



**U.S. DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
Office of the Chief Information Officer  
High Performance Computing and Communications

September 25, 2024

Greenewald, John  
Email: [john@greenewald.com](mailto:john@greenewald.com)

**Re: Request No. DOC-NOAA-2024-000426**

Good afternoon,

This letter is in response to your Freedom of Information Act (FOIA) request which was received by our office on 4/15/2024, in which you requested:

*I respectfully request a copy of records (which includes videos/photos), electronic or otherwise, of all records that pertain to your agency's policy and procedure on sharing information with the DoD's All-domain Anomaly Resolution Office (AARO). I ask that you include all policy, procedure, memorandum of understanding, memorandum of agreement, letters, other memos, etc., that outline your agency's policy on sharing information on any classification level with the AARO effort which investigates UAP related cases, and per their own documentation, gets material from your agency, which is why I believe some sort of responsive records should exist.*

*I ask that you included any adopted procedures that were kept from prior efforts such as the UAP Task Force, AOIMSG, etc. wherein your agency might have shared information to UAP investigative efforts.*

*I ask that you search for all classified and unclassified records. You can limit the search for records dated 2018 through to the date of processing this request.*

After searching our files, we were unable to located records that are responsive to your request

However, we do have previously released records containing correspondence associated with AARO and/or Unidentified Aerial Phenomena Task Force (UAPTF). You can have access to them and they are attached for convenience. Your request is complete.

You have the right to file an administrative appeal if you are not satisfied with our response to your FOIA request. All appeals should include a statement of the reasons why you believe the FOIA response was not satisfactory. An appeal based on documents in this release must be received within 90 calendar days of the date of this response letter at the following address:

Assistant General Counsel for Employment, Litigation, and Information  
U.S. Department of Commerce Room 5896  
1401 Constitution Ave. NW  
Washington, DC 20230

An appeal may also be sent by e-mail to [FOIAAppeals@doc.gov](mailto:FOIAAppeals@doc.gov).

For your appeal to be complete, it must include the following items:

- a copy of the original request,
- our response to your request,
- a statement explaining why the withheld records should be made available, and why the denial of the records was in error.
- "Freedom of Information Act Appeal" must appear on your appeal letter. It should also be written on your envelope, e-mail subject line, or your fax cover sheet.

FOIA appeals posted to the e-mail box, FOIAonline, or Office after normal business hours will be deemed received on the next business day. If the 90th calendar day for submitting an appeal falls on a Saturday, Sunday or legal public holiday, an appeal received by 5:00 p.m., Eastern Time, the next business day will be deemed timely. FOIA grants requesters the right to challenge an agency's final action in federal court. Before doing so, an adjudication of an administrative appeal is ordinarily required.

The Office of Government Information Services (OGIS), an office created within the National Archives and Records Administration, offers free mediation services to FOIA requesters. They may be contacted in any of the following ways:

Office of Government Information Services  
National Archives and Records Administration  
Room 2510  
8601 Adelphi Road  
College Park, MD 20740-6001  
Email: [ogis@nara.gov](mailto:ogis@nara.gov)

Phone: 301-837-1996  
Fax: 301-837-0348  
Toll-free: 1-877-684-6448

If you have questions regarding this correspondence please contact us at [foia@noaa.gov](mailto:foia@noaa.gov) or the NOAA FOIA Public Liaison Tony LaVoi at (843) 834-3516.

Sincerely,

Mark Graff  
NOAA FOIA Officer

This document is made available through the declassification efforts  
and research of John Greenewald, Jr., creator of:

# The Black Vault



The Black Vault is the largest online Freedom of Information Act (FOIA)  
document clearinghouse in the world. The research efforts here are  
responsible for the declassification of hundreds of thousands of pages  
released by the U.S. Government & Military.

**Discover the Truth** at: <http://www.theblackvault.com>



Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

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**Accepted: Invitation: AARO visit to NWS Sterling Field Support Center @ Thu May 4, 2023 10am - 12pm (EDT) (michael.j.rabasco2.civ@mail.mil)**

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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil>

Wed, Apr 26, 2023 at 7:48 AM

To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

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 **invite.ics**  
2K



Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

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## Accepted: Meeting w/ Navy at NWS Sterling Field Support Center

1 message

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(b) (6) USN (USA) (b) (6) @us.navy.mil>  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Thu, Apr 21, 2022 at 10:35 AM

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 **invite.ics**  
2K



Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

**FW: Amateur Ballooning - UAP?**

2 messages

(b) (6) USN (USA) (b) (6) @navy.mil> Mon, Jan 24, 2022 at 8:21 AM  
 To: "Miller, Gary W (FAA)" <Gary.W.Miller@faa.gov>  
 Cc: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>, Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>, (b) (6) (USA)" (b) (6) @navy.mil>, (b) (5) (USA)" (b) (6) @navy.mil>

Gary,

I attached a presentation brought to our attention. Although STEM is a very valuable initiative, this effort is probably causing some air clutter. Sky trash is becoming a problem and probably needs to be monitored somehow. It also appears to be an international initiative.

Dan and Tom,

I included you on distro for SA.

VR,

(b) (6)

**From:** (b) (6) (USA) (b) (6) @navy.mil>  
**Sent:** Wednesday, January 19, 2022 1:11 PM  
**To:** (b) (6) USN NIMITZ OPINTELCEN DC (USA) (b) (6) @navy.mil>; (b) (6) (USA) (b) (6) @navy.mil>; (b) (6) USN (USA) (b) (6) @navy.mil>; (b) (6) USN DCNO N2N6 (USA) (b) (6) @navy.mil>; (b) (6) USN NAWCAD (USA) (b) (6) @navy.mil>; (b) (6) USN ONI WASHINGTON DC (USA) (b) (6) @navy.mil>  
**Subject:** FW: Amateur Ballooning - UAP?

(b) (5)

Cheers,

(b) (6)

(b) (5)

(b) (6), Ph.D.

Research Director

Task Force

Naval Intelligence Activity

Phone: (b) (6) \*(NEW)\*\*

Secure phone: (b) (6)

From: (b) (6) @us.af.mil>

Sent: Wednesday, January 19, 2022 12:42 PM

To: (b) (6) (USA) (b) (6) @navy.mil>; (b) (6) USN ONI WASHINGTON DC (USA) (b) (6) @navy.mil>; (b) (6) USN DCNO N2N6 (USA) (b) (6) @navy.mil>; (b) (6) USN ONI WASHINGTON DC (USA) (b) (6) @navy.mil>; (b) (6) USMC INTELLIGENCE (USA) (b) (6) @usmc.mil>; (b) (6) USMC INTELLIGENCE (USA) (b) (6) @navy.mil>; (b) (6) @ltsnet.net>

Subject: Amateur Ballooning - UAP?

Good Afternoon!

Here's the information that I found regarding ballooning. I sent this info to my AFOSI Det team as well for awareness. Let me know if you have any questions!

[Sondehub](#) tracks Radiosonde

[Habhub](#) tracks Amateur High Alt Balloon Launches

[NOAA HYSPLIT](#) used to predict flight path/ trajectory of item

[Weak Signal Propagation Reporter Network](#) - group of amateur radio operators using K1JT's MEPT\_JT digital mode to probe radio frequency propagation conditions using very low power (QRP/QRPP) transmissions. The software is open source, and the data collected are available to the public through this site.

Pico balloons generally float between 27k to 45k ft in highest winds of a Jet Stream

SBS-13 balloon looks like a trash bag floating in the wind. These typically fly above 39k ft.

//SIGNED//

(b) (6)

NCOIC, Intelligence Execution

158th OSS/IN

Vermont Air National Guard

DSN: (b) (6) / Comm: (b) (6)

 **Amateur Radio Balloons (2020).pdf**  
8501K

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**Miller, Gary W (FAA)** <Gary.W.Miller@faa.gov> Mon, Jan 24, 2022 at 8:29 AM  
To: (b) (6) USN (USA)" (b) (6) @navy.mil>  
Cc: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>, Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>, (b) (6) (USA)" (b) (6) @navy.mil, (b) (6) (USA)" (b) (6) @navy.mil>

Thanks (b) (6)

Hope your well. Thanks for the slides I hadn't seen this before and will send to my Ops Group.

[Quoted text hidden]





# Send an Amateur Radio Balloon around the World

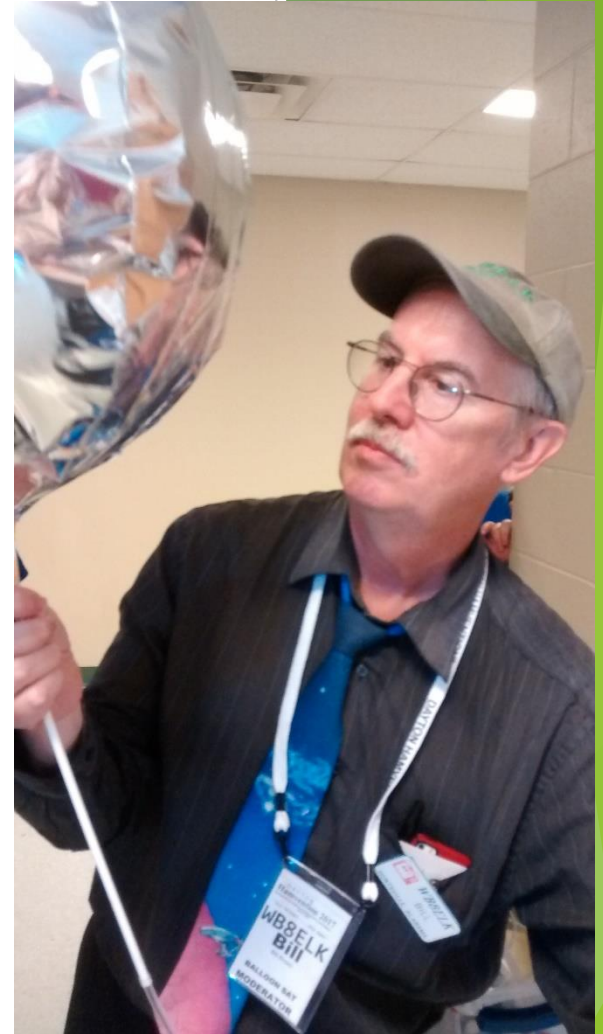
Bill Brown WB8ELK

August 8th and 9th, 2020

# Bill Brown WB8ELK

- Ham since 1969
- Pioneer in Amateur Radio High Altitude Ballooning (ARHAB)

Bill launched his first balloon into the Stratosphere carrying an Amateur TV transmitter and 2m beacon 33 years ago and has been instrumental in using ARHAB flights to encourage STEM education. He has flown over 600 flights since 1987.



# Around the World in 14 days

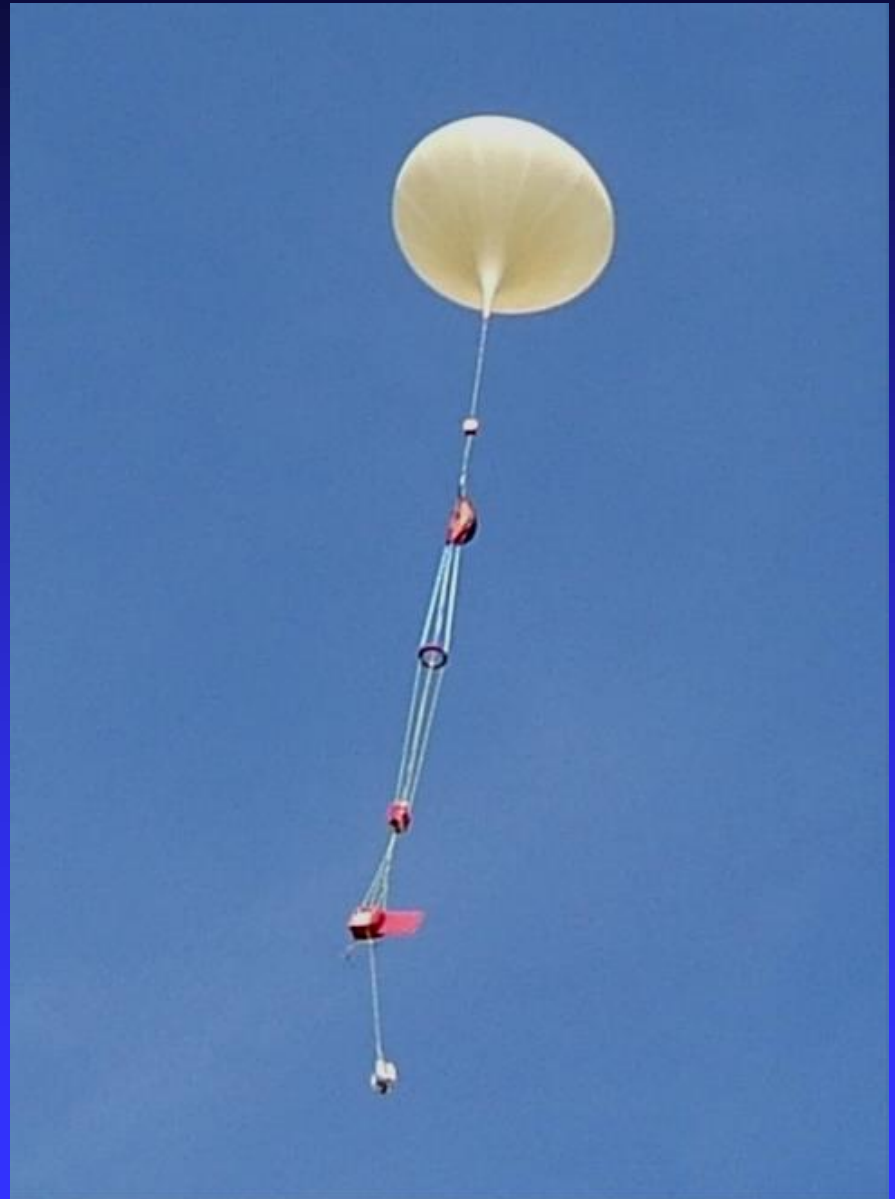


Send an amateur radio balloon around the World

# Typical Amateur Radio latex balloon

## Flight Train:

- Balloon
- Nichrome cutdown
- Parachute
- Primary APRS
- ATV payload
- Secondary APRS



# UAH Student Flights



Most creative payload design



# Simplex Repeater



# Entering the Stratosphere



WB8ELK, KD4STH and KD0QCA balloon  
photographed by Jeff Ducklow N0NQN at  
53,000 feet.

# The view from 85,000 feet



GoPro image over northern Alabama



# Student Science Experiments

>> **Very Angry Bird** <<



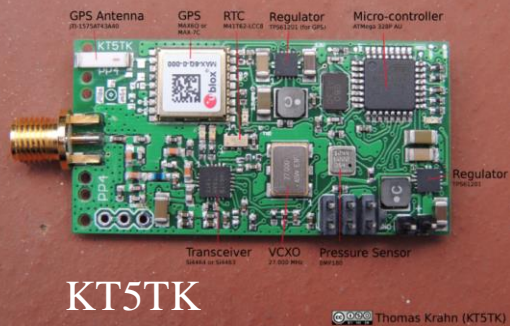
# This very rarely happens



These are the usual  
landing sites for  
balloon payloads



## Pecan Pico 4



# Pico Balloons



Leo M0XER  
61.0 x 10.5mm



Andy VK3YT  
61.0 x 12.7mm

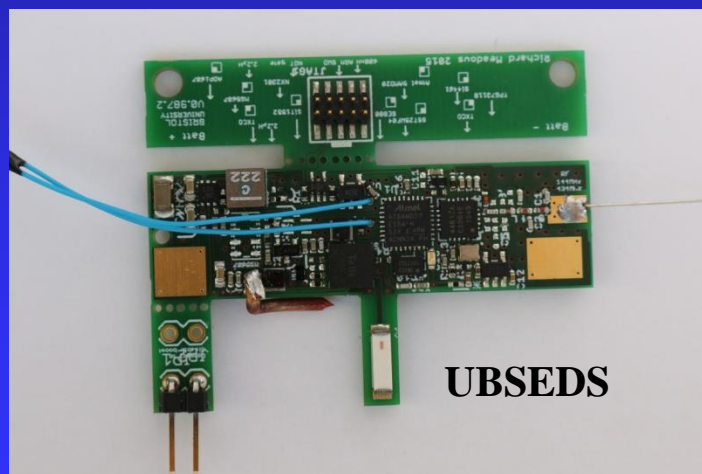
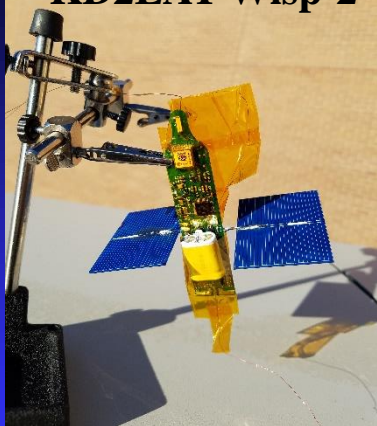


QRP Labs U3B  
33.8 x 12.7mm

## W7QO



## KD2EAT Wisp-2



A handful of hams around the World are developing trackers that weigh less than an ounce.

# Pico Balloons

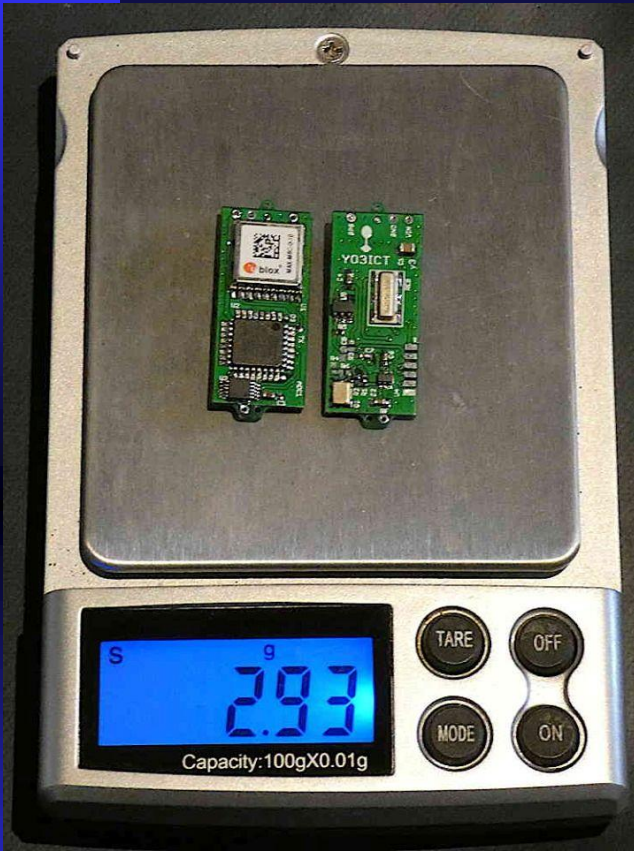


KD2KDD  
KN4IUD

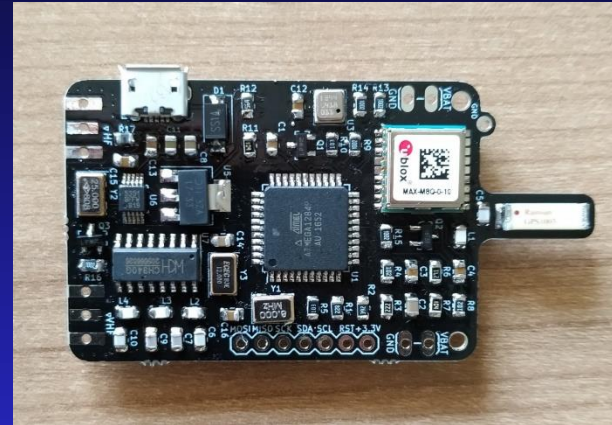


A handful of hams around the World are developing trackers that weigh less than an ounce.

# Pico Balloons



YO3ICT



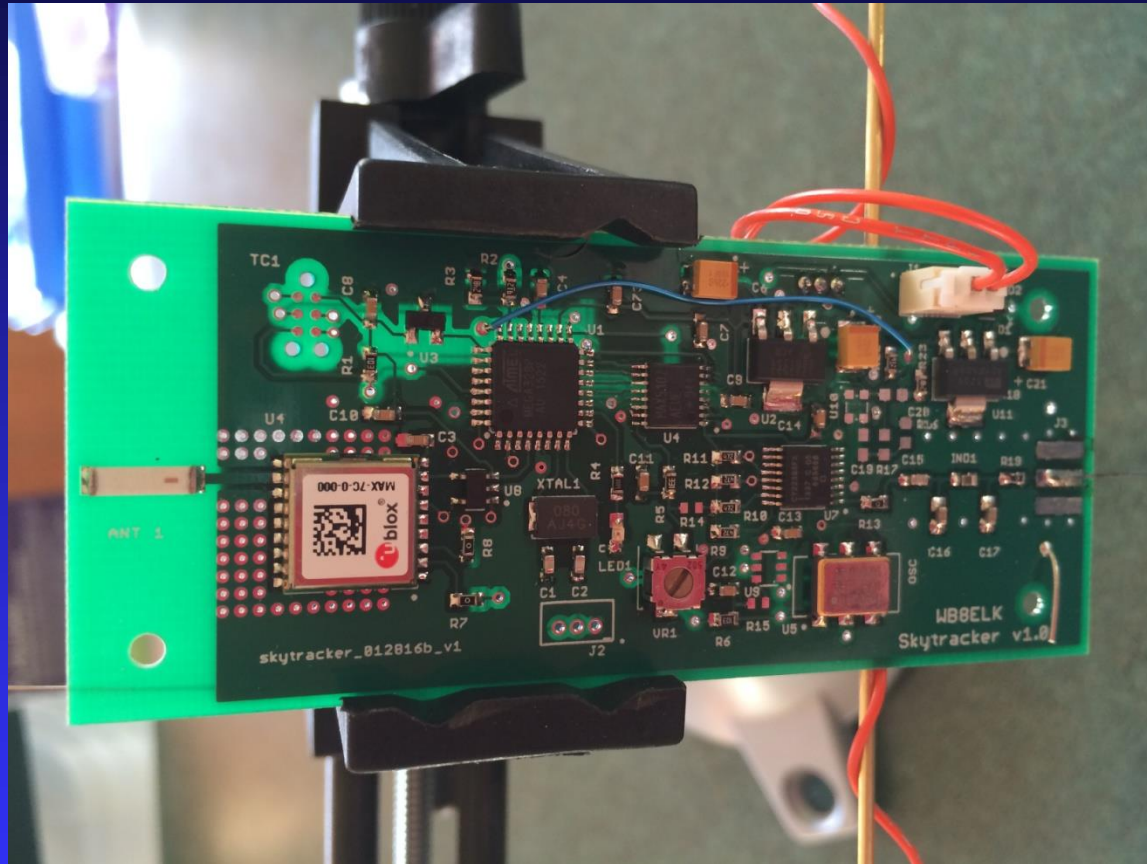
Light  
APRS



Pico  
APRS Lite  
DB1NTO

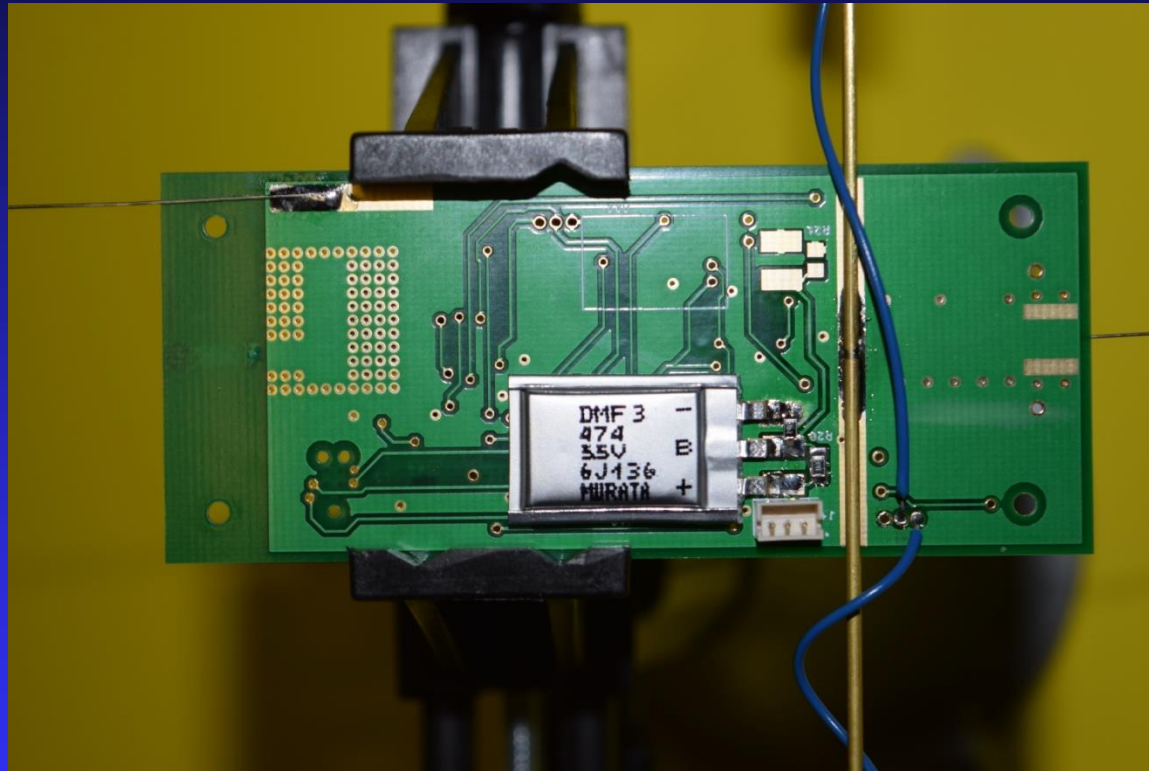
A handful of hams around the World are developing trackers that weigh less than an ounce.

# Pico Balloons



Designed a board called the Skytracker. Complete tracker with onboard GPS that can transmit on VHF or HF frequencies. APRS or WSPR modes.

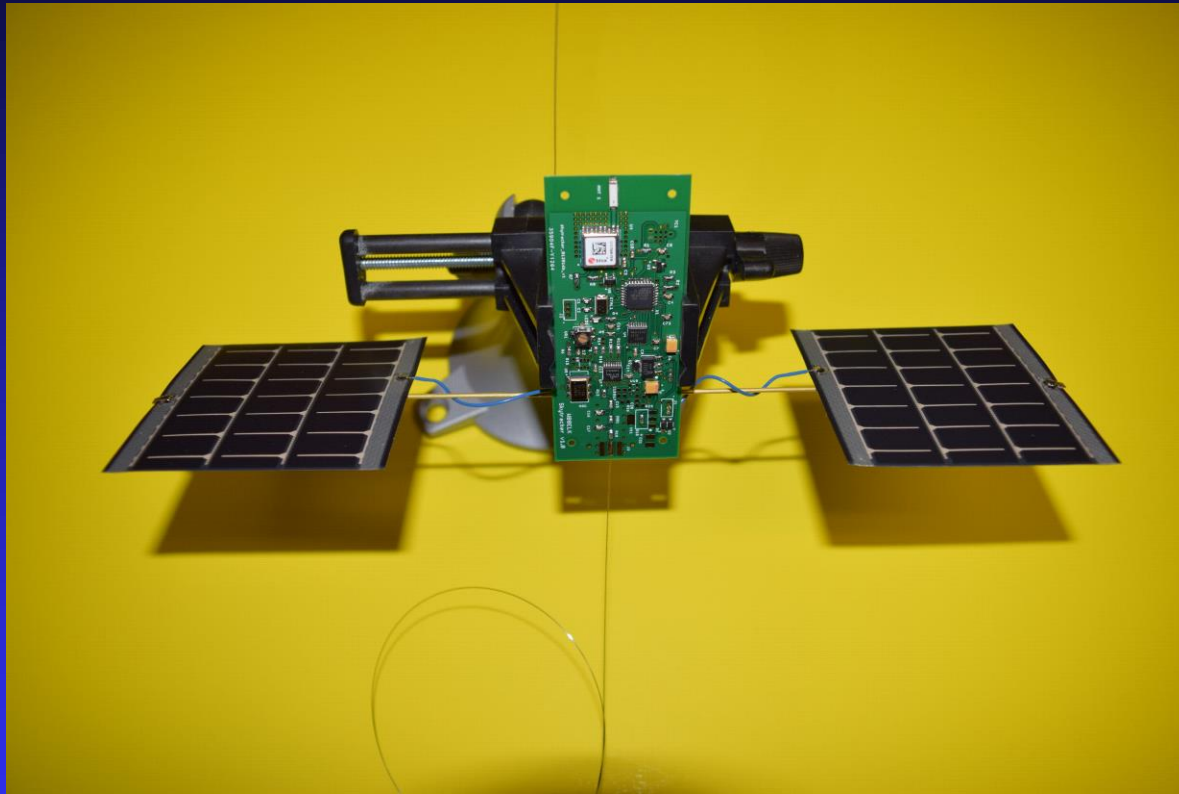
# Pico Balloons



The 0.47 Farad Supercap on the back is very lightweight.



# Skytracker



Totally solar-powered using very lightweight thin-film flexible solar cells by PowerFilmSolar.

# Pico Balloons



Small size makes this an ideal STEM student experiment.

# Pico Balloons



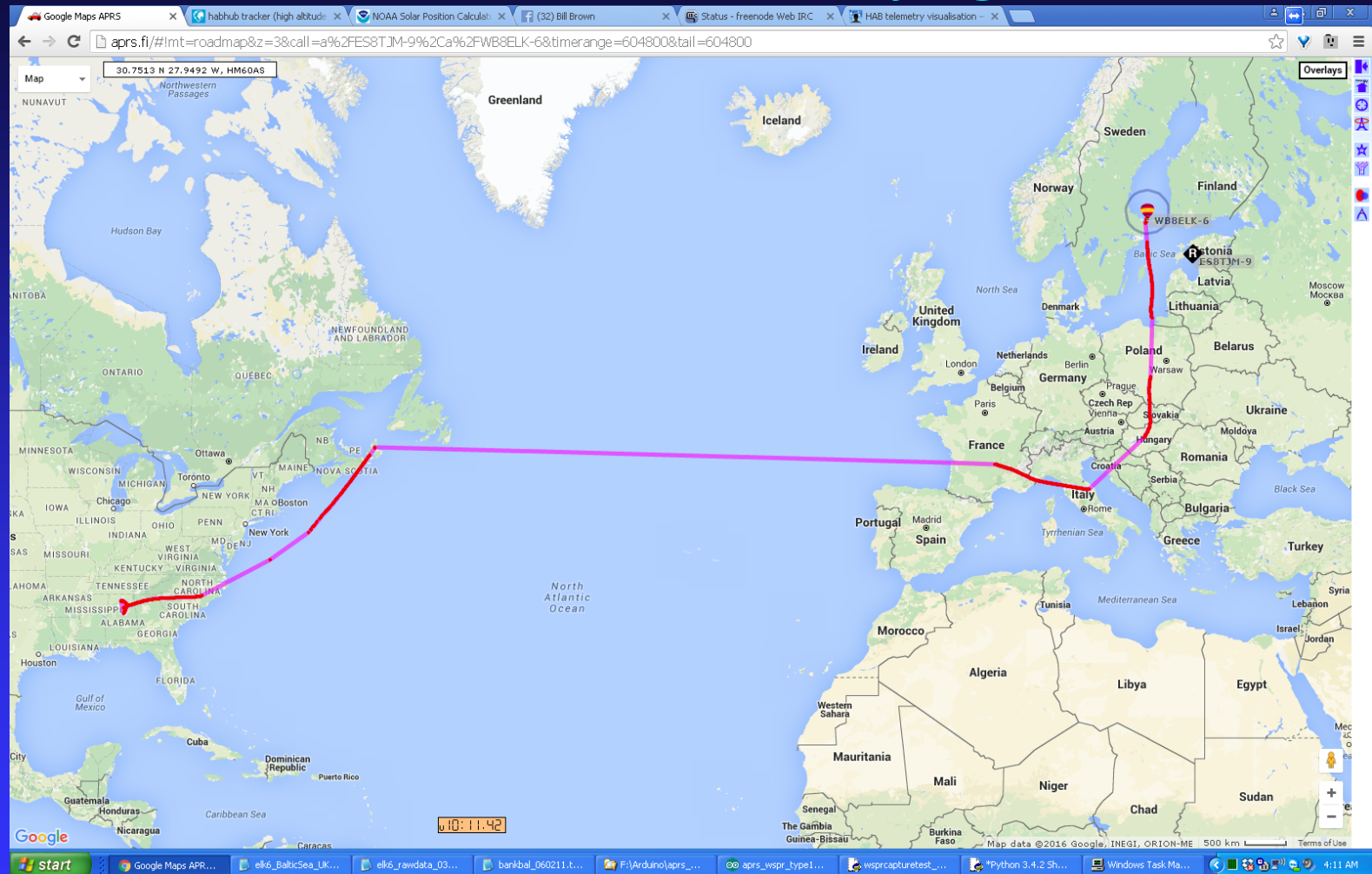
Easily launched by one person in a moderate wind.

Small 40 cubic foot tank of helium can be obtained at low cost



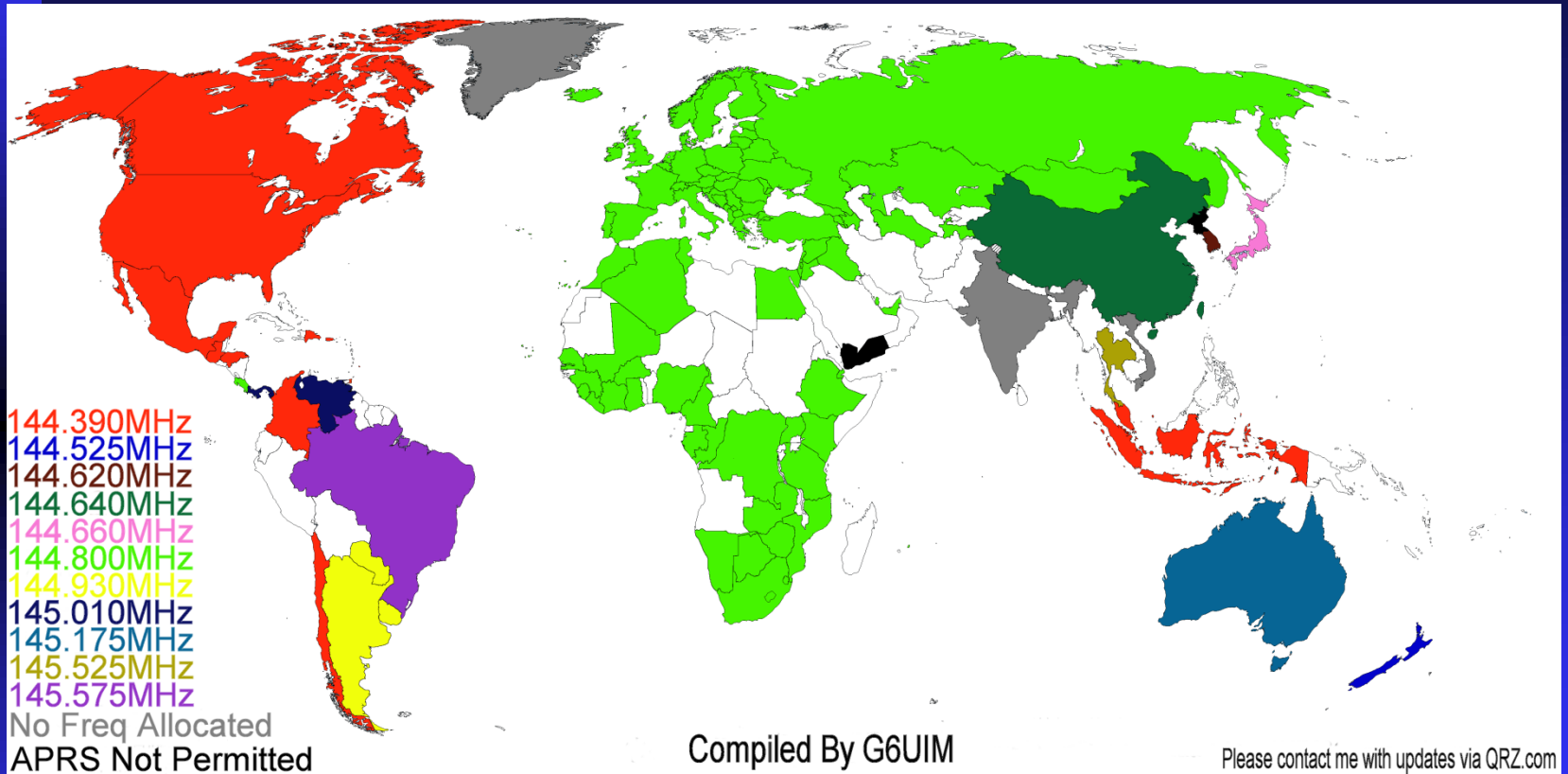
Easy to transport – can inflate 20 flights or more

# How far can they go?



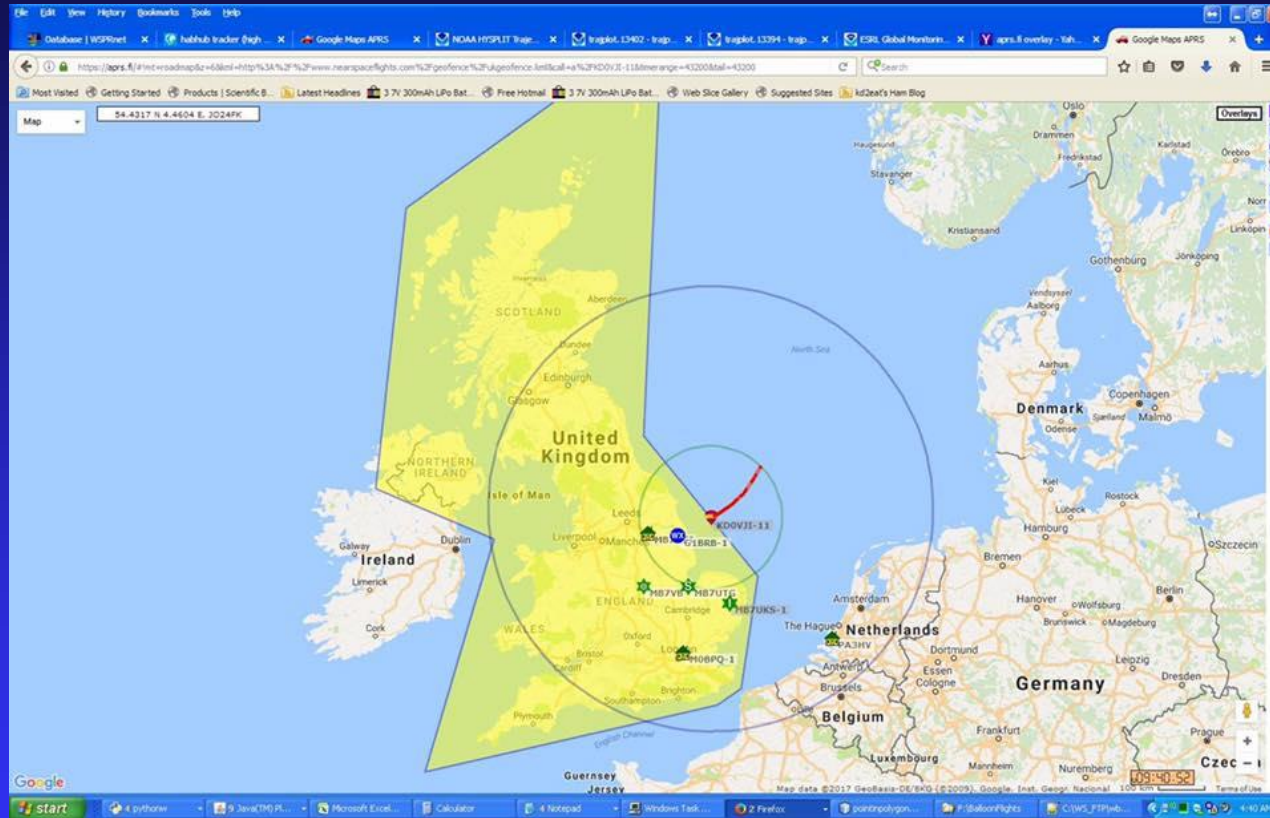
After six days floating at 27,000 feet my little party balloon ended up off the coast of Sweden having crossed the Atlantic Ocean in 32 hours.

# Pico Balloons



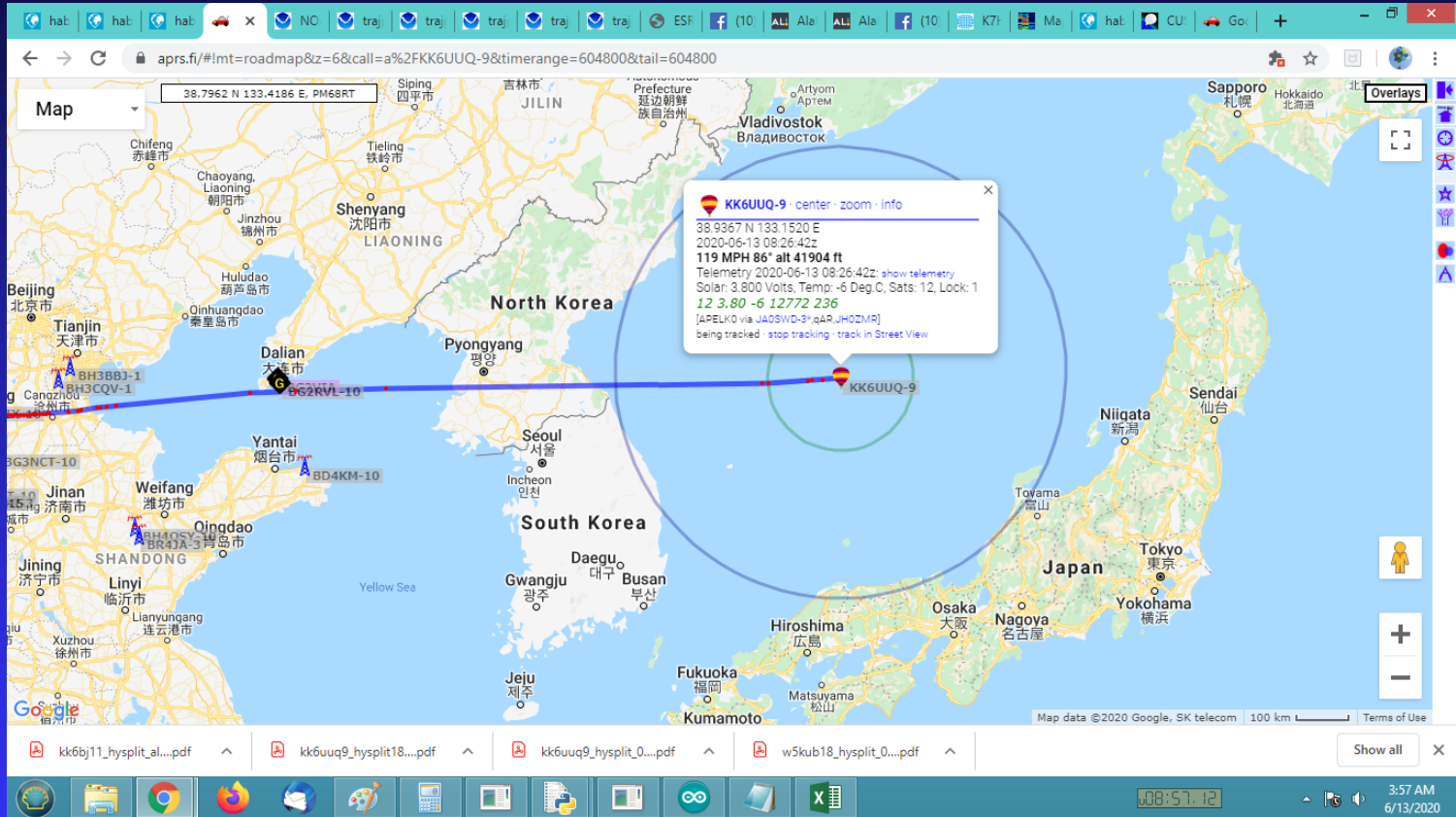
For an APRS tracker you have to automatically switch frequencies based on your location in the World.

# Pico Balloons



There are several Do Not Transmit zones in the World: The UK, Yemen and North Korea are three of the most critical ones. An integer-based point-in-poly routine was written by KD2EAT and W7QQ.

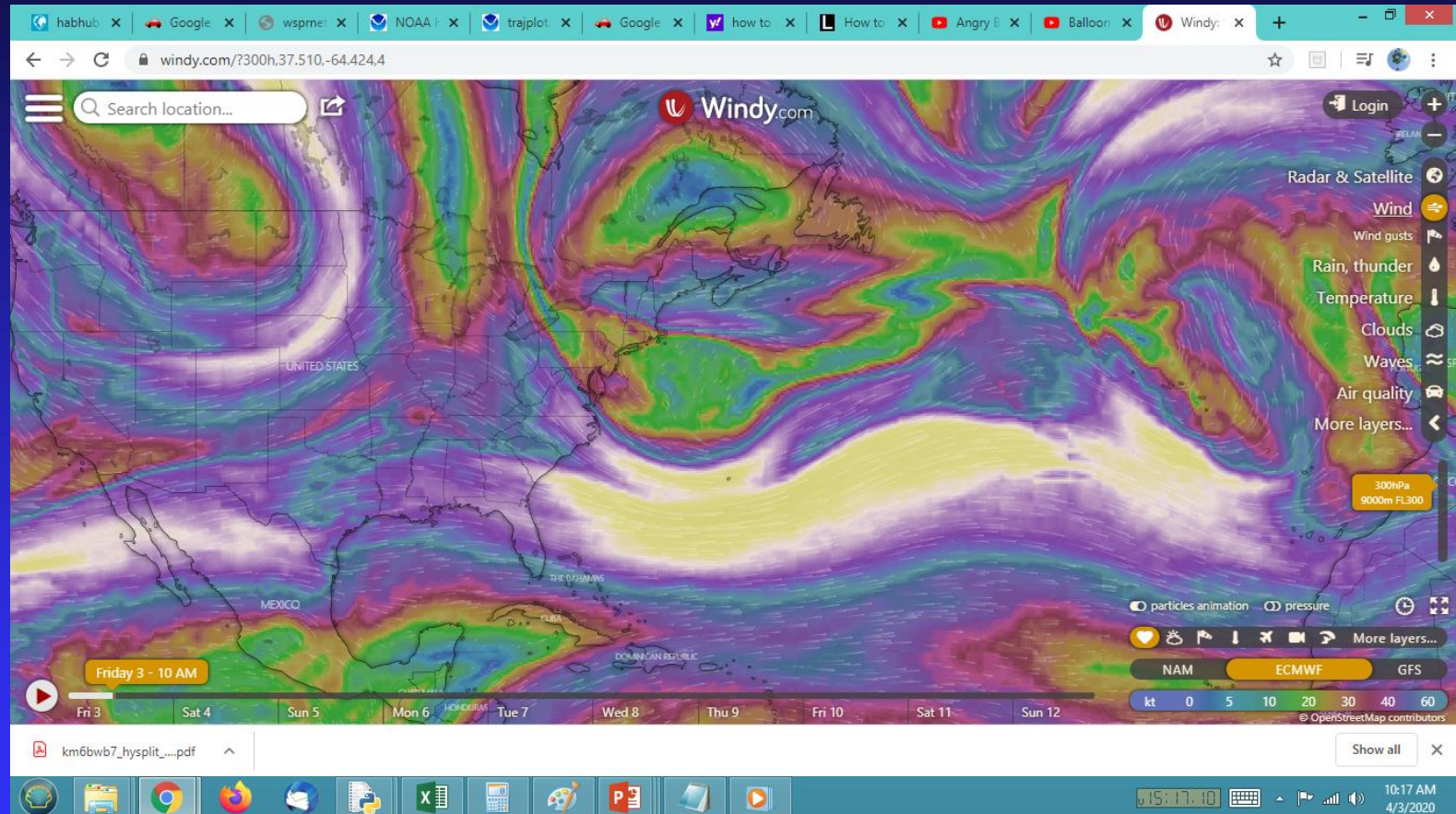
# Pico Balloons



The recent KK6UUQ-9 balloon flew directly over N. Korea but stopped transmitting over the country to prevent WWIII.

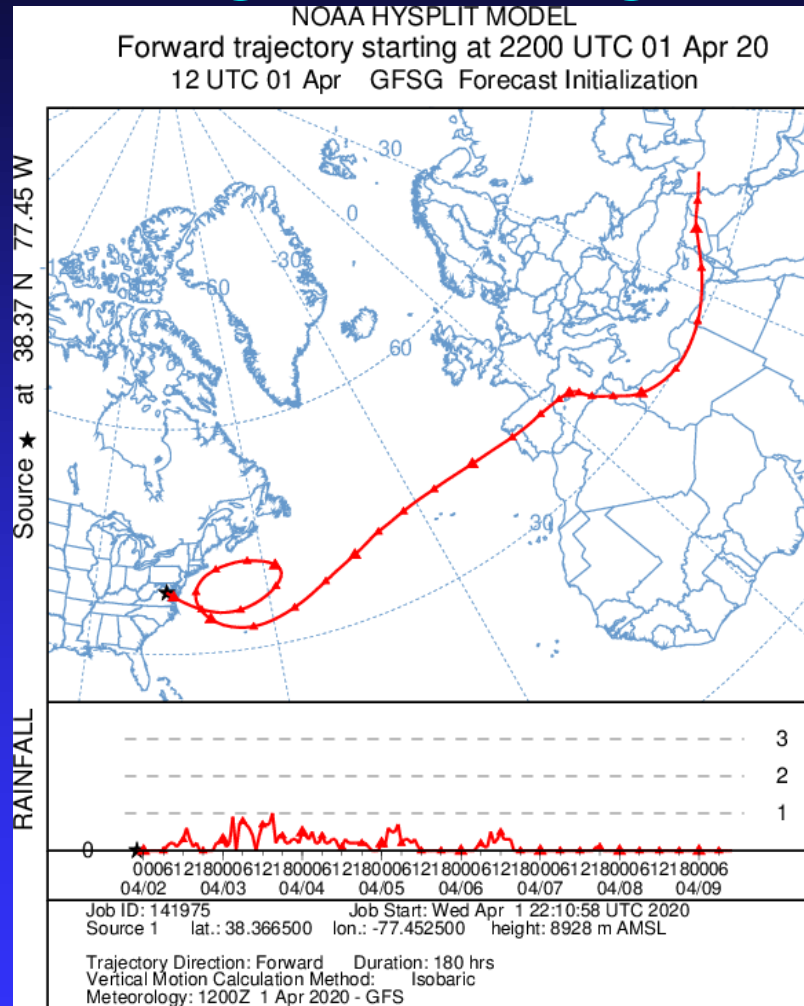


# Floats in the Jet Stream



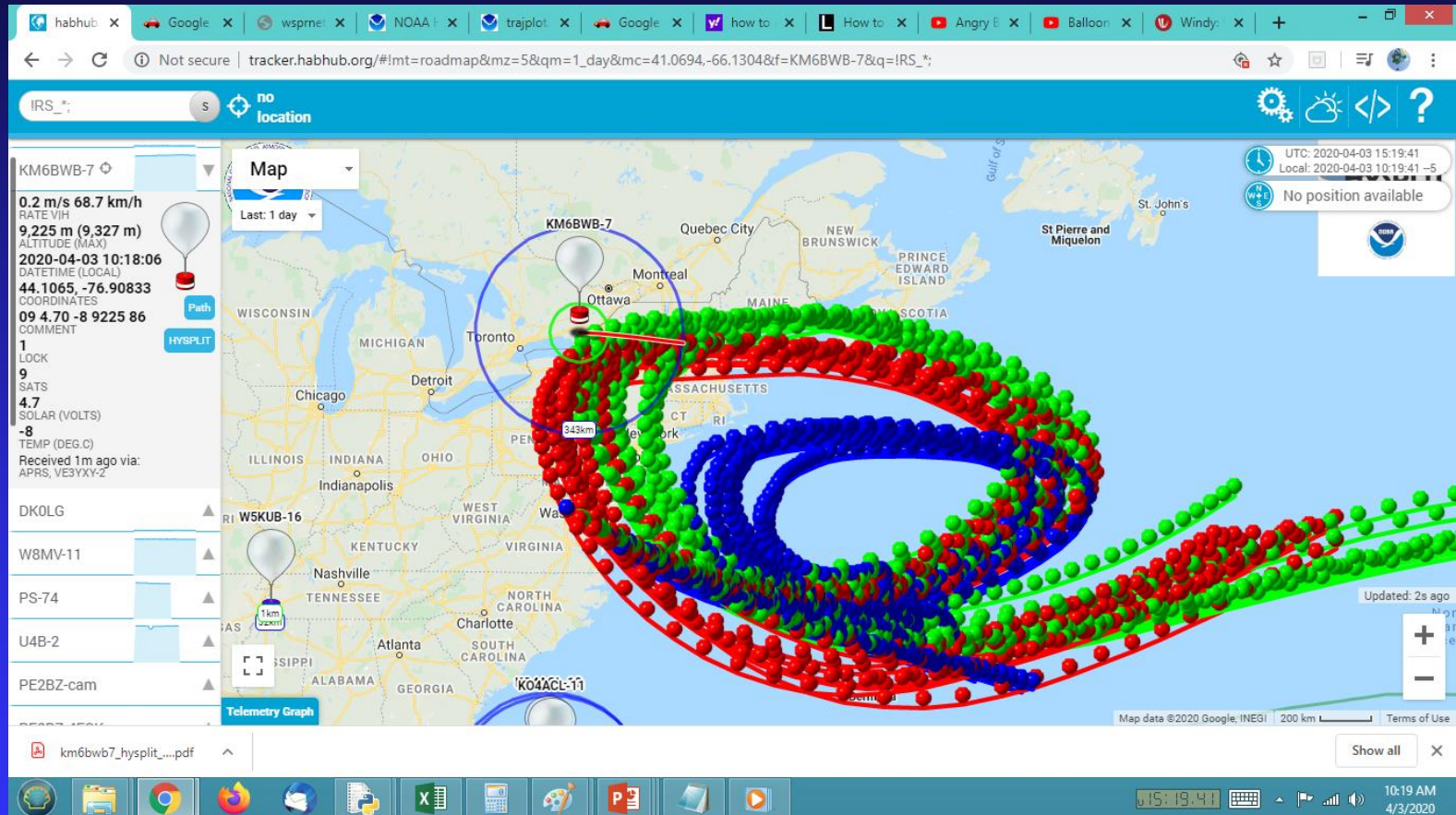
Pico balloons float between 27000 to 45000 feet in the highest winds of the Jet stream. (Windytv.com)

# Predicting the Flight Path



<https://ready.arl.noaa.gov/HYSPLIT.php>

# Actual Flight path



Tracker.habhub.org shows all balloons currently flying

# SBS-13 balloon



A new balloon by Scientific Balloon Solutions flies above 12 km to avoid most storm systems and can stay aloft long enough to circle the World.

# SBS-13 balloon



On its way to attempt a circumnavigation of the World.

# Over the Horizon telemetry

The screenshot displays the WSPRnet website interface. At the top, there are browser tabs for 'Map | WSPRnet', 'Google Maps APRS', 'habhub tracker (high altitude)', 'f (32) Bill Brown', and 'NOAA Solar Position Calculat...'. The main header includes the WSPRnet logo and navigation links: 'Chat | Activity | Map | Database | Stats | Forum | Downloads'. A search bar and user account options are also present.

On the left side, there are several data panels:

- Frequencies:** Lists USB dial frequencies in MHz: 0.136, 0.4742, 1.8366, 3.5926, 5.2872, 7.0386, 10.1387, 14.0956, 18.1046, 21.0946, 24.9246, 28.1246, 50.293, 70.091, 144.489, 432.300, 1296.500.
- Spot Count:** Shows 379,950,331 total spots and 402,799 spots in the last 24 hours, with 10,520 spots in the last hour.
- Navigation:** Includes links for 'Add content', 'Chaos Tools AJAX Demo', and 'Forums'.
- Who's online:** States there are currently 90 users online and lists call signs such as wb8elk, k6pzb, bd4os, VK6HAX, K4BWUU, N3IZN, 5P1B, KG7LKI, W7SZ, PA1NL, G6NHU, DF4PV, oh6mqm, G0MRF, DK5HH, DK8FT, and 4Z4TJ.

The central feature is a world map showing signal propagation paths. A prominent purple path arcs from the United States (near W9ELK) across the Atlantic Ocean to Australia (VK6JJ). Other paths in various colors connect various locations across the globe, including Europe, Africa, and Asia. The map includes a search bar, map controls, and a Google logo.

At the bottom, the Windows taskbar is visible, showing the start button, several open applications (wspcapturetest\_20..., Python 3.4.2 Shell, Windows Task Manager, Map | WSPRnet - Goo..., 15 Notepad, Calculator, TeamViewer), and the system tray with the time 12:14 AM.

Wrote a Python script to skim WSPR data from WSPRnet.org which reformats it to post to the vehicle tracker websites. Data received as far as Australia from the tiny HF wireless transmitter.

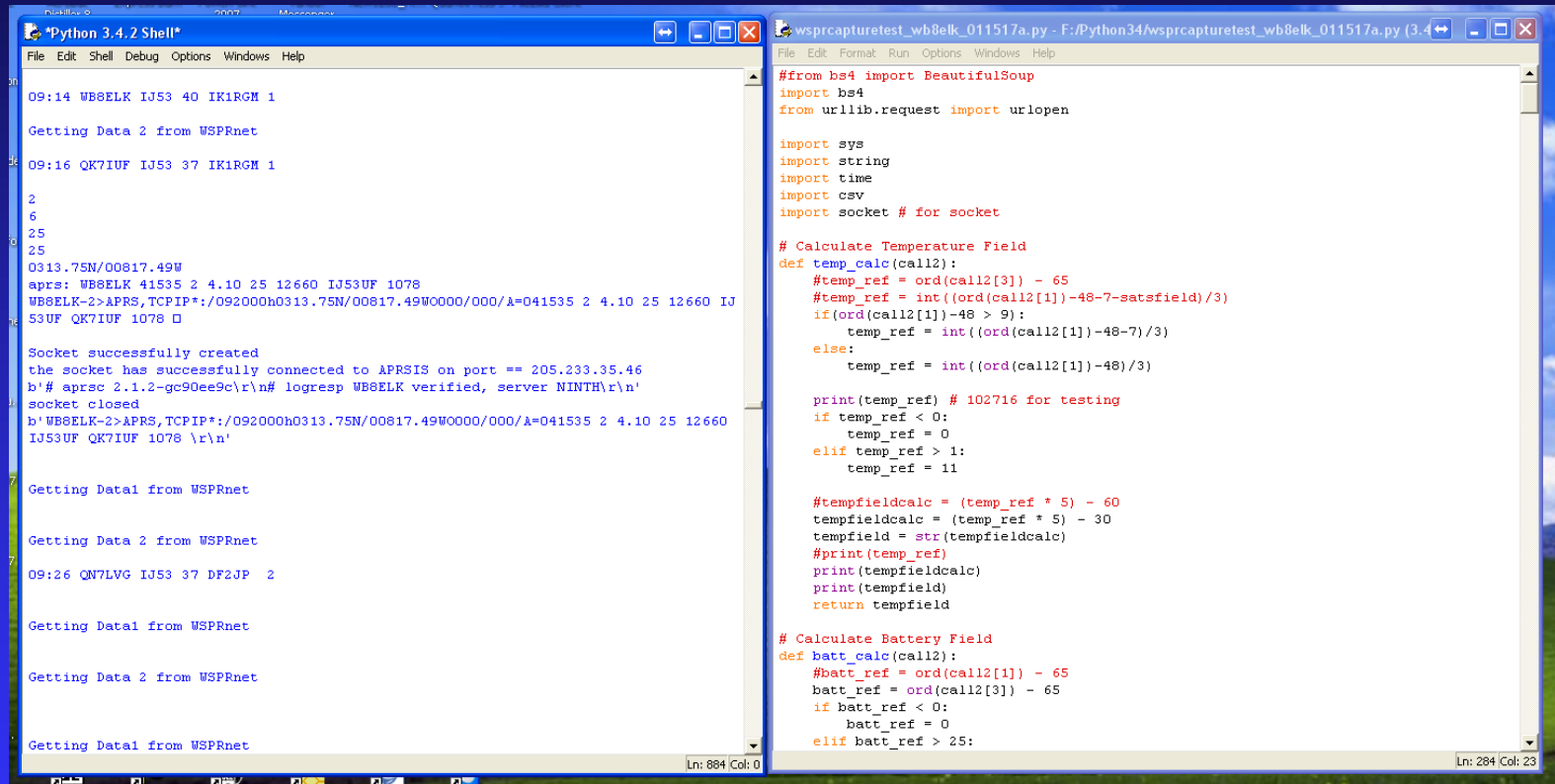
# Reception Report Database

The screenshot shows the WSPRnet website interface. At the top, there's a navigation bar with links for Activity, Map, Database, Stats, Forum, and Downloads. Below this is a 'User login' section with fields for Username and Password, and a 'Log in' button. To the right of the login section is the 'Database' section, which includes a 'Specify query parameters' input and a '65 spots:' label. Below this is a table of reception reports with columns: Timestamp, Call, MHz, SNR, Drift, Grid, Pwr, Reporter, RGrid, km, and az. The table contains 65 rows of data, all starting with the call 'WB8ELK'. A search box with the value '06:48:41' is visible at the bottom right of the table area. The website footer includes a 'Who's online' section listing users like ZP9CTS, G4ZFQ, on7kb, and R2FBI.

Timestamp	Call	MHz	SNR	Drift	Grid	Pwr	Reporter	RGrid	km	az
2017-02-01 12:04	WB8ELK	14.097058	-26	0	U64	10	N4XWC	EM63nu	8792	304
2017-02-01 11:44	WB8ELK	14.097058	-28	0	U64	10	N4XWC	EM63nu	8792	304
2017-02-01 09:14	WB8ELK	14.097073	-28	0	U53	10	IKTRGM	JN35uc	4908	17
2017-02-01 09:14	WB8ELK	14.097065	-26	0	U53	10	PIBESA	JO22fd	5554	11
2017-02-01 09:04	WB8ELK	14.097069	-25	0	U53	10	DK8UG	JN49cm	5373	15
2017-02-01 08:44	WB8ELK	14.097072	-24	0	U53	10	IKTRGM	JN35uc	4908	17
2017-02-01 08:44	WB8ELK	14.097069	-26	0	U53	10	DK8UG	JN49cm	5373	15
2017-01-31 17:34	WB8ELK	14.097069	-25	0	I48	1000	LASJO	JP99gb	8161	11
2017-01-31 17:34	WB8ELK	14.097084	-18	0	I48	1000	OY6FRA	IP62oa	7075	2
2017-01-31 17:34	WB8ELK	14.097066	-25	0	I48	1000	DLDLU	JN49cm	5968	15
2017-01-31 17:24	WB8ELK	14.097067	-26	0	I48	10	DLDLU	JN49cm	5968	15
2017-01-31 17:24	WB8ELK	14.097084	-22	-1	I48	10	OY6FRA	IP62oa	7075	2
2017-01-31 17:14	WB8ELK	14.097084	-20	-2	I48	10	OY6FRA	IP62oa	7075	2
2017-01-31 16:14	WB8ELK	14.097070	-26	0	I48	10	DF6MK	JN68ik	6009	19
2017-01-31 13:34	WB8ELK	14.097052	-27	0	I38	10	N4XWC	EM63nu	8618	305
2017-01-31 13:24	WB8ELK	14.097052	-23	0	I38	10	N4XWC	EM63nu	8618	305
2017-01-31 13:14	WB8ELK	14.097070	-28	0	I38	10	N2NC	FN20ve	7722	314
2017-01-31 13:14	WB8ELK	14.097053	-25	0	I38	10	N4XWC	EM63nu	8618	305
2017-01-31 13:04	WB8ELK	14.097053	-23	0	I38	10	N4XWC	EM63nu	8618	305
2017-01-31 12:44	WB8ELK	14.097052	-22	0	I38	10	N4XWC	EM63nu	8618	305
2017-01-31 12:34	WB8ELK	14.097053	-22	0	I38	10	N4XWC	EM63nu	8618	305
2017-01-31 12:14	WB8ELK	14.097052	-26	0	I38	10	N4XWC	EM63nu	8618	305
2017-01-31 12:04	WB8ELK	14.097053	-21	0	I38	10	N4XWC	EM63nu	8618	305
2017-01-31 08:54	WB8ELK	14.097067	-26	0	I37	10	DLDLU	JN49cm	6136	17
2017-01-30 18:14	WB8ELK	14.097084	-24	0	I17	10	OY6FRA	IP62oa	7229	5
2017-01-30 18:14	WB8ELK	14.097067	-19	0	I17	10	F5KLF	JN24ko	5674	20
2017-01-30 18:14	WB8ELK	14.097083	-27	0	I17	10	PIBESA	JO22fd	6406	15
2017-01-30 18:14	WB8ELK	14.097058	-23	0	I17	10	PI4THT	JO32kf	6489	17
2017-01-30 18:04	WB8ELK	14.097084	-20	0	I17	10	OY6FRA	IP62oa	7229	5
2017-01-30 16:44	WB8ELK	14.097072	-25	0	I17	10	ON7KO	JO21ce	6302	16
2017-01-30 16:44	WB8ELK	14.097068	-24	0	I17	10	F5KLF	JN24ko	5674	20
2017-01-30 16:34	WB8ELK	14.097055	-25	0	I37	10	DLDLU	JN49cm	5968	15

Decoding software used by hundreds of ground stations World-wide uploads reception reports to a central database.

# Skimming data with Python



```
Python 3.4.2 Shell
File Edit Shell Debug Options Windows Help
09:14 WB8ELK IJ53 40 IK1RGM 1
Getting Data 2 from WSPRnet
09:16 QK7IUF IJ53 37 IK1RGM 1
2
6
25
25
0313.75N/00817.49W
aprs: WB8ELK 41535 2 4.10 25 12660 IJ53UF 1078
WB8ELK-2>APRS,TCPIP*:/092000h0313.75N/00817.49W0000/000/A=041535 2 4.10 25 12660 IJ
53UF QK7IUF 1078 □
Socket successfully created
the socket has successfully connected to APRSIS on port == 205.233.35.46
b'# aprsc 2.1.2-gc90ee9c\r\n# logresp WB8ELK verified, server NINTH\r\n'
socket closed
b'WB8ELK-2>APRS,TCPIP*:/092000h0313.75N/00817.49W0000/000/A=041535 2 4.10 25 12660
IJ53UF QK7IUF 1078 \r\n'
Getting Data1 from WSPRnet
Getting Data 2 from WSPRnet
09:26 QN7LVG IJ53 37 DF2JP 2
Getting Data1 from WSPRnet
Getting Data 2 from WSPRnet
Getting Data1 from WSPRnet

wsprcapturetest_wb8elk_011517a.py - F:/Python34/wsprcapturetest_wb8elk_011517a.py (3.4)
File Edit Format Run Options Windows Help
#from bs4 import BeautifulSoup
import bs4
from urllib.request import urlopen

import sys
import string
import time
import csv
import socket # for socket

# Calculate Temperature Field
def temp_calc(call2):
    #temp_ref = ord(call2[3]) - 65
    #temp_ref = int((ord(call2[1])-48-7-satsfield)/3)
    if(ord(call2[1])-48 > 9):
        temp_ref = int((ord(call2[1])-48-7)/3)
    else:
        temp_ref = int((ord(call2[1])-48)/3)

    print(temp_ref) # 102716 for testing
    if temp_ref < 0:
        temp_ref = 0
    elif temp_ref > 1:
        temp_ref = 11

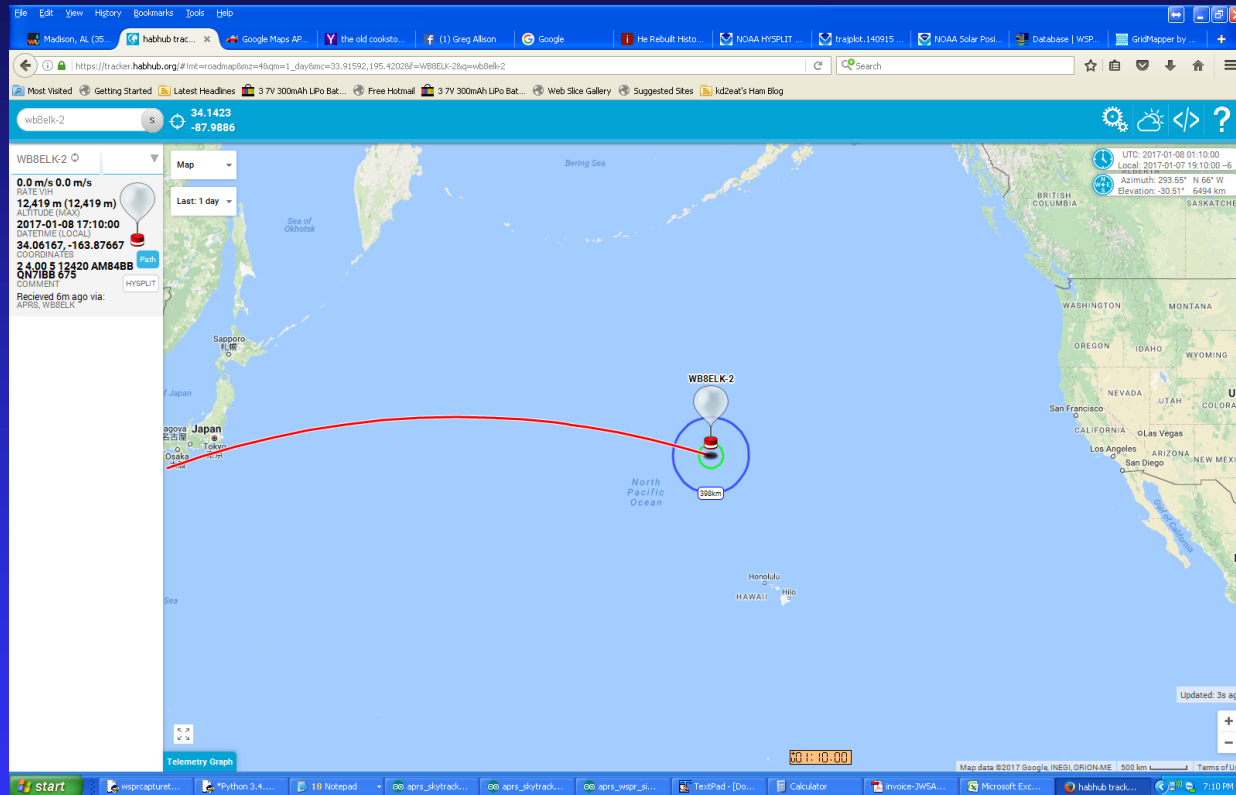
    #tempfieldcalc = (temp_ref * 5) - 60
    tempfieldcalc = (temp_ref * 5) - 30
    tempfield = str(tempfieldcalc)
    #print(temp_ref)
    print(tempfieldcalc)
    print(tempfield)
    return tempfield

# Calculate Battery Field
def batt_calc(call2):
    #batt_ref = ord(call2[1]) - 65
    batt_ref = ord(call2[3]) - 65
    if batt_ref < 0:
        batt_ref = 0
    elif batt_ref > 25:
        batt_ref = 25
```

Python script skims the database of the raw position reports coming in from remote ground stations and sends it to a vehicle-tracking website for a position map display.

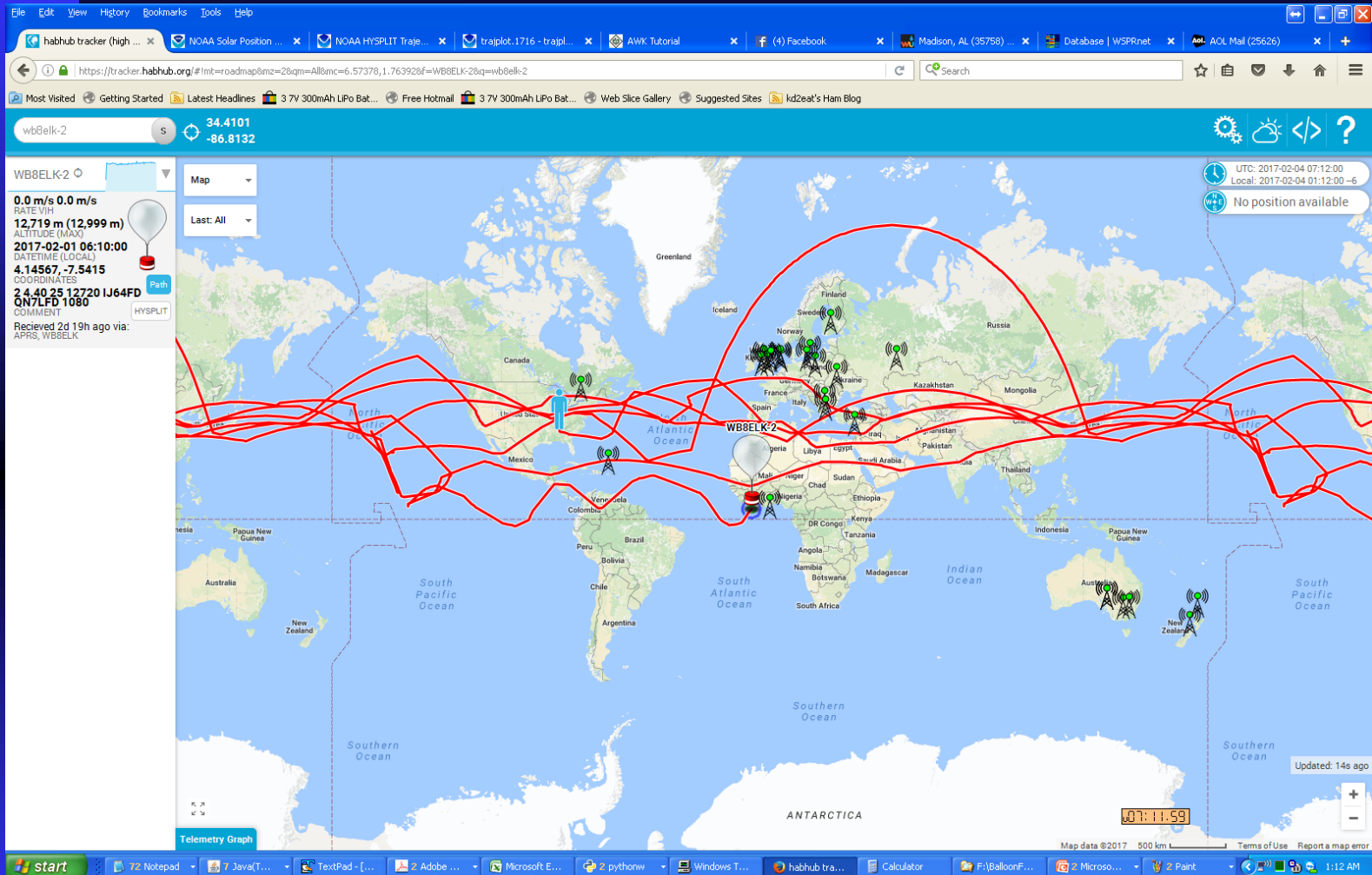


# Balloon Tracking web map



Final result of reformatted raw WSPR data as displayed on the TRACKER. HABHUB.ORG map. Also shows up on APRS.FI

# Around the World



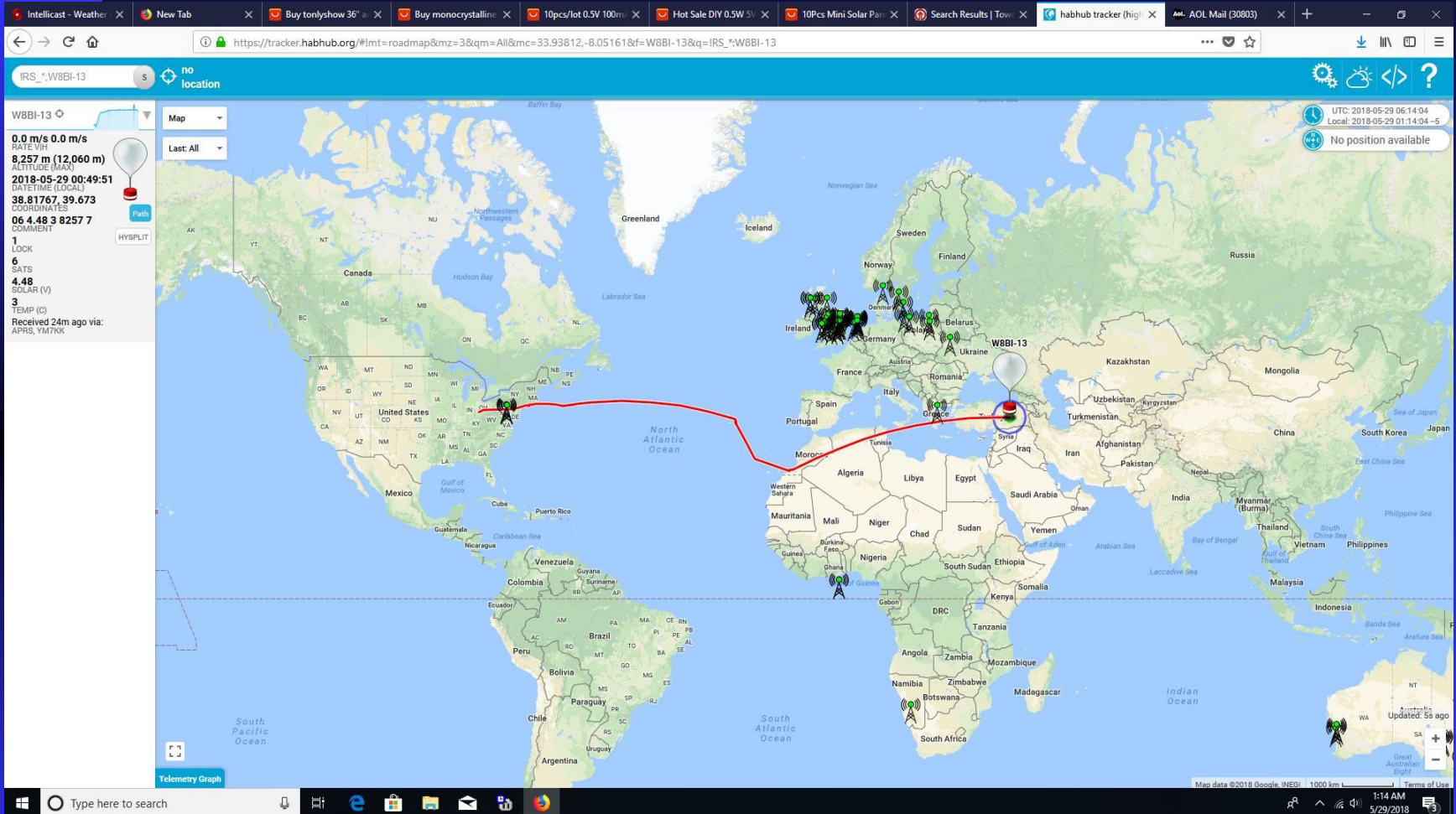
My Skytracker 20m WSPR flight went around the World over 6 times after flying at 40,000 feet for 75 days.

# Dayton Hamvention 2018 Pico balloon flight



The Hamvention Hexbeam snags the W8BI-13 pico balloon

# Dayton Hamvention 2018 Pico balloon flight



11 day flight from Dayton Hamvention to Turkey

# Youth On The Air



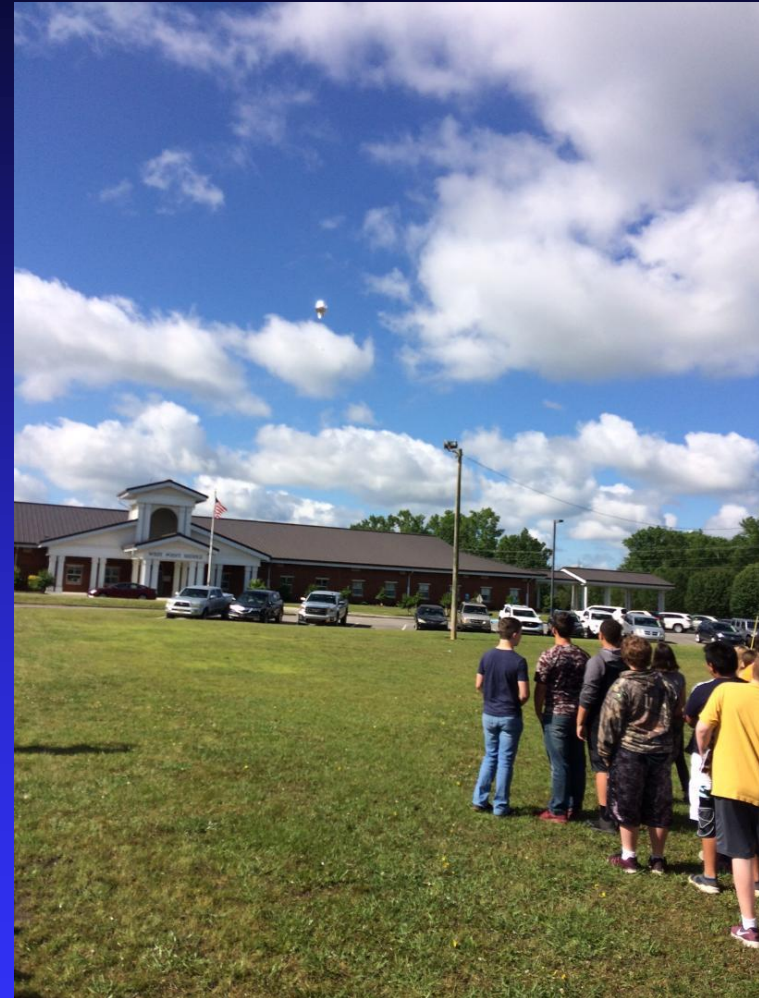
Audrey KM4BUN and Jack KM4ZIA are quite active in High Altitude Ballooning, both regular latex flights and long duration Pico Flights, they plan to launch two WSPR balloons for GPSL2020.

# YOTA Activities



Audrey KM4BUN produced a video she presented to the YOTA (Youth On The Air) group about Pico Balloons.

## Bev WB4ELK prepares a pico balloon for liftoff



West Point Middle school pico launch – Cullman AL

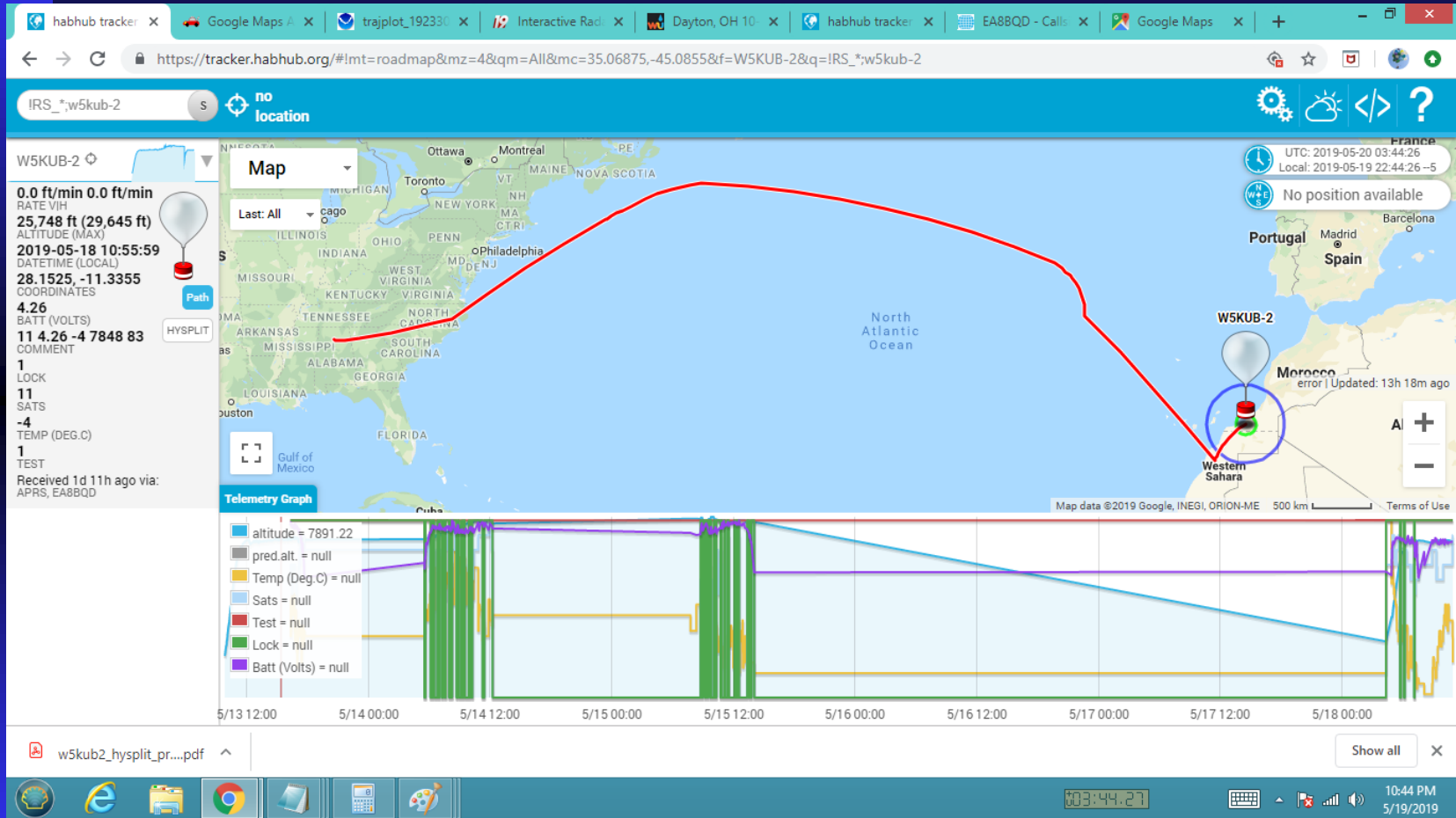
# West Point Middle school pico balloon launch



West Point Middle school pico launch – Cullman AL

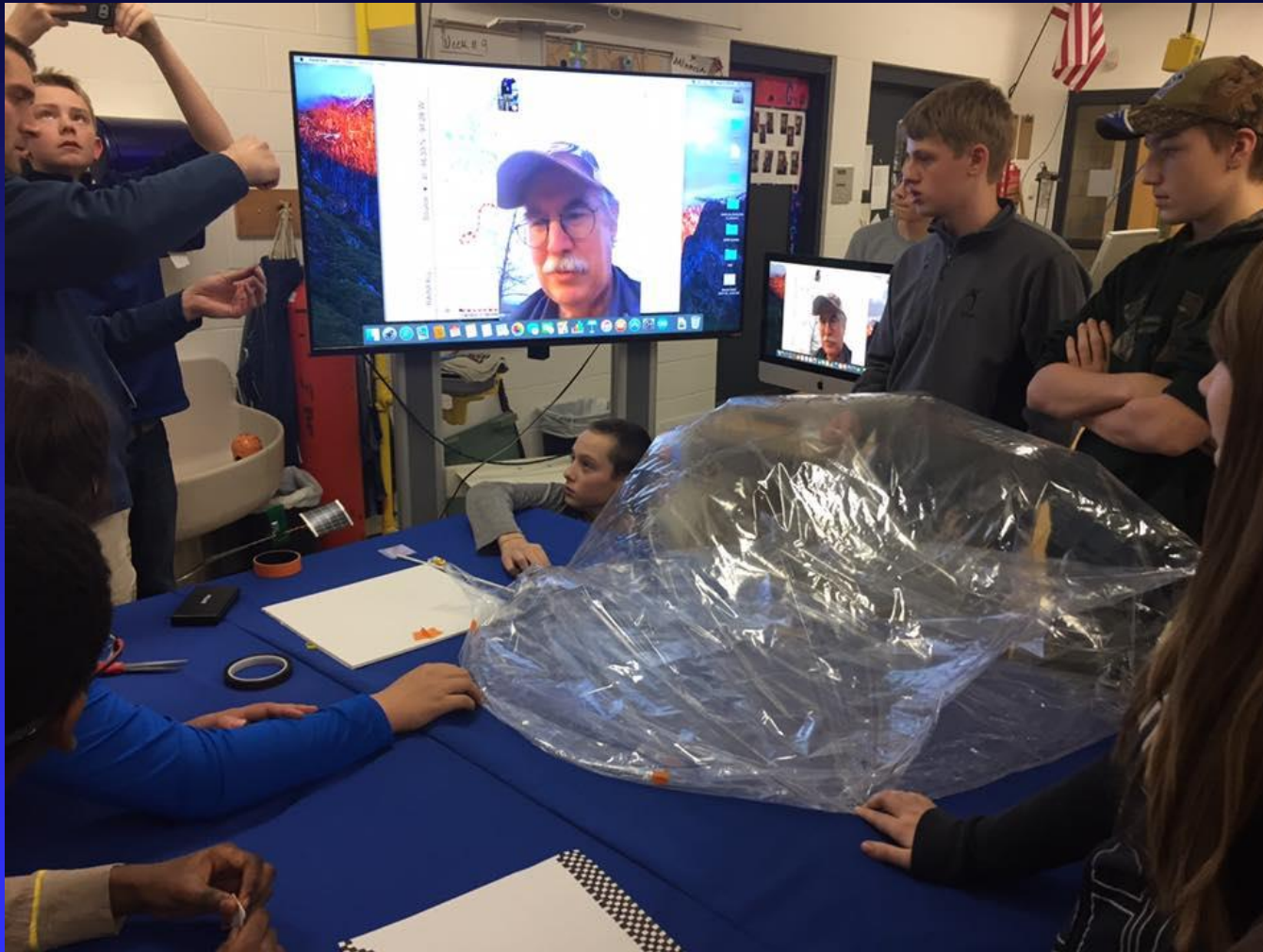


# West Point Middle School – Mylar party balloon to Morocco



W5KUB-2 showing predicted flight path

# Around the World



Students at Forestview Middle School in Baxter MN flew the very first middle school balloon to circumnavigate the World.  
KD0VJI-11

# Around the World



UC San Diego students have flown their KK6PNN-5 balloon around the World 6 times and has been flying for 3 months.

# Great Plains Superlaunch 2016



9 Latex weather balloons launched. 3 Mylar Pico balloons.

# Great Plains Superlaunch



7 balloons in the air at once during group launch.

# Great Plains Superlaunch 2020



10 Pico balloons and 5 Latex balloons launched live via Zoom streaming video. [SUPERLAUNCH.ORG](http://SUPERLAUNCH.ORG)

For more info contact:

[WB8ELK@gmail.com](mailto:WB8ELK@gmail.com)



The Future of Amateur Radio Ballooning?.



**Q&A**





Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

## Mtg at NOAA

36 messages

(b) (6) USN (USA) (b) (6) @us.navy.mil>  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Fri, Mar 18, 2022 at 8:10 AM

Dan,

Has NOAA lifted their restrictions yet for us to attend a mtg?

Thanks,

(b) (6)

Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Fri, Mar 18, 2022 at 1:40 PM

To: Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>, Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>

Hello Neal and Ashby,  
Any word if we can host the Navy at SFSC so they can see a balloon launch?

-Dan

[Quoted text hidden]

--

Daniel Brewer  
NWS [Sterling Field Support Center](#)  
703-661-1208

Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>

Fri, Mar 18, 2022 at 1:53 PM

To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Cc: Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>

I would say yes, we just need to find the best time.

Neal

[Quoted text hidden]

Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Thu, Mar 31, 2022 at 12:10 PM

To: (b) (6) USN (USA) (b) (6) @us.navy.mil>

Hi (b) (6),

Sorry for the delay and thank you for your patience. We are ready to host you at Sterling. What dates will work best for you? I will be on leave from April 8th - April 20th. If you give me a few options, I'll see which ones work best for our facility.

What would be most helpful for you to see and discuss? We can show you the balloon and instrument preparation, data collection process, and special test configurations that are unique to our facility. I'm also going to see if the Program Manager for NWS Upper Air can be in attendance and discuss the entire network. If not, I should be able to cover that info too. If you have specific questions, I can make sure I have those answers for when we talk.

-Dan

[Quoted text hidden]

[Quoted text hidden]

(b) (6) USN (USA) (b) (6) @us.navy.mil>  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Thu, Mar 31, 2022 at 12:22 PM

Dan,

How about the week of 25 April? Yes to seeing all that you provided below including the Program Manager for NWS Upper Air. Also, I heard that NOAA launches balloons with hydrogen? If true, could we speak with a person from that group?

I'd like to have someone from our ONI Advanced Analytics to attend to learn about the NWS tracking database such that he can check all the events that we have with lat/long to check if it was a NWS balloon.

Thanks,

(b) (6)

[Quoted text hidden]

---

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>

Thu, Mar 31, 2022 at 2:27 PM

Hi Jay,

In the past few months, Yin has helped me work through a few Navy requests regarding balloon lat/lon from BUFR files as it relates to their inquiries for unidentified aerial phenomenon. I heard Yin has left? OBS is meeting with a group from the Office of Naval Intelligence hopefully the week of April 25th and from the email below, they are going to have questions about doing the same thing Yin and I did, but for multiple locations. I'm not sure how many. Would you be able to call into this meeting, currently shooting for the week of April 25th? It might be better to discuss this on the phone in the next few days.

-Dan

----- Forwarded message -----

From: (b) (6) USN (USA) (b) (6) @us.navy.mil>  
Date: Thu, Mar 31, 2022 at 12:23 PM  
Subject: RE: [Non-DoD Source] Re: Mtg at NOAA  
To: Brewer, Daniel T CIV (USA) <daniel.brewer@noaa.gov>

[Quoted text hidden]

[Quoted text hidden]

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**Jay Lawrimore - NOAA Federal** <jay.lawrimore@noaa.gov>  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Fri, Apr 1, 2022 at 8:46 AM

Hi Dan,

Yin has left for another division but is still at NCEI. I just sent him a note to see if he could participate with us in the call with the Navy later this month. Will let you know.

Jay

[Quoted text hidden]

--

Jay Lawrimore  
Meteorologist, Dataset Section  
Climatic Science and Service Division  
NOAA's National Centers for Environmental Information (NCEI)

151 Patton Ave  
Asheville, NC 28801  
828-271-4750  
fax: 828-271-4022  
Follow NCEI on Facebook and Twitter (@NOAANCEI)

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**Jay Lawrimore - NOAA Federal** <jay.lawrimore@noaa.gov>  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Fri, Apr 1, 2022 at 9:15 AM

Hi Dan,  
Yin said he can participate in the call with the Navy. Let me know if you think we should talk ahead of time.

Best regards,  
Jay  
[Quoted text hidden]

---

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: (b) (6) USN (USA)" (b) (6) @us.navy.mil>

Fri, Apr 1, 2022 at 11:16 AM

(b) (6),  
I'm checking if the week of April 25th is OK. I'm assuming it will be. For the hydrogen aspect, what types of questions will you have? We have an expert on generating hydrogen gas, but once the gas is in the balloon, our attention turns to balloon performance, not so much what happens to the hydrogen.

Regarding the NWS tracking database, the group that stores the data and helped put together the lat/lon list is in Asheville, NC. They are available to be on the phone during the meeting. I didn't want your analytics person to come out to Sterling just to find their counterpart on the phone.

I'll confirm the date in the next few days.  
-Dan  
[Quoted text hidden]

---

(b) (6) USN (USA)" (b) (6) @us.navy.mil>  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Mon, Apr 4, 2022 at 7:31 AM

Dan,  
Dealing with hydrogen, the balloon design, performance, mission (why use hydrogen versus helium, any safety issues that affect operation) aspects. Having the knowledge on generation piece too is fantastic. I'll leave it up to the analytics person if they want to call in or come out for the discussion.  
I'm really looking forward to the visit.  
thanks,  
(b) (6)

---

**From:** Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
**Sent:** Friday, April 1, 2022 11:16 AM  
**To:** (b) (6) USN (USA)" (b) (6) @us.navy.mil>  
**Subject:** [URL Verdict: Neutral]Re: [Non-DoD Source] Re: Mtg at NOAA

[Quoted text hidden]

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: (b) (6) USN (USA)" (b) (6) @us.navy.mil>

Mon, Apr 4, 2022 at 8:43 AM

Hi (b) (6),  
That all sounds good. The Program Manager for Upper Air is unavailable the week of April 25th. Is it possible to move the meeting to the following week? I am thinking Wednesday May 4th?  
-Dan  
[Quoted text hidden]

(b) (6) USN (USA) (b) (6) @us.navy.mil>  
 To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Tue, Apr 5, 2022 at 8:10 AM

Dan,

I have a speaking engagement in the morning, is it possible to do it May 3 or May 5?

thanks,

(b) (6)

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**From:** Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>
**Sent:** Monday, April 4, 2022 8:43 AM**To:** (b) (6) USN (USA) (b) (6) @us.navy.mil>**Subject:** Re: [URL Verdict: Neutral]Re: [Non-DoD Source] Re: Mtg at NOAA

[Quoted text hidden]

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Tue, Apr 5, 2022 at 8:53 AM

**To:** (b) (6) USN (USA) (b) (6) @us.navy.mil>

Yes, how about the morning of May 5th? What time would give you enough time to get to Sterling....10am?

-Dan

[Quoted text hidden]

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Tue, Apr 5, 2022 at 4:14 PM

**To:** Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>

Hi Jay,

It might be good to talk ahead of time about what we're expecting them to ask and what is possible. I'll set something up for Thursday. Feel free to invite Yin if that is appropriate.

Dan

[Quoted text hidden]

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**(b) (6) USN (USA) (b) (6) @us.navy.mil>**

Wed, Apr 6, 2022 at 7:33 AM

**To:** "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>**Cc:** (b) (6) (USA) (b) (6) @us.navy.mil>, (b) (6) (USA)"

(b) (6) @us.navy.mil&gt;

Yes, 10am would be good.

[Quoted text hidden]

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**Jay Lawrimore - NOAA Federal** <jay.lawrimore@noaa.gov>

Wed, Apr 6, 2022 at 7:45 AM

**To:** Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

ok. thanks. I'll invite Yin.

[Quoted text hidden]

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Wed, Apr 6, 2022 at 12:25 PM

**To:** (b) (6) USN (USA) (b) (6) @us.navy.mil>**Cc:** (b) (6) (USA) (b) (6) @us.navy.mil>, (b) (6) (USA)"

(b) (6) @us.navy.mil&gt;

Great, I will send this group an invite. Should I also invite Thomas Renkevans? If you have anyone on your side joining remotely, we typically use Google's "Meet", but I'm under the impression that is not allowed for DoD. If that is the case I'll see what other options we have, but may need your help to set something up using a different virtual meeting system.

-Dan

[Quoted text hidden]

(b) (6) USN (USA) (b) (6) @us.navy.mil> Wed, Apr 6, 2022 at 12:38 PM  
 To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>  
 Cc: (b) (6) (USA) (b) (6) @us.navy.mil>, (b) (6) (USA)"  
 (b) (6) @us.navy.mil>

Yes, definitely invite Tom Renkevans.

[Quoted text hidden]

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Thu, Apr 7, 2022 at 1:59 PM  
 To: (b) (6) USN (USA) (b) (6) @us.navy.mil>  
 Cc: (b) (6) (USA) (b) (6) @us.navy.mil>, (b) (6) (USA)"  
 (b) (6) @us.navy.mil>

Hi (b) (6)  
 Do you have an idea of how far back in history the NWS balloon lat/lon points need to be checked? Just a year would be helpful. Also, do you have an approximate number of points?  
 Thanks,  
 Dan

[Quoted text hidden]

(b) (6) USN (USA) (b) (6) @us.navy.mil> Tue, Apr 12, 2022 at 11:59 AM  
 To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>  
 Cc: (b) (6) (USA) (b) (6) @us.navy.mil>, (b) (6) (USA)"  
 (b) (6) @us.navy.mil>

From 2012 and about 200 points.

[Quoted text hidden]

(b) (6) USN (USA) (b) (6) @us.navy.mil> Tue, Apr 19, 2022 at 10:22 AM  
 To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>  
 Cc: (b) (6) (USA) (b) (6) @us.navy.mil>, (b) (6) (USA)"  
 (b) (6) @us.navy.mil>

Dan,  
 Could we move the meeting to May 3? We just had an unavoidable conflict occur for May 5.  
 Thanks,

(b) (6)

[Quoted text hidden]

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Thu, Apr 21, 2022 at 9:53 AM  
 To: Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>, Xungang Yin - NOAA Federal <xungang.yin@noaa.gov>

Hi Jay and Yin,  
 Here is the answer to the question of how far back they are looking for radiosonde locations and how many points. Was 2012 going to be an issue?  
 -Dan

----- Forwarded message -----  
 From: (b) (6) USN (USA) (b) (6) @us.navy.mil>  
 Date: Tue, Apr 12, 2022 at 11:59 AM  
 Subject: RE: [URL Verdict: Neutral]Re: [Non-DoD Source] Re: Mtg at NOAA  
 To: Brewer, Daniel T CIV (USA) <daniel.brewer@noaa.gov>

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Thu, Apr 21, 2022 at 10:29 AM

To: (b) (6) USN (USA)" (b) (6) @us.navy.mil&gt;

Cc: (b) (6) (USA)" (b) (6) @us.navy.mil&gt;, (b) (6) (USA)"

(b) (6) @us.navy.mil&gt;

Hi (b) (6),

We are good to go for Tuesday May 3rd. I'll update the invite.

Dan

[Quoted text hidden]

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Thu, Apr 21, 2022 at 11:23 AM

To: Neal Dipasquale - NOAA Federal &lt;neal.dipasquale@noaa.gov&gt;

Cc: Chet Schmitt - NOAA Federal &lt;Chet.Schmitt@noaa.gov&gt;

Hi Neal,

We have an upcoming meeting (May 3rd) with the Navy regarding the Unidentified Aerial Phenomenon Task Force where the Navy will likely ask us to help check 200 lat/lon points to verify that an NWS weather balloon was or was not in the area. I wanted to run my thoughts by you before discussing this with the Navy. I went through this verification process once with them for one point and it takes some time to:

1. identify the predominant wind direction on the date in the area of the Navy provided lat/lon
2. identify the Upper Air station that best matches the upwind location
3. Request from NCEI the decoded BUFR file that matches time and station
4. find the closest lat/lon to the Navy's provided lat/lon.

I have a good idea of how this could be mostly automated, but that could take as much time to write the code unless there was a proficient programmer involved. I am under the impression the Navy has some talented analysts on the project and perhaps they could automate the process with our weather expertise. Otherwise the next best option (if the ball is in our court) is to use our potential intern. It would likely take him/her all summer. I don't mind doing it either.

We can discuss if that would be easier to digest and lay out the options.

-Dan

----- Forwarded message -----

From: (b) (6) USN (USA)" (b) (6) @us.navy.mil&gt;

Date: Tue, Apr 12, 2022 at 11:59 AM

Subject: RE: [URL Verdict: Neutral]Re: [Non-DoD Source] Re: Mtg at NOAA

To: Brewer, Daniel T CIV (USA) &lt;daniel.brewer@noaa.gov&gt;

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

**(b) (6) USN (USA)" (b) (6) @us.navy.mil>**

Thu, Apr 21, 2022 at 11:48 AM

To: "Brewer, Daniel T CIV (USA)" &lt;daniel.brewer@noaa.gov&gt;

Cc: (b) (6) (USA)" (b) (6) @us.navy.mil&gt;, (b) (6) (USA)"

(b) (6) @us.navy.mil&gt;

Dan,

Can you provide the address of your facility. We will be doing in-person. Also if we need to pass any security information.

[Quoted text hidden]

**Jay Lawrimore - NOAA Federal** <jay.lawrimore@noaa.gov>

Thu, Apr 21, 2022 at 3:57 PM

To: Daniel Brewer - NOAA Federal &lt;daniel.brewer@noaa.gov&gt;

Cc: Xungang Yin - NOAA Federal &lt;xungang.yin@noaa.gov&gt;

Hi Dan,

I don't think 2012 will be a problem but Yin can let us know if I'm wrong. Thanks for checking that.

Jay

[Quoted text hidden]

[Quoted text hidden]

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**Xungang Yin - NOAA Federal** <xungang.yin@noaa.gov>  
To: Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>  
Cc: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Thu, Apr 21, 2022 at 4:07 PM

Hi Jay, Dan,

We have the B format BUFR data since maybe 2007, I forgot the exact time but at least 2012 we have data for sure. The older data were not saved on local server but they are online:

<https://www.ncei.noaa.gov/pub/data/ua/rrs-data/bufr/>

Cheers.

Yin

[Quoted text hidden]

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**Neal Dipasquale - NOAA Federal** <neal.dipasquale@noaa.gov>  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
Cc: Chet Schmitt - NOAA Federal <Chet.Schmitt@noaa.gov>, Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>

Fri, Apr 22, 2022 at 10:33 AM

Yes, let's set up a meeting to discuss so I can get a better understanding of this.

Thanks,

Neal

[Quoted text hidden]

---

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>  
Cc: Chet Schmitt - NOAA Federal <Chet.Schmitt@noaa.gov>, Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>

Fri, Apr 22, 2022 at 11:12 AM

Ok, I put it on the calendar for Wednesday at 2:30pm.

Dan

[Quoted text hidden]

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: Xungang Yin - NOAA Federal <xungang.yin@noaa.gov>  
Cc: Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>

Fri, Apr 22, 2022 at 1:13 PM

Thank you Yin and Jay. Would you guys be willing to put together one slide that would help the Navy understand the data NCEI stores for Upper Air and maybe the format? I'm trying to think of something that would be helpful for an outsider to understand what they need and what we have. Perhaps the process of requesting the data to delivery....I think for this case it's pretty simple. Obviously more than one slide is fine, just trying to not over complicate things.

Dan

[Quoted text hidden]

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**Xungang Yin - NOAA Federal** <xungang.yin@noaa.gov>  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
Cc: Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>


Tue, Apr 26, 2022 at 9:31 AM

Hi Dan,

Jay and I created a one-page slide on the data flow and decoding. Not sure if this is suitable or not for the Navy visitors. If you have any suggestions or inputs please let us know.

Thanks  
Yin

[Quoted text hidden]

 schematic\_balloonBUFR.pptx  
1052K

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: Xungang Yin - NOAA Federal <xungang.yin@noaa.gov>  
Cc: Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>

Tue, Apr 26, 2022 at 9:44 AM

Yin,  
Thank you! It looks great! It provides a great overview and will likely stimulate a good conversation.  
Dan

[Quoted text hidden]

**Xungang Yin - NOAA Federal** <xungang.yin@noaa.gov>  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
Cc: Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>

Tue, Apr 26, 2022 at 10:03 AM

Thanks Dan!

Yin  
[Quoted text hidden]

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: (b) (6) USN (USA)" (b) (6) @us.navy.mil>  
Cc: (b) (6) (USA)" (b) (6) @us.navy.mil>, (b) (6) (b) (6) @us.navy.mil>

Wed, Apr 27, 2022 at 2:30 PM

Hi (b) (6),  
Sorry, I lost track of your email. No additional security info assuming everyone is a U.S. citizen.  
43741 Weather Service Drive, Sterling, Va, 20166.  
At the gate, you can let them know you are there to see me. Once inside the gate, follow your gps or the signs to the Sterling Field Support Center (SFSC).  
If you have any issues the day of, my cell is 443-605-7616  
-Dan

[Quoted text hidden]

(b) (6) (USA) (b) (6) @us.navy.mil>  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>, (b) (6) USN (USA)"  
(b) (6) @us.navy.mil>  
Cc: "D'Ambrosio, Philip A CIV (USA)" <philip.a.dambrosio2.civ@us.navy.mil>

Wed, Apr 27, 2022 at 2:55 PM

Thank you, Dan, much appreciated! We are all U.S. citizens who are excited to visit you next week!

Best,  
(b) (6)

(b) (6), Ph.D.  
Research Director



Task Force

Naval Intelligence Activity

Phone: (b) (6)

Secure phone: (b) (6)

NIPR: (b) (6) @us.navy.mil

SIPR: (b) (6) @navy.smil.mil

JWICS: (b) (6) @nmic.ic.gov

[Quoted text hidden]

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Mon, May 2, 2022 at 10:08 AM

To: (b) (6) S USN (USA)" (b) (6) @us.navy.mil>

Cc: (b) (6) (USA)" (b) (6) @us.navy.mil>, (b) (6) (USA)"  
(b) (6) @us.navy.mil>

Good morning,

I believe the agenda is included in the meeting invite, if not, I've pasted it below. We have flexibility to do whatever it takes to make your visit worthwhile. The only piece that we are locked into is 11:15am - a few participants will be joining virtually. They are the data people: NOAA's National Centers for Environmental Information (NCEI). And I just found out the Program Manager, Hiram Escabi, has to be at a budget meeting right after our meeting so he is going to join us virtually. Before or after that, we can spend more time on whatever is of interest. Finally, regarding masks....we do not have to wear masks unless there is someone unvaccinated and we cannot maintain 6ft separation. I don't foresee that situation, but I would recommend having one in your pocket just in case.

Dan

### Agenda - Tuesday May 3<sup>rd</sup>

**10:00 a.m. Arrive at Sterling Field Support Center**

**Welcome & Introductions (Conference Room)**

**10:15 a.m Walk through Manual Balloon Launch**

**11:00 a.m Walk through Automated Balloon Launch**

**11:15 a.m Upper Air Program Overview & Discussion (Hiram Escabi, Upper Air PM, Conference Room)**

[Quoted text hidden]



Daniel Brewer - NOAA Federal &lt;daniel.brewer@noaa.gov&gt;

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**Need To Reschedule**

8 messages

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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil>  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Wed, May 3, 2023 at 12:12 PM

Dan—

I'm so sorry to have to do this but we've received some rather onerous, hair on fire taskings regarding our budget that are due COB tomorrow. And so we will need to reschedule. I would much rather come see you than crunch and justify budget numbers. Again, I apologize and hope we did not waste your time.

Would it be possible to reschedule for the first week of June?

Mike Rabasco

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>

Wed, May 3, 2023 at 12:25 PM

Hi Mike,  
No problem, budget happens. At first glance, the week of June 5th looks open. If you have a day or two in mind, I can circulate and get back to you.

Dan

[Quoted text hidden]

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Daniel Brewer  
NWS Sterling Field Support Center  
703-661-1208

---

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Wed, May 3, 2023 at 12:32 PM  
To: Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>, Mike Hopkins - NOAA Federal <mike.hopkins@noaa.gov>, Hiram Escabi - NOAA Federal <hiram.escabi@noaa.gov>, Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>, Gregory Kochanowicz <gregory.kochanowicz@noaa.gov>, Bonnie Thompson - NOAA Affiliate <bonnie.m.thompson@noaa.gov>, Tyler Trice - NOAA Affiliate <tyler.trice@noaa.gov>

Good afternoon,  
The AARO group from DoD has to reschedule their trip to SFSC tomorrow. I'll work with them to find a new time, possibly in June.

Dan

[Quoted text hidden]

[Quoted text hidden]

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: Daniel Brewer - NOAA Federal <Daniel.Brewer@noaa.gov>

Wed, May 3, 2023 at 12:34 PM

**Agenda - Thursday May 4th****10:00 a.m. Arrive at Sterling Field Support Center****Welcome & Introductions (Conference Room)****10:15 a.m. Upper Air Program Overview & Discussion (Hiram Escabi, Upper Air PM, Conference Room, Remote Attendees join through Google Meet or dial in number)****11:00 a.m. Walk through Manual Balloon Launch****12:00 p.m. Walk through Automated Balloon Launch (optional)**

Directions and access:

<https://www.weather.gov/SOIC/visitors>

[Quoted text hidden]

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**Mike Hopkins - NOAA Federal** <mike.hopkins@noaa.gov>  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Wed, May 3, 2023 at 12:38 PM

Cc: Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>, Hiram Escabi - NOAA Federal <hiram.escabi@noaa.gov>, Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>, Gregory Kochanowicz <gregory.kochanowicz@noaa.gov>, Bonnie Thompson - NOAA Affiliate <bonnie.m.thompson@noaa.gov>, Tyler Trice - NOAA Affiliate <tyler.trice@noaa.gov>, Ellen Clark - NOAA Federal <ellen.clark@noaa.gov>

Hi Dan

Thanks for the heads up...

Regards,  
Mike

-----  
Mike Hopkins  
Director, Surface and Upper Air Division  
NWS Office of Observations  
SSMC2/Room 4220  
[1325 East West Highway](#)  
[Silver Spring MD 20910](#)  
**240-309-0425 (government cell)**  
[mike.hopkins@noaa.gov](mailto:mike.hopkins@noaa.gov)

**50 Years of Science, Service, and Stewardship**

On Wed, May 3, 2023 at 12:32 PM Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov> wrote:

[Quoted text hidden]

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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil>  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Thu, Jul 13, 2023 at 8:03 AM

Dan—

Hope you are enjoying your summer. We are finally coming up for air and would love to come out to see your operations. Let me know what dates and times work for you.

Mike

[Quoted text hidden]

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>

Tue, Jul 18, 2023 at 3:19 PM

Hi Mike,  
How about the week of Aug 7th?  
Dan

[Quoted text hidden]

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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil>  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Wed, Jul 19, 2023 at 8:18 AM

Perfect, pick a day and time that works for you.

[Quoted text hidden]



Daniel Brewer - NOAA Federal &lt;daniel.brewer@noaa.gov&gt;

**question on NOAA balloon tracking**

5 messages

(b) (6) USAF HAF NASIC/GSIR <(b) (6)> Mon, Mar 6, 2023 at 1:51 PM  
To: "daniel.brewer@noaa.gov" <daniel.brewer@noaa.gov>, "thomas.renkevans@noaa.gov" <thomas.renkevans@noaa.gov>

Dan/Tom,

I received your names from Carol McIlwain and believe you had worked with the old UAPTF. We here at NASIC have continued to try to correlate known balloon tracks with those showing up in data collections and overall attempting to database the tracks to form reference in order to discriminate them from unknown objects.

One tool we have used is the NOAA website which reports the information on the weather radiosondes. The website is rather limited, and only reports altitude and some atmospheric conditions. I assume the instruments collect location and time at more frequent intervals. Is there a way this data can be made available?

(not sure if you are the right people to ask, if not please pass me off to another)

V/R,

(b) (6)

(b) (6)

Principal Intelligence Analyst, Passive GEOINT  
NASIC/GSIR

Open: (b) (6)

Secure: (b) (6)

---

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Mon, Mar 6, 2023 at 2:11 PM

To: (b) (6) USAF HAF NASIC/GSIR" (b) (6)  
Cc: "thomas.renkevans@noaa.gov" <thomas.renkevans@noaa.gov>, Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>

Hi (b) (6),

The balloons are tracked live by the local office that releases them and they see the lat/lon/alt points per 1-2 seconds. In a live setting, there is no *centralized* database of balloon location. After the balloon bursts, each office (~91 offices) sends the data to NOAA's NCEI which is a central repository of the data, but I'm not sure what the delay is from balloon burst to data availability at NCEI. I'm including Jay Lawrimore (NOAA NCEI) who was involved in the discussions with Carol Mcilwain to get access to the data.

Jay, could you fill in some of the gaps I'm forgetting and neglecting regarding data availability?

Did Carol share the presentations with you? Her team visited our facility in Sterling, Virginia and we demonstrated how the balloon is tracked live at the local office. We could do the same for you if that would help.

Dan

[Quoted text hidden]

--  
Daniel Brewer  
NWS Sterling Field Support Center  
703-661-1208

(b) (6) USAF HAF NASIC/GSIR (b) (6) Mon, Mar 6, 2023 at 3:29 PM  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
Cc: "thomas.renkevans@noaa.gov" <thomas.renkevans@noaa.gov>, Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>

Dan,

Thanks, I will forward that link to the data scientists here and see if that is the same type of data they are attempting to use. I may have Carol's briefings, let me go back and look before asking you to resend.

We are trying to plan a trip to the more local weather office down in Wilmington, OH to see how they do live tracking.

V/R,  
(b) (6)

(b) (6)  
Principal Intelligence Analyst, Passive GEOINT  
NASIC/GSIR  
Open: (b) (6)  
Secure: (b) (6)

-----Original Message-----

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
Sent: Monday, March 6, 2023 2:12 PM  
To: (b) (6) USAF HAF NASIC/GSIR <(b) (6)>  
Cc: thomas.renkevans@noaa.gov; Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>  
Subject: [Non-DoD Source] Re: question on NOAA balloon tracking

H (b) (6),  
The balloons are tracked live by the local office that releases them and they see the lat/lon/alt points per 1-2 seconds. In a live setting, there is no centralized database of balloon location. After the balloon bursts, each office (~91 offices) sends the data to NOAA's NCEI <<https://www.ncei.noaa.gov/>> which is a central repository of the data, but I'm not sure what the delay is from balloon burst to data availability at NCEI. I'm including Jay Lawrimore (NOAA NCEI) who was involved in the discussions with Carol McIlwain to get access to the data.

Jay, could you fill in some of the gaps I'm forgetting and neglecting regarding data availability?

Did Carol share the presentations with you? Her team visited our facility in Sterling, Virginia and we demonstrated how the balloon is tracked live at the local office. We could do the same for you if that would help.  
Dan

On Mon, Mar 6, 2023 at 1:52 PM (b) (6) USAF HAF NASIC/GSIR <(b) (6)>  
<mailto:(b) (6)> wrote:

Dan/Tom,

I received your names from Carol McIlwain and believe you had worked with the old UAPTF. We here at NASIC have continued to try to correlate known balloon tracks with those showing up in data collections and overall attempting to database the tracks to form reference in order to discriminate them from unknown objects.

One tool we have used is the NOAA website which reports the information on the weather radiosondes. The website is rather limited, and only reports altitude and some atmospheric conditions. I assume the instruments collect location and time at more frequent intervals. Is there a way this data can

be made available?

(not sure if you are the right people to ask, if not please pass me off to another)

V/R,

(b) (6)

(b) (6)

Principal Intelligence Analyst, Passive GEOINT  
NASIC/GSIR

Open: (b) (6)

Secure: (b) (6)

--

Daniel Brewer

NWS Sterling Field Support Center <<https://www.weather.gov/soic/>>  
703-661-1208

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Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>

Mon, Mar 6, 2023 at 4:28 PM

To: (b) (6) USAF HAF NASIC/GSIR" <(b) (6)>

Cc: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>, "thomas.renkevans@noaa.gov" <thomas.renkevans@noaa.gov>

(b) (6)

Here is the link to the upper air sounding data. You will want to use the C BUFR data. If you need the C files before April 2021 I can help you obtain them.

<https://www.ncei.noaa.gov/data/us-radiosonde-bufr/archive/> .

If you have questions about these please let me know and I will get you in touch with the data experts.

Best regards,

Jay

[Quoted text hidden]

--

Jay Lawrimore  
Meteorologist, Dataset Section  
Climatic Science and Service Division  
NOAA's National Centers for Environmental Information (NCEI)  
[151 Patton Ave](#)  
[Asheville, NC 28801](#)  
828-271-4750  
fax: 828-271-4022  
Follow NCEI on Facebook and Twitter (@NOAANCEI)

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Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Wed, Mar 8, 2023 at 1:35 PM

To: Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>, Hiram Escabi - NOAA Federal <hiram.escabi@noaa.gov>

Hi Neal and Hiram,

This thread is just FYI related to the Unidentified Aerial Phenomena Task Force. It sounds like there was a handoff from the old UAPTF that we interacted with to a new UAPTF. No action is needed at this time.

11/8/23, 10 25 AM

National Oceanic and Atmospheric Administration Mail question on NOAA balloon tracking

**Dan**

[Quoted text hidden]

[Quoted text hidden]

703-661-1208





Daniel Brewer - NOAA Federal &lt;daniel.brewer@noaa.gov&gt;

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**Question**

2 messages

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(b) (6) USN (USA) (b) (6) n@navy.mil> Mon, Feb 7, 2022 at 8:27 AM  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
Cc: (b) (6) (USA) (b) (6) @navy.mil>, (b) (6) (USA) (b) (6) @navy.mil>

Dan,

I have a design question for you. Have you ever had a balloon design that fabricated a lightweight metal frame around the balloon such that the balloon could protrude around the frame? I would think that this design would provide durability to reuse the balloon? Would it provide better stability in flight for a non-traditional shape balloon? Typically, what are the materials used for balloons?

Appreciate any insight that you can provide.

VR,

(b) (6)

(b) (6)

NIA-N2N6 (b) (6)

(b) (6)

---

Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov> Tue, Feb 8, 2022 at 9:53 AM  
To: (b) (6) USN (USA) (b) (6) @navy.mil>  
Cc: (b) (6) (USA) (b) (6) @navy.mil>, (b) (6) (USA) (b) (6) @navy.mil>

Hi (b) (6),

We have not used any type of frame around the balloon. The balloons we use are latex balloons (KCI 600) from Kaymont: <https://www.kaymont.com/balloons>

I have attached pictures of what standard NWS balloons and flight trains (balloon to radiosonde) look like. And since the 92 upper air sites are considered operational, there is no deviation from the standard configuration. At my office, we'll test different versions of these balloons, but they all look the same. We'll also use a styrofoam crossbar (attached NWS\_test\_crossbar) for multiple radiosondes. Besides styrofoam, I am not aware of any other structures being used on the balloons.

In my opinion, a lightweight structure in the balloon sounds like a sort of blimp that is like you said, reusable and possibly controllable. I just came across this that seems to have the blimp/drone look with what appears to be a lightweight structure. <https://www.rc-zeppelin.com/what-is-blimp-drone-hybrid.html>

I'm just guessing at this point.

Let me know what other questions you have or if I need to clarify anything.

-Dan

[Quoted text hidden]

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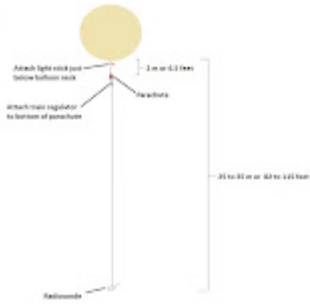
Daniel Brewer  
NWS Sterling Field Support Center  
703-661-1208

---

**4 attachments**



**NWS\_test\_crossbar.jfif**  
177K



**NWS\_balloon\_diagram.jpg**  
37K



**NWS\_balloon\_inflation.png**  
1774K



**NWS\_balloon\_release.png**  
955K



Daniel Brewer - NOAA Federal &lt;daniel.brewer@noaa.gov&gt;

**Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC**

26 messages

**Thomas Renkevans - NOAA Federal** <thomas.renkevans@noaa.gov> Tue, Nov 16, 2021 at 1:37 PM

To: (b) (6) USN (USA)" (b) (6) @navy.mil&gt;, Daniel Brewer - NOAA Federal &lt;daniel.brewer@noaa.gov&gt;

Cc: Mark Mulholland &lt;mark.mulholland@noaa.gov&gt;, (b) (6) (USA)" (b) (6) @navy.mil&gt;, (b) (6) (USA)" (b) (6) @navy.mil&gt;

(b) (6),

In part of my inquiries, one good point of contact for you to contact (I added him to this email after my email discussion with him) is Dan Brewer:

[daniel.brewer@noaa.gov](mailto:daniel.brewer@noaa.gov)

Daniel Brewer

NWS Sterling Field Support Center

703-661-1208

Tom

On Mon, Nov 15, 2021 at 2:31 PM Thomas Renkevans - NOAA Federal &lt;thomas.renkevans@noaa.gov&gt; wrote:

I am getting some mild traction, so stand by...

As far as the questions on launch location, wind data, projected path, etc... yes, that does exist.

Go to [https://www.ready.noaa.gov/HYSPLIT\\_traj.php](https://www.ready.noaa.gov/HYSPLIT_traj.php) and in the main box of "compute forecast trajectories" I believe stepping through all of those pages will allow a user to pick a date, time, location, elevation, and perhaps other parameters and then have a projected path. This may be of some help.

Tom

On Mon, Nov 15, 2021 at 9:15 AM (b) (6) USN (USA)" (b) (6) @navy.mil&gt; wrote:

Mark,

This website shows weather data for dates, but I'm sure someone has an algorithm that given a launch location, pulling in wind data, a projected path can be determined with some range of confidence.

Thanks,

(b) (6)

<https://www.spc.noaa.gov/exper/soundings/>

**From:** Thomas Renkevens - NOAA Federal <[thomas.renkevens@noaa.gov](mailto:thomas.renkevens@noaa.gov)>  
**Sent:** Monday, November 15, 2021 8:20 AM  
**To:** (b) (6) USN (USA) (b) (6) @navy.mil>  
**Cc:** Mark Mulholland <[mark.mulholland@noaa.gov](mailto:mark.mulholland@noaa.gov)>; (b) (6) (USA) (b) (6) @navy.mil>; (b) (6) (USA) (b) (6) @navy.mil>  
**Subject:** Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

(b) (6),

I sent out an email with some feelers, so I am hoping to hear back from them soon.

Which website below are you referring to?

Tom

On Wed, Nov 10, 2021 at 3:13 PM (b) (6) USN (USA) (b) (6) @navy.mil> wrote:

Tom,

Who would be a good POC at NOAA dealing with modeling wind patterns and tracking weather balloon locations? I see that you have a website below but my questions are beyond what I could work with that forecasting tool.

Thanks,

(b) (6)

**From:** Thomas Renkevens - NOAA Federal <[thomas.renkevens@noaa.gov](mailto:thomas.renkevens@noaa.gov)>  
**Sent:** Tuesday, October 5, 2021 9:19 AM  
**To:** (b) (6) (USA) (b) (6) @navy.mil>  
**Cc:** Mark Mulholland <[mark.mulholland@noaa.gov](mailto:mark.mulholland@noaa.gov)>; (b) (6) USN DCNO N2N6 (USA) (b) (6) @us.navy.mil>; (b) (6) USN (USA) (b) (6) @navy.mil>; (b) (6) (USA) (b) (6) @navy.mil>; (b) (6) USN NAWCAD (USA) (b) (6) @us.navy.mil>  
**Subject:** [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

While yes, one of my employees worked there, that was a while ago, so not sure if that is a good entry point there or not.

What perhaps may be best is if Mark or I send the email to a few of the relevant people there, copying you folks, with text that you provide as to why you are trying to engage, etc... This way, it comes from a NOAA email and I can add in some of the NOAA and CAC context as well.

As to the question of " ... (b) (2), (b) (7)(E) [REDACTED]

[REDACTED]

Tom

On Mon, Oct 4, 2021 at 3:17 PM (b) (6) [REDACTED] (USA) (b) (6) [REDACTED] @navy.mil> wrote:

Hello Tom and Mark,

So we are a bit more settled in our new space and would like to ask for some POCs at the Sterling facility... We are hoping we could make a visit happen sometime in the next several weeks, COVID permitting...

Tom, you mentioned one of your employees, would he/she be a good place to start? And we can be somewhat vague when describing what we're after— (b) (2), (b) (7)(E) [REDACTED]

Many thanks again for all your help with these issues!

Best,

(b) (6) [REDACTED]

**From:** Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>

**Sent:** Friday, September 24, 2021 1:50 PM

**To:** (b) (6) [REDACTED] (USA) (b) (6) [REDACTED] @navy.mil>

**Cc:** Mark Mulholland <mark.mulholland@noaa.gov>; (b) (6) [REDACTED] (USA)

(b) (6) [REDACTED] @navy.mil>; (b) (6) [REDACTED] USN DCNO N2N6 (USA)

(b) (6) [REDACTED] @us.navy.mil>; (b) (6) [REDACTED] USN (USA) (b) (6) [REDACTED] @navy.mil>

**Subject:** Re: FW: [Non-DoD Source] Fwd: FW: COVID Access Procedures

Hey all (and send/share with others as needed)

Great discussions yesterday....

Some quick unclassified feedback on some of the Q&A

**For more info on weather balloons**, I was right that there is a facility out there in Sterling, with two relevant weblinks:

<https://www.weather.gov/soic/>

<https://www.weather.gov/SOIC/upperair>

One of my current employees used to work out there (more on the ground equipment, not weather balloons) so I have some good POCs should you want me to arrange for questions, and virtual meeting or an in person meeting (which may be challenging due to COVID limitations)

And some more info on weather balloons - <https://www.weather.gov/upperair/factsheet>

And a fun (if you are a weather geek like I am) image of the radiosonde data from the Baltimore/Washington Forecast Office in Sterling from this morning. Shows temps, moisture, wind speed/direction and derived weather parameters

I talked about **Trajectory Models** used by NOAA OAR (Office of Atmospheric Research)

See <https://www.ready.noaa.gov/index.php> and on the left are links related to transport and dispersion. I think this is where one can plug data in at lat/lon/height, and run backwards forecast models to see where it may have come from if solely under the influence of the weather. If there are more questions here, I can reach out and facilitate that.

#### **Other NWS (National Weather Service) Info**

I quickly mentioned about the 9 units that make up NCEP (National Center for Environmental Prediction) such as the Hurricane Center, Storm Prediction Center etc...

Link here - <https://www.weather.gov/ncep/> and I have contacts at all of them and the head of NCEP should there be any interest there.

I mentioned all the WFOs (Weather Forecast Offices) in the US - here is a nice link/map to that - <https://www.weather.gov/srh/nwsoffices>

**NOAA UAS** There was some discussion yesterday there, and while I am not as familiar in this area, here are some links, and I can work to pursue/connect as needed.

<https://uas.noaa.gov/>

<https://www.oma.noaa.gov/learn/aircraft-operations/aircraft/uncrewed-aircraft-systems>

#### **Next Steps...**

So... Looking for your guidance and direction on how you want me to engage, what questions to ask, and how to do so.

For example, there was a great question yesterday about if/how/where any of the NWS Weather Forecast Offices report odd/unusual phenomena as seen on radar/satellite. If you all want, I can pursue that.

But... looking for any guidance on how best to frame any questions as I go poking these areas. Can/should I reference that unclassified document on UAPs? Etc...

I have not emailed any other contacts yet other than I am working to activate/reactivate my high side emails (I was in the process of getting that all going just prior to COVID)

Let me know how I can further support the dialog and engagement and next steps.

Tom

On Wed, Sep 22, 2021 at 11:40 AM Thomas Renkevans - NOAA Federal <[thomas.renkevans@noaa.gov](mailto:thomas.renkevans@noaa.gov)> wrote:

Sounds good.

Mark may not be able to make it (contracting issue, trying to work it out) but let's still meet for sure.

He and I were at the NRO July 24 on the same topic.

From the very minimal notes I took, I jotted down several websites (but did not send them anywhere, waiting for their followup) which are now cut/paste below which may offer some insight into NOAA assets, capabilities, phenomena observing, etc...

Looking forward to the discussion. I may not know all the answers, but I am willing to help connect the dots with my background in meteorology and more than 25 years in NOAA.

Tom

PBox Notes/Info/Thought re NOAA assets (7/24/21 meeting @ NRO)

- Weather Balloons:
  - <https://www.spc.noaa.gov/exper/soundings/>
- where/when...
  - <https://www.weather.gov/upperair/factsheet>
  - [https://www.weather.gov/upperair/nws\\_upper](https://www.weather.gov/upperair/nws_upper)
  - <https://www.ncdc.noaa.gov/data-access/weather-balloon-data>
- Satellites
  - <https://www.star.nesdis.noaa.gov/GOES/>
  - <https://rammb-slider.cira.colostate.edu/>
  - <https://www.goes-r.gov/spacesegment/instruments.html>
  - <https://www.goes-r.gov/spacesegment/abi.html>
  - <https://www.goes-r.gov/mission/ABI-bands-quick-info.html>
  - <https://www.goes-r.gov/spacesegment/ABI-tech-summary.html>

- <https://www.goes-r.gov/spacesegment/glm.html>
- <https://www.jpss.noaa.gov/>
- [https://www.jpss.noaa.gov/mission\\_and\\_instruments.html](https://www.jpss.noaa.gov/mission_and_instruments.html)
- <https://www.jpss.noaa.gov/viirs.html>
  
- Launches
  - <https://cimss.ssec.wisc.edu/satellite-blog/?s=launch>
  
- Fire
  - <https://cimss.ssec.wisc.edu/satellite-blog/?s=fire>
  
- Day Night Band
  - <https://cimss.ssec.wisc.edu/satellite-blog/?s=dnb>
  
- Lightning Smear –
  - <https://cimss.ssec.wisc.edu/satellite-blog/?s=viirs+lightning>
  
- Mesoscale Domain Sectors from GOES Satellites
  - <https://vlab.noaa.gov/web/towr-s/mmm/meso-view> default east coast
  - <https://ams.confex.com/ams/101ANNUAL/meetingapp.cgi/Paper/381423>
  
- NASA Balloon Info
  - <https://www.csbf.nasa.gov/>
  
- Space Weather
  - <https://www.swpc.noaa.gov/>

On Wed, Sep 22, 2021 at 11:34 AM (b) (6) (USA) (b) (6) @navy.mil> wrote:

(b) (6)

Tom/Mark –



(b) (5) [Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted]

[Redacted] are other topics you'd like to cover as part of this discussion, please don't hesitate to let us know.

Take good care,

(b) (6) [Redacted]

(b) (6) [Redacted]

Director, Capabilities Development

Task Force

Naval Intelligence Activity

PSTN: (b) (6) [Redacted] (no voicemail)

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Tom Renkevans - Acting Deputy Chief - NESDIS STAR (Center for Satellite Applications and Research)

NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
[5830 University Research Court, College Park, MD 20740](#)  
Office and Fax: (301) 683-3257  
Cell: (240) 691-2416     Thomas.Renkevans@noaa.gov <http://www.ospo.noaa.gov> \*\* <http://twitter.com/NOAASatellites>

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Office and Fax: (301) 683-3257  
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[5830 University Research Court, College Park, MD 20740](http://www.ospo.noaa.gov)  
Office and Fax: (301) 683-3257  
Cell: (240) 691-2416 [Thomas.Renkevans@noaa.gov](mailto:Thomas.Renkevans@noaa.gov)  
<http://www.ospo.noaa.gov> \*\* <http://twitter.com/NOAASatellites>

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(b) (6) USN (USA) (b) (6) @navy.mil> Fri, Dec 10, 2021 at 9:31 AM  
To: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>, Daniel Brewer - NOAA Federal  
<daniel.brewer@noaa.gov>  
Cc: Mark Mulholland <mark.mulholland@noaa.gov>, (b) (6) (USA)" (b) (6) @navy.mil>, (b) (6)  
(USA)" (b) (6) @navy.mil>

Tom,

A couple more questions.

So the weather balloon once launched transmits GPS coordinates and weather collected information until it finally drops? Is this data saved such that if one wanted to check whether a weather balloon was in a certain location at a certain time that information would be stored in a database aligned with the weather data at that location? If this is correct, who can we talk to for extracting this information from database?

The below website is for forecasting purposes, so predicting where it will go and not actually where it went?

Dan,

Are you available to meet after the New Year?

[Quoted text hidden]

---

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Fri, Dec 10, 2021 at 11:52 AM

To: (b) (6) USN (USA)" (b) (6) @navy.mil&gt;

Cc: Thomas Renkevans - NOAA Federal &lt;thomas.renkevans@noaa.gov&gt;, Mark Mulholland &lt;mark.mulholland@noaa.gov&gt;, (b) (6) (USA)" (b) (6) @navy.mil&gt;, (b) (6) (USA)" (b) (6) @navy.mil&gt;

Hi (b) (6),

I have a few quick responses, but will need to follow up in more detail.

- 1) The websites provided were for prediction, not actual trajectories.
- 2) The actual locations are recorded and sent to NOAA's NCEI. I'm in the process of determining whether NCEI publishes this data and the process for accessing the data. If the data is not publicly available for download, then there may be other options.
- 3) I am available to meet after the New Year. If you're thinking of an NWS SFSC visit then that can be easily arranged! I have some travel planned, but shouldn't be a problem to work around.

Dan

[Quoted text hidden]

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[Quoted text hidden]

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(b) (6) USN (USA)" (b) (6) @navy.mil>

Fri, Dec 10, 2021 at 12:01 PM

To: Daniel Brewer - NOAA Federal &lt;daniel.brewer@noaa.gov&gt;

Cc: Thomas Renkevans - NOAA Federal &lt;thomas.renkevans@noaa.gov&gt;, Mark Mulholland &lt;mark.mulholland@noaa.gov&gt;, (b) (6) (USA)" (b) (6) @navy.mil&gt;, (b) (6) (USA)" (b) (6) @navy.mil&gt;

Dan,

The info below is very helpful for us. Are you available Jan 5 or 6?

Thanks,

(b) (6)

[Quoted text hidden]

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Fri, Dec 10, 2021 at 11:56 PM

To: Neal Dipasquale - NOAA Federal &lt;neal.dipasquale@noaa.gov&gt;

Hi Neal,

I'm beginning to coordinate specific dates for a group from the Navy's Unidentified Aerial Phenomena Task Force to visit SFSC regarding weather balloons. I'm planning to host them, answer their questions, do a balloon launch, and maybe a tour if they want one. Am I free to continue this coordination? From a previous email string, Jordan Gerth and Hiram (with Kevin Schrab & Capt. Crocker cc'd) were pointing the Navy to SFSC so I think we're OK, right?

Dan

[Quoted text hidden]

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(b) (6) USN (USA)" (b) (6) @navy.mil>

Mon, Dec 13, 2021 at 9:17 AM

To: Daniel Brewer - NOAA Federal &lt;daniel.brewer@noaa.gov&gt;

Cc: Thomas Renkevans - NOAA Federal &lt;thomas.renkevans@noaa.gov&gt;, Mark Mulholland &lt;mark.mulholland@noaa.gov&gt;, (b) (6) (USA)" (b) (6) @navy.mil&gt;, (b) (6) (USA)" (b) (6) @navy.mil&gt;

Dan,

We have a conflict with those dates, how about Jan 11 or 12?

Thanks,

**(b) (6)**

**From:** **(b) (6)** USN (USA)  
**Sent:** Friday, December 10, 2021 12:01 PM  
**To:** 'Daniel Brewer - NOAA Federal' <daniel.brewer@noaa.gov>  
**Cc:** Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>; Mark Mulholland <mark.mulholland@noaa.gov>; **(b) (6)** (USA) **(b) (6)** @navy.mil; **(b) (6)** (USA) **(b) (6)** @navy.mil  
**Subject:** RE: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Dan,

The info below is very helpful for us. Are you available Jan 5 or 6?

Thanks,

**(b) (6)**

[Quoted text hidden]

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Mon, Dec 13, 2021 at 12:00 PM  
**To:** **(b) (6)** USN (USA)" **(b) (6)** @navy.mil  
**Cc:** Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>, Mark Mulholland <mark.mulholland@noaa.gov>, **(b) (6)** (USA)" **(b) (6)** @navy.mil, **(b) (6)** (USA)" **(b) (6)** @navy.mil

**(b) (6)**,

I'm fine with either of those dates. I have travel planned the week before that is deemed "mission critical" so if that slips that we'll have to postpone. How about Wednesday Jan 12th at 10am?

-Dan

[Quoted text hidden]

**Thomas Renkevans - NOAA Federal** <thomas.renkevans@noaa.gov> Mon, Dec 13, 2021 at 1:04 PM  
**To:** Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
**Cc:** **(b) (6)** USN (USA)" **(b) (6)** @navy.mil, Mark Mulholland <mark.mulholland@noaa.gov>, **(b) (6)** (USA)" **(b) (6)** @navy.mil, **(b) (6)** (USA)" **(b) (6)** @navy.mil

While I am not central to this meeting, I would like to be part of the meeting (I am available then) so I can understand more of the Q&A and where this may go within other discussions/meetings on this topic.

Plus - as a meteorologist, it seems like a very interesting place and discussion!

Tom

[Quoted text hidden]

**(b) (6)** USN (USA) **(b) (6)** Mon, Dec 13, 2021 at 1:47 PM  
**To:** Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
**Cc:** Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>, Mark Mulholland <mark.mulholland@noaa.gov>, **(b) (6)** (USA)" **(b) (6)** @navy.mil, **(b) (6)** (USA)" **(b) (6)** @navy.mil

That's good.

Sent with BlackBerry Work  
[www.blackberry.com](http://www.blackberry.com)

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>  
 Date: Monday, Dec 13, 2021, 12:02 PM  
 To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>  
 Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>, Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>, (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>, (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>  
 Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

(b) (6)  
 I'm fine with either of those dates. I have travel planned the week before that is deemed "mission critical" so if that slips that we'll have to postpone. How about Wednesday Jan 12th at 10am?  
 -Dan

On Mon, Dec 13, 2021 at 9:18 AM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>> wrote:  
 Dan,  
 We have a conflict with those dates, how about Jan 11 or 12?  
 Thanks,  
 (b) (6)

From: (b) (6) USN (USA)  
 Sent: Friday, December 10, 2021 12:01 PM  
 To: 'Daniel Brewer - NOAA Federal' <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>  
 Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>, Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>, (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>, (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>  
 Subject: RE: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Dan,  
 The info below is very helpful for us. Are you available Jan 5 or 6?  
 Thanks,  
 (b) (6)

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>  
 Sent: Friday, December 10, 2021 11:53 AM  
 To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>  
 Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>, Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>, (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>, (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>  
 Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Hi (b) (6),  
 I have a few quick responses, but will need to follow up in more detail.  
 1) The websites provided were for prediction, not actual trajectories.  
 2) The actual locations are recorded and sent to NOAA's NCEI. I'm in the process of determining whether NCEI publishes this data and the process for accessing the data. If the data is not publicly available for download, then there may be other options.  
 3) I am available to meet after the New Year. If you're thinking of an NWS SFSC visit then that can be easily arranged! I have some travel planned, but shouldn't be a problem to work around.

Dan

On Fri, Dec 10, 2021 at 9:32 AM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>> wrote:  
 Tom,

A couple more questions.

So the weather balloon once launched transmits GPS coordinates and weather collected information until it finally drops? Is this data saved such that if one wanted to check whether a weather balloon was in a certain location at a certain time that information would be stored in a database aligned with the weather data at that location? If this is correct, who can we talk to for extracting this information from database?

The below website is for forecasting purposes, so predicting where it will go and not actually where it went?

Dan,

Are you available to meet after the New Year?

Thanks,

(b) (6)

From: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>  
 Sent: Tuesday, November 16, 2021 1:37 PM  
 To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>; Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>  
 Cc: Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>  
 Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

(b) (6),

In part of my inquiries, one good point of contact for you to contact (I added him to this email after my email discussion with him) is Dan Brewer:

[daniel.brewer@noaa.gov](mailto:daniel.brewer@noaa.gov)<mailto:daniel.brewer@noaa.gov>  
 Daniel Brewer  
 NWS Sterling Field Support Center<<https://no-click.mil/?https://www.weather.gov/soic/>>  
 703-661-1208

Tom

On Mon, Nov 15, 2021 at 2:31 PM Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>> wrote:  
 I am getting some mild traction, so stand by...

As far as the questions on launch location, wind data, projected path, etc... yes, that does exist.

Go to [https://www.ready.noaa.gov/HYSPLIT\\_traj.php](https://www.ready.noaa.gov/HYSPLIT_traj.php)<[https://no-click.mil/?https://www.ready.noaa.gov/HYSPLIT\\_traj.php](https://no-click.mil/?https://www.ready.noaa.gov/HYSPLIT_traj.php)> and in the main box of "compute forecast trajectories" I believe stepping through all of those pages will allow a user to pick a date, time, location, elevation, and perhaps other parameters and then have a projected path. This may be of some help.

Tom

On Mon, Nov 15, 2021 at 9:15 AM (b) (6) USN (USA) <(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>> wrote:  
 Mark,

This website shows weather data for dates, but I'm sure someone has an algorithm that given a launch location, pulling in wind data, a projected path can be determined with some range of confidence.

Thanks,

(b) (6)

<https://www.spc.noaa.gov/exper/soundings/><<https://no-click.mil/?https://www.spc.noaa.gov/exper/soundings/>>

From: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>  
 Sent: Monday, November 15, 2021 8:20 AM  
 To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>  
 Cc: Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>; (b) (6)

(USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>  
Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

(b) (6),  
I sent out an email with some feelers, so I am hoping to hear back from them soon.  
Which website below are you referring to?

Tom

On Wed, Nov 10, 2021 at 3:13 PM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>> wrote:  
Tom,

Who would be a good POC at NOAA dealing with modeling wind patterns and tracking weather balloon locations? I see that you have a website below but my questions are beyond what I could work with that forecasting tool.

Thanks,  
(b) (6)

From: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>  
Sent: Tuesday, October 5, 2021 9:19 AM  
To: (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>  
Cc: Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>; (b) (6) USN DCNO N2N6 (USA) (b) (6) @us.navy.mil<mailto:(b) (6) @us.navy.mil>>; (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>; (b) (6) USN NAWCAD (USA) (b) (6) @us.navy.mil<mailto:(b) (6) @us.navy.mil>>  
Subject: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

While yes, one of my employees worked there, that was a while ago, so not sure if that is a good entry point there or not.

What perhaps may be best is if Mark or I send the email to a few of the relevant people there, copying you folks, with text that you provide as to why you are trying to engage, etc... This way, it comes from a NOAA email and I can add in some of the NOAA and CAC context as well.

As to the question of " ... do any of your experts hold a SECRET clearance, or are they completely un-cleared?"  
Some of the folks that work in my Division do have a Secret clearance, but they are probably not the experts in this area that you are looking for. So depending on what areas of information you are looking for an SME in, I can try to locate the right folks in the right orgs.

Tom

On Mon, Oct 4, 2021 at 3:17 PM (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>> wrote:  
Hello Tom and Mark,

So we are a bit more settled in our new space and would like to ask for some POCs at the Sterling facility... We are hoping we could make a visit happen sometime in the next several weeks, COVID permitting...

Tom, you mentioned one of your employees, would he/she be a good place to start? And we can be somewhat vague when describing what we're after—I recognize that clearances will be an issue and we'll just have to be somewhat vague.

Many thanks again for all your help with these issues!

Best,  
(b) (6)

From: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>  
Sent: Friday, September 24, 2021 1:50 PM  
To: (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>  
Cc: Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>; (b) (6) USN DCNO N2N6 (USA)



(b) (6) @us.navy.mil<mailto:(b) (6)@us.navy.mil>; (b) (6) USN  
(USA) (b) (6) @navy.mil<mailto:(b) (6)@navy.mil>>  
Subject: Re: FW: [Non-DoD Source] Fwd: FW: COVID Access Procedures

Hey all (and send/share with others as needed)

Great discussions yesterday...

Some quick unclassified feedback on some of the Q&A

For more info on weather balloons, I was right that there is a facility out there in Sterling, with two relevant weblinks:

<https://www.weather.gov/soic/><<https://no-click.mil/?https://www.weather.gov/soic/>>

[https://www.weather.gov/SOIC/upperair](https://www.weather.gov/SOIC/upperair/)<[https://no-click.mil/?https://www.weather.gov/SOIC/upperair](https://no-click.mil/?https://www.weather.gov/SOIC/upperair/)>

One of my current employees used to work out there (more on the ground equipment, not weather balloons) so I have some good POCs should you want me to arrange for questions, and virtual meeting or an in person meeting (which may be challenging due to COVID limitations)

And some more info on weather balloons - [https://www.weather.gov/upperair/factsheet](https://www.weather.gov/upperair/factsheet/)<[https://no-click.mil/?https://www.weather.gov/upperair/factsheet](https://no-click.mil/?https://www.weather.gov/upperair/factsheet/)>

And a fun (if you are a weather geek like I am) image of the radiosonde data from the Baltimore/Washington Forecast Office in Sterling from this morning. Shows temps, moisture, wind speed/direction and derived weather parameters

I talked about Trajectory Models used by NOAA OAR (Office of Atmospheric Research)

See [https://www.ready.noaa.gov/index.php](https://www.ready.noaa.gov/index.php/)<[https://no-click.mil/?https://www.ready.noaa.gov/index.php](https://no-click.mil/?https://www.ready.noaa.gov/index.php/)> and on the left are links related to transport and dispersion. I think this is where one can plug data in at lat/lon/height, and run backwards forecast models to see where it may have come from if solely under the influence of the weather. If there are more questions here, I can reach out and facilitate that.

Other NWS (National Weather Service) Info

I quickly mentioned about the 9 units that make up NCEP (National Center for Environmental Prediction) such as the Hurricane Center, Storm Prediction Center etc...

Link here - <https://www.weather.gov/ncep/><<https://no-click.mil/?https://www.weather.gov/ncep/>> and I have contacts at all of them and the head of NCEP should there be any interest there.

I mentioned all the WFOs (Weather Forecast Offices) in the US - here is a nice link/map to that -

[https://www.weather.gov/srh/nwsoffices](https://www.weather.gov/srh/nwsoffices/)<[https://no-click.mil/?https://www.weather.gov/srh/nwsoffices](https://no-click.mil/?https://www.weather.gov/srh/nwsoffices/)>

NOAA UAS There was some discussion yesterday there, and while I am not as familiar in this area, here are some links, and I can work to pursue/connect as needed.

<https://uas.noaa.gov/><<https://no-click.mil/?https://uas.noaa.gov/>>

[https://www.oma.noaa.gov/learn/aircraft-operations/aircraft/uncrewed-aircraft-systems](https://www.oma.noaa.gov/learn/aircraft-operations/aircraft/uncrewed-aircraft-systems/)<[https://no-click.mil/?https://www.oma.noaa.gov/learn/aircraft-operations/aircraft/uncrewed-aircraft-systems](https://no-click.mil/?https://www.oma.noaa.gov/learn/aircraft-operations/aircraft/uncrewed-aircraft-systems/)>

[https://www.oma.noaa.gov/learn/aircraft-operations/aircraft/uncrewed-aircraft-systems](https://www.oma.noaa.gov/learn/aircraft-operations/aircraft/uncrewed-aircraft-systems/)>

Next Steps...

So... Looking for your guidance and direction on how you want me to engage, what questions to ask, and how to do so. For example, there was a great question yesterday about if/how/where any of the NWS Weather Forecast Offices report odd/unusual phenomena as seen on radar/satellite. If you all want, I can pursue that.

But... looking for any guidance on how best to frame any questions as I go poking these areas. Can/should I reference that unclassified document on UAPs? Etc...

I have not emailed any other contacts yet other than I am working to activate/reactivate my high side emails (I was in the process of getting that all going just prior to COVID)

Let me know how I can further support the dialog and engagement and next steps.

Tom

On Wed, Sep 22, 2021 at 11:40 AM Thomas Renkevans - NOAA Federal <[thomas.renkevans@noaa.gov](mailto:thomas.renkevans@noaa.gov)>  
<mailto:thomas.renkevans@noaa.gov>>> wrote:

Sounds good.

Mark may not be able to make it (contracting issue, trying to work it out) but let's still meet for sure.

He and I were at the NRO July 24 on the same topic.

From the very minimal notes I took, I jotted down several websites (but did not send them anywhere, waiting for their followup) which are now cut/paste below which may offer some insight into NOAA assets, capabilities, phenomena observing, etc...

Looking forward to the discussion. I may not know all the answers, but I am willing to help connect the dots with my background in meteorology and more than 25 years in NOAA.

Tom

#### PBox Notes/Info/Thought re NOAA assets (7/24/21 meeting @ NRO)

- Weather Balloons:

- o <https://www.spc.noaa.gov/exper/soundings/><<https://no-click.mil/?https://www.spc.noaa.gov/exper/soundings/>>

- where/when...

- o <https://www.weather.gov/upperair/factsheet><<https://no-click.mil/?https://www.weather.gov/upperair/factsheet>>

- o [https://www.weather.gov/upperair/nws\\_upper](https://www.weather.gov/upperair/nws_upper)<[https://no-click.mil/?https://www.weather.gov/upperair/nws\\_upper](https://no-click.mil/?https://www.weather.gov/upperair/nws_upper)>

- o <https://www.ncdc.noaa.gov/data-access/weather-balloon-data><<https://no-click.mil/?https://www.ncdc.noaa.gov/data-access/weather-balloon-data>>

- Satellites

- o <https://www.star.nesdis.noaa.gov/GOES/><<https://no-click.mil/?https://www.star.nesdis.noaa.gov/GOES/>>

- o <https://rammb-slider.cira.colostate.edu/><<https://no-click.mil/?https://rammb-slider.cira.colostate.edu/>>

- o <https://www.goes-r.gov/spacesegment/instruments.html><<https://no-click.mil/?https://www.goes-r.gov/spacesegment/instruments.html>>

- o <https://www.goes-r.gov/spacesegment/abi.html><<https://no-click.mil/?https://www.goes-r.gov/spacesegment/abi.html>>

- o <https://www.goes-r.gov/mission/ABI-bands-quick-info.html><<https://no-click.mil/?https://www.goes-r.gov/mission/ABI-bands-quick-info.html>>

- o <https://www.goes-r.gov/spacesegment/ABI-tech-summary.html><<https://no-click.mil/?https://www.goes-r.gov/spacesegment/ABI-tech-summary.html>>

- o <https://www.goes-r.gov/spacesegment/glm.html><<https://no-click.mil/?https://www.goes-r.gov/spacesegment/glm.html>>

- o <https://www.jpss.noaa.gov/><<https://no-click.mil/?https://www.jpss.noaa.gov/>>

- o [https://www.jpss.noaa.gov/mission\\_and\\_instruments.html](https://www.jpss.noaa.gov/mission_and_instruments.html)<[https://no-click.mil/?https://www.jpss.noaa.gov/mission\\_and\\_instruments.html](https://no-click.mil/?https://www.jpss.noaa.gov/mission_and_instruments.html)>

- o <https://www.jpss.noaa.gov/viirs.html><<https://no-click.mil/?https://www.jpss.noaa.gov/viirs.html>>

- Launches

- o <https://cimss.ssec.wisc.edu/satellite-blog/?s=launch><<https://no-click.mil/?https://cimss.ssec.wisc.edu/satellite-blog/?s=launch>>

- Fire

o <https://cimss.ssec.wisc.edu/satellite-blog/?s=fire><<https://no-click.mil/?https://cimss.ssec.wisc.edu/satellite-blog/?s=fire>>

• Day Night Band

o <https://cimss.ssec.wisc.edu/satellite-blog/?s=dnb><<https://no-click.mil/?https://cimss.ssec.wisc.edu/satellite-blog/?s=dnb>>

• Lightning Smear –

o <https://cimss.ssec.wisc.edu/satellite-blog/?s=viirs+lightning><<https://no-click.mil/?https://cimss.ssec.wisc.edu/satellite-blog/?s=viirs+lightning>>

• Mesoscale Domain Sectors from GOES Satellites

o <https://vlab.noaa.gov/web/towr-s/mmm/meso-view><<https://no-click.mil/?https://vlab.noaa.gov/web/towr-s/mmm/meso-view>> default east coast

o <https://ams.confex.com/ams/101ANNUAL/meetingapp.cgi/Paper/381423><<https://no-click.mil/?https://ams.confex.com/ams/101ANNUAL/meetingapp.cgi/Paper/381423>>

• NASA Balloon Info

o <https://www.csbf.nasa.gov/><<https://no-click.mil/?https://www.csbf.nasa.gov/>>

• Space Weather

o <https://www.swpc.noaa.gov/><<https://no-click.mil/?https://www.swpc.noaa.gov/>>

[Quoted text hidden]

Cell: (240) 691-2416 Thomas.Renkevns@noaa.gov<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevns - Acting Deputy Chief - NESDIS STAR (Center for Satellite Applications and Research)  
NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
5830 University Research Court, College Park, MD 20740  
Office and Fax: (301) 683-3257  
Cell: (240) 691-2416 Thomas.Renkevns@noaa.gov<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevns - Division Chief  
NOAA/NESDIS/OSPO Satellite Products and Services Division  
NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05

5830 University Research Court, College Park, MD 20740  
Office and Fax: (301) 683-3257  
Cell: (240) 691-2416 Thomas.Renkevns@noaa.gov<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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NOAA/NESDIS/OSPO Satellite Products and Services Division  
NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
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Office and Fax: (301) 683-3257  
Cell: (240) 691-2416 Thomas.Renkevns@noaa.gov<<mailto:Thomas.Renkevns@noaa.gov>>  
<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Office and Fax: (301) 683-3257  
Cell: (240) 691-2416 Thomas.Renkevns@noaa.gov<<mailto:Thomas.Renkevns@noaa.gov>>  
<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Daniel Brewer  
NWS Sterling Field Support Center<<https://www.weather.gov/soic/>>  
703-661-1208

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Daniel Brewer  
NWS Sterling Field Support Center<<https://www.weather.gov/soic/>>

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Tue, Dec 14, 2021 at 10:20 AM

To: (b) (6) USN (USA)" (b) (6) @navy.mil>

Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>, Mark Mulholland <mark.mulholland@noaa.gov>, (b) (6) (USA)" (b) (6) @navy.mil>, (b) (6) (USA)" (b) (6) @navy.mil>

Hi (b) (6)

I believe the data you are looking for regarding radiosonde/balloon position is here: <https://www.ncei.noaa.gov/data/us-radiosonde-bufr/archive/>.

I tried to verify the contents of the files, but it's difficult to do outside of a linux environment. From what I can tell, the files go from August 2005 through November 2021 with more added each month. Once the file is decompressed and the tar archive extracted, you should have a B and C file in a BUFR format (Binary Universal Form for the Representation of meteorological data) for each station for each sounding during that period. There are 92 stations in the U.S. network that perform two soundings per day. When it comes to data format and processing, I'm at the end of the niche, but Jay Lawrimore of NCEI ([jay.lawrimore@noaa.gov](mailto:jay.lawrimore@noaa.gov)) is a federal employee and runs the office that hosts this data set and should be able to assist you. Below is an example of a one second data packet from the instrument including lat/lon.

-Dan

```

3 03 054      ***** Sequence (Start)
0 04 086      LONG TIME PERIOD OR DISPLACEMENT          s          10** 0          -8192          15 bits
8453 [ 261.000 ]
0 08 042      EXTENDED VERTICAL SOUNDING SIGNIFICANCE    FLAG_TABLE  10** 0          0          18 bits
8 [ 8.000 (Bits: 0000 0000 0000 0010 00) ] Bit 15: Level determined by regional decision
0 07 004      PRESSURE                                               Pa          10** -1          0          14 bits
8812 [ 88120.000 ]
0 10 009      GEOPOTENTIAL HEIGHT                                   gpm        10** 0          -1000          17 bits
2219 [ 1219.000 ]
0 05 015      LATITUDE DISPLACEMENT (HIGH ACCURACY)                deg        10** 5          -9000000          25 bits
9000653 [ 0.00653 ]
0 06 015      LONGITUDE DISPLACEMENT (HIGH ACCURACY)                deg        10** 5          -18000000          26 bits
18001032 [ 0.01032 ]
0 12 101      TEMPERATURE/AIR TEMPERATURE                           K          10** 2          0          16 bits
29244 [ 292.440 ]
0 12 103      DEWPOINT TEMPERATURE                                   K          10** 2          0          16 bits
28961 [ 289.610 ]
0 11 001      WIND DIRECTION                                         degree tr... 10** 0          0          9 bits
277 [ 277.000 ]
0 11 002      WIND SPEED                                              m/s        10** 1          0          12 bits
47 [ 4.700 ]

```

[Quoted text hidden]

[Quoted text hidden]

703-661-1208

**Neal Dipasquale - NOAA Federal** <neal.dipasquale@noaa.gov>

Mon, Jan 3, 2022 at 10:38 AM

To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>, Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>

Cc: Gregory Kochanowicz - NOAA Federal <gregory.kochanowicz@noaa.gov>

Dan,

Sorry, I missed this email before I went on leave. What is the latest on this?

Overall as long as they follow all the Covid requirements and you make all the proper arrangements and coordination with everyone to be on site and it does not interfere with operations, then it should be alright.

Are you fully aware of the positive case reports at SFSC over the holidays?

Thanks,  
Neal

[Quoted text hidden]

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Mon, Jan 3, 2022 at 10:46 AM

To: Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>

Cc: Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>, Gregory Kochanowicz - NOAA Federal <gregory.kochanowicz@noaa.gov>

Hi Neal,

The circumstances at SFSC have changed since I started coordinating this. I'll discuss with Ashby later today to see if we should postpone or not.

Dan

[Quoted text hidden]

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**Ashby Hawse - NOAA Federal** <ashby.hawse@noaa.gov>

Mon, Jan 3, 2022 at 12:33 PM

To: Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>

Cc: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>, Gregory Kochanowicz - NOAA Federal <gregory.kochanowicz@noaa.gov>

Dan,

Per our conversation, Please request a delay in this visit for a minimum of 30 days (Mid Feb). With the increased COVID cases being seen across the nation and our recent spike at the SFSC, it would be better to delay this request than risk personal safety and operational objectives. Currently the facility COVID occupancy leve was reduced back to Phase 1 (25% occupancy) and operations support is taking president.

On Mon, Jan 3, 2022 at 10:39 AM Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov> wrote:

[Quoted text hidden]

--

**Ashby L. Hawse**

Sterling Field Support Center Site Manager

National Weather Service  
Sterling Field Support Center  
[43741 Weather Service Rd.](#)  
[Sterling, VA 20166](#)

(W) (703) 661-1222, (C) (301) 351-1270

#### Contact Center Information

**Main Line:** (703) 661-1268, Backup Line: (703)661-1293

**Email:** [nws.sfsc@noaa.gov](mailto:nws.sfsc@noaa.gov)

**Website:** <https://www.weather.gov/soic/>

---

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Mon, Jan 3, 2022 at 1:14 PM

To: Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>

Cc: Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>, Gregory Kochanowicz - NOAA Federal <gregory.kochanowicz@noaa.gov>

Got it. Thanks!

[Quoted text hidden]

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Tue, Jan 4, 2022 at 9:51 AM

To: (b) (6) USN (USA)" (b) (6) @navy.mil>  
Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>, Mark Mulholland <mark.mulholland@noaa.gov>, (b) (6) (USA)" (b) (6) @navy.mil>, (b) (6) (USA)" (b) (6) @navy.mil>

Hi (b) (6)

We need to postpone our meeting at Sterling next week. There was an increase in the number of COVID cases in the office last week and our office is now moving back to a more restrictive phase of access. We are requesting that we wait at least 30 days and then revisit your visit. I'm sorry for the delay, but if there is anything I can do in the meantime to help, let me know.

-Dan

[Quoted text hidden]

(b) (6) USN (USA)" (b) (6) @navy.mil> Fri, Jan 7, 2022 at 8:08 PM  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>, Mark Mulholland <mark.mulholland@noaa.gov>, (b) (6) (USA)" (b) (6) @navy.mil>, (b) (6) (USA)" (b) (6) @navy.mil>

Understand Dan, all our organizations are changing restrictions based on the increase. As it gets a little closer to 30 days out we'll set a reschedule date. VR (b) (6)

Sent with BlackBerry Work  
(www.blackberry.com)

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>  
Date: Tuesday, Jan 04, 2022, 9:52 AM  
To: (b) (6) USN (USA)" (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>  
Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>, Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>, (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>, (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>  
Subject: [URL Verdict: Unknown]Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Hi (b) (6),

We need to postpone our meeting at Sterling next week. There was an increase in the number of COVID cases in the office last week and our office is now moving back to a more restrictive phase of access. We are requesting that we wait at least 30 days and then revisit your visit. I'm sorry for the delay, but if there is anything I can do in the meantime to help, let me know.

-Dan

On Tue, Dec 14, 2021 at 10:20 AM Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>> wrote:

Hi (b) (6)

I believe the data you are looking for regarding radiosonde/balloon position is here: <https://www.ncei.noaa.gov/data/us-radiosonde-bufr/archive/>.

I tried to verify the contents of the files, but it's difficult to do outside of a linux environment. From what I can tell, the files go from August 2005 through November 2021 with more added each month. Once the file is decompressed and the tar archive extracted, you should have a B and C file in a BUFR format (Binary Universal Form for the Representation of meteorological data) for each station for each sounding during that period. There are 92 stations in the U.S. network that perform two soundings per day. When it comes to data format and processing, I'm at the end of the niche, but Jay Lawrimore of NCEI (jay.lawrimore@noaa.gov<mailto:jay.lawrimore@noaa.gov>) is a federal employee and runs the office that hosts this data set and should be able to assist you. Below is an example of a one second data packet from the instrument including lat/lon.

-Dan

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3 03 054 ***** Sequence (Start)
0 04 086 LONG TIME PERIOD OR DISPLACEMENT s 10** 0 -8192 15 bits 8453 [
261.000 ]
0 08 042 EXTENDED VERTICAL SOUNDING SIGNIFICANCE FLAG_TABLE 10** 0 0 18 bits
8 [ 8.000 (Bits: 0000 0000 0000 0010 00) ] Bit 15: Level determined by regional decision
```

0 07 004	PRESSURE	Pa	10** -1	0	14 bits	8812	[ 88120.000 ]
0 10 009	GEOPOTENTIAL HEIGHT	gpm	10** 0	-1000	17 bits	2219	[ 1219.000 ]
0 05 015	LATITUDE DISPLACEMENT (HIGH ACCURACY)	deg	10** 5	-9000000	25 bits		
9000653	[ 0.00653 ]						
0 06 015	LONGITUDE DISPLACEMENT (HIGH ACCURACY)	deg	10** 5	-18000000	26 bits		
18001032	[ 0.01032 ]						
0 12 101	TEMPERATURE/AIR TEMPERATURE	K	10** 2	0	16 bits	29244	[
292.440							]
0 12 103	DEWPOINT TEMPERATURE	K	10** 2	0	16 bits	28961	[ 289.610 ]
0 11 001	WIND DIRECTION	degree tr...	10** 0	0	9 bits	277	[ 277.000 ]
0 11 002	WIND SPEED	m/s	10** 1	0	12 bits	47	[ 4.700 ]

On Mon, Dec 13, 2021 at 1:48 PM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>> wrote:  
That's good.

Sent with BlackBerry Work  
(www.blackberry.com<http://www.blackberry.com>)

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>  
<mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>>  
Date: Monday, Dec 13, 2021, 12:02 PM  
To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>  
<mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>  
Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>  
<mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>>, Mark Mulholland  
<mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>><mailto:mark.mulholland@noaa.gov<mailto:mark.  
mulholland@noaa.gov>>>, (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.  
mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>, (b) (6) (USA)  
(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>  
Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

(b) (6),  
I'm fine with either of those dates. I have travel planned the week before that is deemed "mission critical" so if that slips that we'll have to postpone. How about Wednesday Jan 12th at 10am?  
-Dan

On Mon, Dec 13, 2021 at 9:18 AM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>> wrote:  
Dan,  
We have a conflict with those dates, how about Jan 11 or 12?  
Thanks,  
(b) (6)

From: (b) (6) USN (USA)  
Sent: Friday, December 10, 2021 12:01 PM  
To: 'Daniel Brewer - NOAA Federal' <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>  
<mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>>  
Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>  
<mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>>; Mark Mulholland  
<mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>><mailto:mark.mulholland@noaa.gov<mailto:mark.  
mulholland@noaa.gov>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.  
mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>; (b) (6) (USA)  
(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>  
Subject: RE: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Dan,  
The info below is very helpful for us. Are you available Jan 5 or 6?  
Thanks,  
(b) (6)

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>  
<mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>>  
Sent: Friday, December 10, 2021 11:53 AM



To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>  
 <mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>  
 Cc: Thomas Renkevens - NOAA Federal <thomas.renkevens@noaa.gov<mailto:thomas.renkevens@noaa.gov>  
 <mailto:thomas.renkevens@noaa.gov<mailto:thomas.renkevens@noaa.gov>>>; Mark Mulholland  
 <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov><mailto:mark.mulholland@noaa.gov<mailto:mark.  
 mulholland@noaa.gov>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.  
 mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>; (b) (6) (USA)  
 (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>>  
 Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Hi (b) (6),  
 I have a few quick responses, but will need to follow up in more detail.  
 1) The websites provided were for prediction, not actual trajectories.  
 2) The actual locations are recorded and sent to NOAA's NCEI. I'm in the process of determining whether NCEI publishes this data and the process for accessing the data. If the data is not publicly available for download, then there may be other options.  
 3) I am available to meet after the New Year. If you're thinking of an NWS SFSC visit then that can be easily arranged! I have some travel planned, but shouldn't be a problem to work around.

Dan

On Fri, Dec 10, 2021 at 9:32 AM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>> wrote:  
 Tom,

A couple more questions.

So the weather balloon once launched transmits GPS coordinates and weather collected information until it finally drops? Is this data saved such that if one wanted to check whether a weather balloon was in a certain location at a certain time that information would be stored in a database aligned with the weather data at that location? If this is correct, who can we talk to for extracting this information from database?

The below website is for forecasting purposes, so predicting where it will go and not actually where it went?

Dan,

Are you available to meet after the New Year?

Thanks,  
(b) (6)

From: Thomas Renkevens - NOAA Federal <thomas.renkevens@noaa.gov<mailto:thomas.renkevens@noaa.gov>  
 <mailto:thomas.renkevens@noaa.gov<mailto:thomas.renkevens@noaa.gov>>>  
 Sent: Tuesday, November 16, 2021 1:37 PM  
 To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>  
 <mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>; Daniel Brewer - NOAA Federal  
 <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov>  
 <mailto:daniel.brewer@noaa.gov>>>  
 Cc: Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov><mailto:mark.mulholland@  
 noaa.gov<mailto:mark.mulholland@noaa.gov>>>; (b) (6) (USA) (b) (6) @navy.mil<  
 mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>; (b) (6)  
 (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:  
 (b) (6) @navy.mil>>>>  
 Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

(b) (6)

In part of my inquiries, one good point of contact for you to contact (I added him to this email after my email discussion with him) is Dan Brewer:

daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov>  
 mailto:daniel.brewer@noaa.gov>>  
 Daniel Brewer  
 NWS Sterling Field Support Center<https://no-click.mil/?https://www.weather.gov/soic/>  
 703-661-1208

Tom

On Mon, Nov 15, 2021 at 2:31 PM Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov><mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>>> wrote:

I am getting some mild traction, so stand by...

As far as the questions on launch location, wind data, projected path, etc... yes, that does exist.

Go to [https://www.ready.noaa.gov/HYSPLIT\\_traj.php](https://www.ready.noaa.gov/HYSPLIT_traj.php)<[https://no-click.mil/?https://www.ready.noaa.gov/HYSPLIT\\_traj.php](https://no-click.mil/?https://www.ready.noaa.gov/HYSPLIT_traj.php)> and in the main box of "compute forecast trajectories" I believe stepping through all of those pages will allow a user to pick a date, time, location, elevation, and perhaps other parameters and then have a projected path. This may be of some help.

Tom

On Mon, Nov 15, 2021 at 9:15 AM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>> wrote:  
Mark,

This website shows weather data for dates, but I'm sure someone has an algorithm that given a launch location, pulling in wind data, a projected path can be determined with some range of confidence.

Thanks,

(b) (6)

<https://www.spc.noaa.gov/exper/soundings/><<https://no-click.mil/?https://www.spc.noaa.gov/exper/soundings/>>

From: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov><mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>>>

Sent: Monday, November 15, 2021 8:20 AM

To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>

Cc: Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov><mailto:mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>

Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

(b) (6),

I sent out an email with some feelers, so I am hoping to hear back from them soon.

Which website below are you referring to?

Tom

On Wed, Nov 10, 2021 at 3:13 PM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>> wrote:  
Tom,

Who would be a good POC at NOAA dealing with modeling wind patterns and tracking weather balloon locations? I see that you have a website below but my questions are beyond what I could work with that forecasting tool.

Thanks,

(b) (6)

From: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov><mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>>>

Sent: Tuesday, October 5, 2021 9:19 AM

To: (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>

Cc: Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>><mailto:mark.mulholland@noaa.gov><mailto:mark.mulholland@noaa.gov>>>; (b) (6) USN DCNO N2N6 (USA) (b) (6) @us.navy.mil<mailto:(b) (6) @us.navy.mil><mailto:(b) (6) @us.navy.mil>>>; (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>; (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>; (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>; (b) (6) USN NAWCAD (USA) (b) (6) @us.navy.mil<mailto:(b) (6) @us.navy.mil><mailto:(b) (6) @us.navy.mil>>>; (b) (6) @us.navy.mil<mailto:(b) (6) @us.navy.mil>>>

Subject: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

While yes, one of my employees worked there, that was a while ago, so not sure if that is a good entry point there or not.

What perhaps may be best is if Mark or I send the email to a few of the relevant people there, copying you folks, with text that you provide as to why you are trying to engage, etc... This way, it comes from a NOAA email and I can add in some of the NOAA and CAC context as well.

As to the question of " ... do any of your experts hold a SECRET clearance, or are they completely un-cleared?" Some of the folks that work in my Division do have a Secret clearance, but they are probably not the experts in this area that you are looking for. So depending on what areas of information you are looking for an SME in, I can try to locate the right folks in the right orgs.

Tom

On Mon, Oct 4, 2021 at 3:17 PM (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>> wrote:  
Hello Tom and Mark,

So we are a bit more settled in our new space and would like to ask for some POCs at the Sterling facility... We are hoping we could make a visit happen sometime in the next several weeks, COVID permitting...

Tom, you mentioned one of your employees, would he/she be a good place to start? And we can be somewhat vague when describing what we're after—I recognize that clearances will be an issue and we'll just have to be somewhat vague.

Many thanks again for all your help with these issues!

Best,  
(b) (6)

[Quoted text hidden]  
[Quoted text hidden]  
[Quoted text hidden]

Cell: (240) 691-2416 Thomas.Renkevns@noaa.gov<http://www.ospo.noaa.gov><<http://www.ospo.noaa.gov>><<https://no-click.mil/?http://www.ospo.noaa.gov>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevns - Acting Deputy Chief - NESDIS STAR (Center for Satellite Applications and Research)  
NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
5830 University Research Court, College Park, MD 20740  
Office and Fax: (301) 683-3257  
Cell: (240) 691-2416 Thomas.Renkevns@noaa.gov<http://www.ospo.noaa.gov><<http://www.ospo.noaa.gov>><<https://no-click.mil/?http://www.ospo.noaa.gov>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevans - Division Chief  
 NOAA/NESDIS/OSPO Satellite Products and Services Division  
 NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
 5830 University Research Court, College Park, MD 20740  
 Office and Fax: (301) 683-3257  
 Cell: (240) 691-2416      Thomas.Renkevans@noaa.gov<http://www.ospo.noaa.gov><<http://www.ospo.noaa.gov>>  
 <<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><[https://no-click.mil/?](https://no-click.mil/?http://twitter.com/NOAASatellites)

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Tom Renkevans - Division Chief  
 NOAA/NESDIS/OSPO Satellite Products and Services Division  
 NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
 5830 University Research Court, College Park, MD 20740  
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 Cell: (240) 691-2416      Thomas.Renkevans@noaa.gov<<mailto:Thomas.Renkevans@noaa.gov>>  
 <<mailto:Thomas.Renkevans@noaa.gov>><<mailto:Thomas.Renkevans@noaa.gov>>>  
<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevans - Division Chief  
 NOAA/NESDIS/OSPO Satellite Products and Services Division  
 NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
 5830 University Research Court, College Park, MD 20740  
 Office and Fax: (301) 683-3257  
 Cell: (240) 691-2416      Thomas.Renkevans@noaa.gov<<mailto:Thomas.Renkevans@noaa.gov>>  
 <<mailto:Thomas.Renkevans@noaa.gov>><<mailto:Thomas.Renkevans@noaa.gov>>>  
<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevans - Division Chief  
 NOAA/NESDIS/OSPO Satellite Products and Services Division  
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 Cell: (240) 691-2416      Thomas.Renkevans@noaa.gov<<mailto:Thomas.Renkevans@noaa.gov>>  
 <<mailto:Thomas.Renkevans@noaa.gov>><<mailto:Thomas.Renkevans@noaa.gov>>>

[Quoted text hidden]

To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Dan,

Is it possible that someone could check if a NWS balloon was in this location (363094N 751482W) on 26 Apr 21?

[Quoted text hidden]

---

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Fri, Jan 21, 2022 at 2:59 PM

To: (b) (6) USN (USA) (b) (6) @navy.mil>

Hi (b) (6),

I'm currently looking at the data from balloons that were launched at the Morehead City location. Given the winds that day, I think that would be the closest possibility. I should have an answer later today or Monday.

Dan

[Quoted text hidden]

---

(b) (6) USN (USA) (b) (6) @navy.mil>

Fri, Jan 21, 2022 at 3:12 PM

To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Excellent!

Sent with BlackBerry Work  
([www.blackberry.com](http://www.blackberry.com))

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>

Date: Friday, Jan 21, 2022, 3:00 PM

To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>

Subject: Re: [URL Verdict: Neutral]Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Hi (b) (6),

I'm currently looking at the data from balloons that were launched at the Morehead City location. Given the winds that day, I think that would be the closest possibility. I should have an answer later today or Monday.

Dan

On Wed, Jan 19, 2022 at 1:54 (b) (6) USN (USA) (b) (6) @navy.mil<

mailto:(b) (6) @navy.mil>> wrote:

Dan,

Is it possible that someone could check if a NWS balloon was in this location (363094N 751482W) on 26 Apr 21?

Thanks,

(b) (6)

---

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>

Sent: Tuesday, January 4, 2022 9:51 AM

To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>

Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>; Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>; (b) (6) (USA)

(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>; (b) (6) (USA)

(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>

Subject: [URL Verdict: Unknown]Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Hi (b) (6),

We need to postpone our meeting at Sterling next week. There was an increase in the number of COVID cases in the office last week and our office is now moving back to a more restrictive phase of access. We are requesting that we wait at least 30 days and then revisit your visit. I'm sorry for the delay, but if there is anything I can do in the meantime to help, let me know.

-Dan

On Tue, Dec 14, 2021 at 10:20 AM Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>> wrote:

Hi (b) (6),

I believe the data you are looking for regarding radiosonde/balloon position is here: <https://www.ncei.noaa.gov/data/us-radiosonde-bufr/archive/>.

I tried to verify the contents of the files, but it's difficult to do outside of a linux environment. From what I can tell, the files go from August 2005 through November 2021 with more added each month. Once the file is decompressed and the tar archive extracted, you should have a B and C file in a BUFR format (Binary Universal Form for the Representation of meteorological data) for each station for each sounding during that period. There are 92 stations in the U.S. network that perform two soundings per day. When it comes to data format and processing, I'm at the end of the niche, but Jay Lawrimore of NCEI (jay.lawrimore@noaa.gov<mailto:jay.lawrimore@noaa.gov>) is a federal employee and runs the office that hosts this data set and should be able to assist you. Below is an example of a one second data packet from the instrument including lat/lon.

-Dan

3 03 054 \*\*\*\*\* Sequence (Start)

0 04 086 LONG TIME PERIOD OR DISPLACEMENT s 10\*\* 0 -8192 15 bits 8453 [ 261.000 ]

0 08 042 EXTENDED VERTICAL SOUNDING SIGNIFICANCE FLAG\_TABLE 10\*\* 0 0 18 bits 8 [ 8.000 (Bits: 0000 0000 0000 0010 00) ] Bit 15: Level determined by regional decision

0 07 004 PRESSURE Pa 10\*\* -1 0 14 bits 8812 [ 88120.000 ]

0 10 009 GEOPOTENTIAL HEIGHT gpm 10\*\* 0 -1000 17 bits 2219 [ 1219.000 ]

0 05 015 LATITUDE DISPLACEMENT (HIGH ACCURACY) deg 10\*\* 5 -9000000 25 bits 9000653 [ 0.00653 ]

0 06 015 LONGITUDE DISPLACEMENT (HIGH ACCURACY) deg 10\*\* 5 -18000000 26 bits 18001032 [ 0.01032 ]

0 12 101 TEMPERATURE/AIR TEMPERATURE K 10\*\* 2 0 16 bits 29244 [ 292.440 ]

0 12 103 DEWPOINT TEMPERATURE K 10\*\* 2 0 16 bits 28961 [ 289.610 ]

0 11 001 WIND DIRECTION degree tr... 10\*\* 0 0 9 bits 277 [ 277.000 ]

0 11 002 WIND SPEED m/s 10\*\* 1 0 12 bits 47 [ 4.700 ]

On Mon, Dec 13, 2021 at 1:48 PM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>> wrote:  
That's good.

Sent with BlackBerry Work  
([www.blackberry.com](http://www.blackberry.com)<http://www.blackberry.com>)

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>  
<mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>>  
Date: Monday, Dec 13, 2021, 12:02 PM  
To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>  
<mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>  
Cc: Thomas Renkevens - NOAA Federal <thomas.renkevens@noaa.gov<mailto:thomas.renkevens@noaa.gov>>  
<mailto:thomas.renkevens@noaa.gov<mailto:thomas.renkevens@noaa.gov>>>, Mark Mulholland  
<mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>><mailto:mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>>, (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>, (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>, (b) (6) (USA)

(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>  
Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

(b) (6),

I'm fine with either of those dates. I have travel planned the week before that is deemed "mission critical" so if that slips that we'll have to postpone. How about Wednesday Jan 12th at 10am?

-Dan

On Mon, Dec 13, 2021 at 9:18 AM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>> wrote:

Dan,

We have a conflict with those dates, how about Jan 11 or 12?

Thanks,

(b) (6)

From: Mcilwain, Carol J SES USN (USA)  
Sent: Friday, December 10, 2021 12:01 PM  
To: 'Daniel Brewer - NOAA Federal' <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>>>  
Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov><mailto:thomas.renkevans@noaa.gov>>>; Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov><mailto:mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>  
Subject: RE: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Dan,

The info below is very helpful for us. Are you available Jan 5 or 6?

Thanks,

(b) (6)

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>>>  
Sent: Friday, December 10, 2021 11:53 AM  
To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>  
Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov><mailto:thomas.renkevans@noaa.gov>>>; Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov><mailto:mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>  
Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Hi (b) (6),

I have a few quick responses, but will need to follow up in more detail.

- 1) The websites provided were for prediction, not actual trajectories.
- 2) The actual locations are recorded and sent to NOAA's NCEI. I'm in the process of determining whether NCEI publishes this data and the process for accessing the data. If the data is not publicly available for download, then there may be other options.
- 3) I am available to meet after the New Year. If you're thinking of an NWS SFSC visit then that can be easily arranged! I have some travel planned, but shouldn't be a problem to work around.

Dan

On Fri, Dec 10, 2021 at 9:32 AM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>> wrote:

Tom,

A couple more questions.

So the weather balloon once launched transmits GPS coordinates and weather collected information until it finally drops? Is this data saved such that if one wanted to check whether a weather balloon was in a certain location at a certain time that information would be stored in a database aligned with the weather data at that location? If this is correct, who can

we talk to for extracting this information from database?

The below website is for forecasting purposes, so predicting where it will go and not actually where it went?

Dan,

Are you available to meet after the New Year?

Thanks,

(b) (6)

From: Thomas Renkevens - NOAA Federal <thomas.renkevens@noaa.gov<mailto:thomas.renkevens@noaa.gov>>  
<mailto:thomas.renkevens@noaa.gov<mailto:thomas.renkevens@noaa.gov>>>

Sent: Tuesday, November 16, 2021 1:37 PM

To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>  
<mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>; Daniel Brewer - NOAA Federal  
<daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>><mailto:daniel.brewer@noaa.gov  
<mailto:daniel.brewer@noaa.gov>>>

Cc: Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>><mailto:mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>

Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

(b) (6)

In part of my inquiries, one good point of contact for you to contact (I added him to this email after my email discussion with him) is Dan Brewer:

daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov>  
mailto:daniel.brewer@noaa.gov>>

Daniel Brewer

NWS Sterling Field Support Center<https://no-click.mil/?https://www.weather.gov/soic/>  
703-661-1208

Tom

On Mon, Nov 15, 2021 at 2:31 PM Thomas Renkevens - NOAA Federal <thomas.renkevens@noaa.gov<mailto:thomas.renkevens@noaa.gov>><mailto:thomas.renkevens@noaa.gov<mailto:thomas.renkevens@noaa.gov>>>  
wrote:

I am getting some mild traction, so stand by...

As far as the questions on launch location, wind data, projected path, etc... yes, that does exist.

Go to [https://www.ready.noaa.gov/HYSPLIT\\_traj.php](https://www.ready.noaa.gov/HYSPLIT_traj.php)<https://no-click.mil/?https://www.ready.noaa.gov/HYSPLIT\_traj.php> and in the main box of "compute forecast trajectories" I believe stepping through all of those pages will allow a user to pick a date, time, location, elevation, and perhaps other parameters and then have a projected path. This may be of some help.

Tom

On Mon, Nov 15, 2021 at 9:15 AM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>> wrote:  
Mark,

This website shows weather data for dates, but I'm sure someone has an algorithm that given a launch location, pulling in wind data, a projected path can be determined with some range of confidence.

Thanks,

(b) (6)



<https://www.spc.noaa.gov/exper/soundings/><<https://no-click.mil/?https://www.spc.noaa.gov/exper/soundings/>>

From: Thomas Renkevans - NOAA Federal <[thomas.renkevans@noaa.gov](mailto:thomas.renkevans@noaa.gov)<<mailto:thomas.renkevans@noaa.gov>>>>

Sent: Monday, November 15, 2021 8:20 AM

To: (b) (6) USN (USA) (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>  
<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)><[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>

Cc: Mark Mulholland <[mark.mulholland@noaa.gov](mailto:mark.mulholland@noaa.gov)<<mailto:mark.mulholland@noaa.gov>>>><mailto:mark.mulholland@noaa.gov><<mailto:mark.mulholland@noaa.gov>>>>; (b) (6) (USA) (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>; (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>; (b) (6) (USA) (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>; (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>

Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

(b) (6)

I sent out an email with some feelers, so I am hoping to hear back from them soon. Which website below are you referring to?

Tom

On Wed, Nov 10, 2021 at 3:13 PM (b) (6) USN (USA) (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>> wrote:  
Tom,

Who would be a good POC at NOAA dealing with modeling wind patterns and tracking weather balloon locations? I see that you have a website below but my questions are beyond what I could work with that forecasting tool.

Thanks,

(b) (6)

From: Thomas Renkevans - NOAA Federal <[thomas.renkevans@noaa.gov](mailto:thomas.renkevans@noaa.gov)<<mailto:thomas.renkevans@noaa.gov>>>>

Sent: Tuesday, October 5, 2021 9:19 AM

To: (b) (6) (USA) (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>  
(b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>

Cc: Mark Mulholland <[mark.mulholland@noaa.gov](mailto:mark.mulholland@noaa.gov)<<mailto:mark.mulholland@noaa.gov>>>><mailto:mark.mulholland@noaa.gov><<mailto:mark.mulholland@noaa.gov>>>>; (b) (6) USN DCNO N2N6 (USA) (b) (6) @us.navy.mil<[mailto:\(b\) \(6\) @us.navy.mil](mailto:(b) (6) @us.navy.mil)>>>; (b) (6) @us.navy.mil<[mailto:\(b\) \(6\) @us.navy.mil](mailto:(b) (6) @us.navy.mil)>>>; (b) (6) USN (USA) (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>; (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>; (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>; (b) (6) (USA) (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>; (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>; (b) (6) USN NAWCAD (USA) (b) (6) @us.navy.mil<[mailto:\(b\) \(6\) @us.navy.mil](mailto:(b) (6) @us.navy.mil)>>>; (b) (6) @us.navy.mil<[mailto:\(b\) \(6\) @us.navy.mil](mailto:(b) (6) @us.navy.mil)>>>

Subject: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

While yes, one of my employees worked there, that was a while ago, so not sure if that is a good entry point there or not.

What perhaps may be best is if Mark or I send the email to a few of the relevant people there, copying you folks, with text that you provide as to why you are trying to engage, etc... This way, it comes from a NOAA email and I can add in some of the NOAA and CAC context as well.

As to the question of " ... do any of your experts hold a SECRET clearance, or are they completely un-cleared?" Some of the folks that work in my Division do have a Secret clearance, but they are probably not the experts in this area that you are looking for. So depending on what areas of information you are looking for an SME in, I can try to locate the right folks in the right orgs.

Tom

On Mon, Oct 4, 2021 at 3:17 PM (b) (6) (USA) (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>> wrote:

Hello Tom and Mark,

So we are a bit more settled in our new space and would like to ask for some POCs at the Sterling facility... We are hoping we could make a visit happen sometime in the next several weeks, COVID permitting...

Tom, you mentioned one of your employees, would he/she be a good place to start? And we can be somewhat vague when describing what we're after—I recognize that clearances will be an issue and we'll just have to be somewhat vague.

Many thanks again for all your help with these issues!

Best,

(b) (6)

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

Cell: (240) 691-2416 Thomas.Renkevens@noaa.gov<http://www.ospo.noaa.gov><<http://www.ospo.noaa.gov>> <<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevens - Acting Deputy Chief - NESDIS STAR (Center for Satellite Applications and Research)  
NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
5830 University Research Court, College Park, MD 20740  
Office and Fax: (301) 683-3257

Cell: (240) 691-2416 Thomas.Renkevens@noaa.gov<http://www.ospo.noaa.gov><<http://www.ospo.noaa.gov>> <<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevens - Division Chief  
NOAA/NESDIS/OSPO Satellite Products and Services Division  
NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
5830 University Research Court, College Park, MD 20740  
Office and Fax: (301) 683-3257

Cell: (240) 691-2416 Thomas.Renkevens@noaa.gov<http://www.ospo.noaa.gov><<http://www.ospo.noaa.gov>> <<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevens - Division Chief  
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NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
5830 University Research Court, College Park, MD 20740  
Office and Fax: (301) 683-3257

Cell: (240) 691-2416 [Thomas.Renkevens@noaa.gov](mailto:Thomas.Renkevens@noaa.gov)<<mailto:Thomas.Renkevens@noaa.gov>> <<mailto:Thomas.Renkevens@noaa.gov>> <<http://www.ospo.noaa.gov>><<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/>

[NOAASatellites<https://no-click.mil/?http://twitter.com/NOAASatellites>](https://no-click.mil/?http://twitter.com/NOAASatellites)

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Tom Renkevans - Division Chief  
NOAA/NESDIS/OSPO Satellite Products and Services Division  
NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
5830 University Research Court, College Park, MD 20740  
Office and Fax: (301) 683-3257  
Cell: (240) 691-2416 [Thomas.Renkevans@noaa.gov](mailto:Thomas.Renkevans@noaa.gov)<mailto:Thomas.Renkevans@noaa.gov>  
<mailto:Thomas.Renkevans@noaa.gov><mailto:Thomas.Renkevans@noaa.gov>>  
<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevans - Division Chief  
NOAA/NESDIS/OSPO Satellite Products and Services Division  
NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
5830 University Research Court, College Park, MD 20740  
Office and Fax: (301) 683-3257  
Cell: (240) 691-2416 [Thomas.Renkevans@noaa.gov](mailto:Thomas.Renkevans@noaa.gov)<mailto:Thomas.Renkevans@noaa.gov>  
<mailto:Thomas.Renkevans@noaa.gov><mailto:Thomas.Renkevans@noaa.gov>>  
<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Daniel Brewer  
NWS Sterling Field Support Center<<https://www.weather.gov/soic/>>  
703-661-1208

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NWS Sterling Field Support Center<<https://www.weather.gov/soic/>>  
703-661-1208

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703-661-1208

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Daniel Brewer  
 NWS Sterling Field Support Center<<https://www.weather.gov/soic/>>  
 703-661-1208

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
 To: (b) (6) USN (USA)" (b) (6) @navy.mil>

Mon, Jan 24, 2022 at 4:06 PM

Hi (b) (6),

Attached is a map of balloon release location, burst locations, and the location you provided. I realized I was looking at the weather on the wrong date after I told you Morehead City. Winds were out of the north on the 26th for most of the profile which led me to Wallops Island, Va as the closest location. NWS releases balloons twice a day at 12 UTC and 00 UTC, but in reality, the stations are allowed to release starting at 11 UTC and 23 UTC which are the times most stations target.

There might be some things open for interpretation looking at the map, such as if the balloon burst at the noted locations, the trajectory still pushes the shredded balloon/string/instrument south toward the location you provided. It still seems unlikely for the balloon to make it that far even if it didn't burst and shred all the way.

Also, just eyeballing the trajectory of the Wallops balloons, if a non-NWS balloon was released out of Norfolk, it would be steered by the same upper level winds and generally speaking, its trajectory would put it closer to the location you provided. That thought leads me to other Navy contacts that you may already have. Dr. (b) (6) and (b) (6) both track NWS radiosonde data used for Navy numerical modeling and if there were any other weather balloons that day from DoD, they would be able to tell you.

(b) (6) @nrlmry.navy.mil Data Assimilation Group, Naval Research Lab  
 (b) (6) @us.navy.mil Fleet Numerical Meteorology & Oceanography Center

Also, if you'd like to get the data files I used to map the location, I can send it to you. I'm also attaching the NWS Upper Air network map. There are a few more stations in the Pacific than what is shown and I can provide them if you are interested.

Let me know if you have any questions.

Dan

[Quoted text hidden]

[Quoted text hidden]

703-661-1208

## 2 attachments



**UA Station Maps.gif**  
 71K

 **balloon\_location\_26april21.pdf**  
 306K

(b) (6) USN (USA) (b) (6) @navy.mil>  
 To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Mon, Jan 24, 2022 at 4:54 PM

Fantastic, send me anything you can.

Sent with BlackBerry Work  
([www.blackberry.com](http://www.blackberry.com))

From: Daniel Brewer - NOAA Federal <[daniel.brewer@noaa.gov](mailto:daniel.brewer@noaa.gov)<<mailto:daniel.brewer@noaa.gov>>>  
Date: Monday, Jan 24, 2022, 4:07 PM  
To: (b) (6) USN (USA) (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>  
Subject: Re: [URL Verdict: Neutral]Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Hi (b) (6),

Attached is a map of balloon release location, burst locations, and the location you provided. I realized I was looking at the weather on the wrong date after I told you Morehead City. Winds were out of the north on the 26th for most of the profile which led me to Wallops Island, Va as the closest location. NWS releases balloons twice a day at 12 UTC and 00 UTC, but in reality, the stations are allowed to release starting at 11 UTC and 23 UTC which are the times most stations target.

There might be some things open for interpretation looking at the map, such as if the balloon burst at the noted locations, the trajectory still pushes the shredded balloon/string/instrument south toward the location you provided. It still seems unlikely for the balloon to make it that far even if it didn't burst and shred all the way.

Also, just eyeballing the trajectory of the Wallops balloons, if a non-NWS balloon was released out of Norfolk, it would be steered by the same upper level winds and generally speaking, its trajectory would put it closer to the location you provided. That thought leads me to other Navy contacts that you may already have. Dr. (b) (6) and (b) (6) both track NWS radiosonde data used for Navy numerical modeling and if there were any other weather balloons that day from DoD, they would be able to tell you.

(b) (6) @nrlmry.navy.mil<[mailto:\(b\) \(6\) @nrlmry.navy.mil](mailto:(b) (6) @nrlmry.navy.mil)> Data Assimilation Group, Naval Research Lab  
(b) (6) @us.navy.mil<[mailto:\(b\) \(6\) @us.navy.mil](mailto:(b) (6) @us.navy.mil)> Fleet Numerical Meteorology & Oceanography Center

Also, if you'd like to get the data files I used to map the location, I can send it to you. I'm also attaching the NWS Upper Air network map. There are a few more stations in the Pacific than what is shown and I can provide them if you are interested.

Let me know if you have any questions.  
Dan

On Fri, Jan 21, 2022 at 3:12 PM (b) (6) USN (USA) (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>> wrote:  
Excellent!

Sent with BlackBerry Work  
([www.blackberry.com](http://www.blackberry.com)<<http://www.blackberry.com>>)

From: Daniel Brewer - NOAA Federal <[daniel.brewer@noaa.gov](mailto:daniel.brewer@noaa.gov)<<mailto:daniel.brewer@noaa.gov>>>  
<<mailto:daniel.brewer@noaa.gov><<mailto:daniel.brewer@noaa.gov>>>>  
Date: Friday, Jan 21, 2022, 3:00 PM  
To: (b) (6) USN (USA) (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>  
<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>>>  
Subject: Re: [URL Verdict: Neutral]Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Hi (b) (6)

I'm currently looking at the data from balloons that were launched at the Morehead City location. Given the winds that day, I think that would be the closest possibility. I should have an answer later today or Monday.

Dan

On Wed, Jan 19, 2022 at 1:54 PM (b) (6) USN (USA) (b) (6) @navy.mil<[mailto:\(b\) \(6\) @navy.mil](mailto:(b) (6) @navy.mil)>> wrote:  
Dan,

Is it possible that someone could check if a NWS balloon was in this location (363094N 751482W) on 26 Apr 21?

Thanks,  
(b) (6)

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>  
<mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>>  
Sent: Tuesday, January 4, 2022 9:51 AM  
To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>  
<mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>  
Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>  
<mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>>; Mark Mulholland  
<mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>><mailto:mark.mulholland@noaa.gov<mailto:mark.  
mulholland@noaa.gov>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.  
mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>; (b) (6) (USA)  
(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>  
Subject: [URL Verdict: Unknown]Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Hi (b) (6)

We need to postpone our meeting at Sterling next week. There was an increase in the number of COVID cases in the office last week and our office is now moving back to a more restrictive phase of access. We are requesting that we wait at least 30 days and then revisit your visit. I'm sorry for the delay, but if there is anything I can do in the meantime to help, let me know.  
-Dan

On Tue, Dec 14, 2021 at 10:20 AM Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>><mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>> wrote:  
Hi (b) (6)

I believe the data you are looking for regarding radiosonde/balloon position is here: <https://www.ncei.noaa.gov/data/us-radiosonde-bufr/archive/>.

I tried to verify the contents of the files, but it's difficult to do outside of a linux environment. From what I can tell, the files go from August 2005 through November 2021 with more added each month. Once the file is decompressed and the tar archive extracted, you should have a B and C file in a BUFR format (Binary Universal Form for the Representation of meteorological data) for each station for each sounding during that period. There are 92 stations in the U.S. network that perform two soundings per day. When it comes to data format and processing, I'm at the end of the niche, but Jay Lawrimore of NCEI (jay.lawrimore@noaa.gov<mailto:jay.lawrimore@noaa.gov><mailto:jay.lawrimore@noaa.gov<mailto:jay.lawrimore@noaa.gov>>>) is a federal employee and runs the office that hosts this data set and should be able to assist you. Below is an example of a one second data packet from the instrument including lat/lon.

-Dan

```
3 03 054 ***** Sequence (Start)

0 04 086 LONG TIME PERIOD OR DISPLACEMENT      s      10** 0      -8192      15 bits      8453 [
261.000 ]

0 08 042 EXTENDED VERTICAL SOUNDING SIGNIFICANCE  FLAG_TABLE  10** 0      0      18 bits
8 [ 8.000 (Bits: 0000 0000 0000 0010 00) ] Bit 15: Level determined by regional decision

0 07 004 PRESSURE                                Pa      10** -1      0      14 bits      8812 [ 88120.000 ]

0 10 009 GEOPOTENTIAL HEIGHT                    gpm     10** 0      -1000      17 bits      2219 [ 1219.000 ]

0 05 015 LATITUDE DISPLACEMENT (HIGH ACCURACY)  deg     10** 5      -9000000    25 bits
9000653 [ 0.00653 ]

0 06 015 LONGITUDE DISPLACEMENT (HIGH ACCURACY) deg     10** 5      -18000000   26 bits
18001032 [ 0.01032 ]

0 12 101 TEMPERATURE/AIR TEMPERATURE            K       10** 2      0      16 bits      29244 [
292.440 ]

0 12 103 DEWPOINT TEMPERATURE                  K       10** 2      0      16 bits      28961 [ 289.610 ]
```

0 11 001 WIND DIRECTION degree tr... 10\*\* 0 0 9 bits 277 [ 277.000 ]  
0 11 002 WIND SPEED m/s 10\*\* 1 0 12 bits 47 [ 4.700 ]

On Mon, Dec 13, 2021 at 1:48 PM (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>> wrote:  
That's good.

Sent with BlackBerry Work  
(www.blackberry.com<http://www.blackberry.com><http://www.blackberry.com>)

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov>>>>  
gov<mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov>>>>

Date: Monday, Dec 13, 2021, 12:02 PM

To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>  
(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>

Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov><mailto:thomas.renkevans@noaa.gov><mailto:thomas.renkevans@noaa.gov>>>>  
mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov><mailto:thomas.renkevans@noaa.gov>>>>;  
Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov><mailto:mark.mulholland@noaa.gov>>>>  
noaa.gov<mailto:mark.mulholland@noaa.gov><mailto:mark.mulholland@noaa.gov>>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>  
(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>  
(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>; (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>  
Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

(b) (6)  
I'm fine with either of those dates. I have travel planned the week before that is deemed "mission critical" so if that slips that we'll have to postpone. How about Wednesday Jan 12th at 10am?  
-Dan

On Mon, Dec 13, 2021 at 9:18 (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>  
(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>> wrote:

Dan,  
We have a conflict with those dates, how about Jan 11 or 12?  
Thanks,  
(b) (6)

From: (b) (6) USN (USA)  
Sent: Friday, December 10, 2021 12:01 PM  
To: 'Daniel Brewer - NOAA Federal' <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov>>>>  
gov<mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov>>>>  
Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov><mailto:thomas.renkevans@noaa.gov><mailto:thomas.renkevans@noaa.gov>>>>  
mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov><mailto:thomas.renkevans@noaa.gov>>>>;  
Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov><mailto:mark.mulholland@noaa.gov>>>>  
noaa.gov<mailto:mark.mulholland@noaa.gov><mailto:mark.mulholland@noaa.gov>>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>  
(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>  
(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>; (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil>>>>  
Subject: RE: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Dan,

The info below is very helpful for us. Are you available Jan 5 or 6?

Thanks,

(b) (6)

From: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>  
<mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>><mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov>>>>

Sent: Friday, December 10, 2021 11:53 AM

To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>  
<mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>>

Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>  
<mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>><mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>>>;  
Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov><mailto:mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>>>;  
Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>><mailto:mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>>>

(b) (6) (USA) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>>; (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>>; (b) (6) @navy.mil<mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>>; (b) (6) @navy.mil<mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>>

Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

Hi (b) (6)

I have a few quick responses, but will need to follow up in more detail.

- 1) The websites provided were for prediction, not actual trajectories.
- 2) The actual locations are recorded and sent to NOAA's NCEI. I'm in the process of determining whether NCEI publishes this data and the process for accessing the data. If the data is not publicly available for download, then there may be other options.
- 3) I am available to meet after the New Year. If you're thinking of an NWS SFSC visit then that can be easily arranged! I have some travel planned, but shouldn't be a problem to work around.

Dan

On Fri, Dec 10, 2021 at 9:32 AM (b) (6) USN (USA) (b) (6) @navy.mil  
<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>>; (b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>>

Tom,

A couple more questions.

So the weather balloon once launched transmits GPS coordinates and weather collected information until it finally drops? Is this data saved such that if one wanted to check whether a weather balloon was in a certain location at a certain time that information would be stored in a database aligned with the weather data at that location? If this is correct, who can we talk to for extracting this information from database?

The below website is for forecasting purposes, so predicting where it will go and not actually where it went?

Dan,

Are you available to meet after the New Year?

Thanks,

(b) (6)

From: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>  
<mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>><mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>>>

Sent: Tuesday, November 16, 2021 1:37 PM

To: (b) (6) USN (USA) (b) (6) @navy.mil<mailto:(b) (6) @navy.mil>  
<mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>>; Daniel Brewer - NOAA  
Federal <daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov>>>>



<mailto:daniel.brewer@noaa.gov>><mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>  
<mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>>>  
Cc: Mark Mulholland <mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>><mailto:mark.mulholland@  
noaa.gov<mailto:mark.mulholland@noaa.gov>>><mailto:mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>  
<mailto:mark.mulholland@noaa.gov<mailto:mark.mulholland@noaa.gov>>>>; (b) (6) (USA)  
(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6)  
@navy.mil>><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>><mailto:(b) (6) @  
navy.mil<mailto:(b) (6) @navy.mil>>>>; (b) (6) (USA) (b) (6) @navy.mil<mailto:  
(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>><mailto:  
(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>>>>  
Subject: Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

(b) (6)

In part of my inquiries, one good point of contact for you to contact (I added him to this email after my email discussion with him) is Dan Brewer:

daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov><mailto:daniel.brewer@noaa.gov<  
mailto:daniel.brewer@noaa.gov>><mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>  
<mailto:daniel.brewer@noaa.gov<mailto:daniel.brewer@noaa.gov>>>>  
Daniel Brewer  
NWS Sterling Field Support Center<https://no-click.mil/?https://www.weather.gov/soic/>  
703-661-1208

Tom

On Mon, Nov 15, 2021 at 2:31 PM Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<  
mailto:thomas.renkevans@noaa.gov>><mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>>  
<mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>>> wrote:  
I am getting some mild traction, so stand by...

As far as the questions on launch location, wind data, projected path, etc... yes, that does exist.

Go to [https://www.ready.noaa.gov/HYSPLIT\\_traj.php](https://www.ready.noaa.gov/HYSPLIT_traj.php)<[https://no-click.mil/?https://www.ready.noaa.gov/HYSPLIT\\_traj.php](https://no-click.mil/?https://www.ready.noaa.gov/HYSPLIT_traj.php)> and in the main box of "compute forecast trajectories" I believe stepping through all of those pages will allow a user to pick a date, time, location, elevation, and perhaps other parameters and then have a projected path. This may be of some help.

Tom

On Mon, Nov 15, 2021 at 9:15 AM (b) (6) USN (USA) (b) (6) @navy.mil<  
mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>><mailto:(b) (6)  
(b) (6) @navy.mil<mailto:(b) (6) @navy.mil><mailto:(b) (6) @navy.mil<mailto:  
(b) (6) @navy.mil>>>> wrote:  
Mark,

This website shows weather data for dates, but I'm sure someone has an algorithm that given a launch location, pulling in wind data, a projected path can be determined with some range of confidence.

Thanks,

(b) (6)

<https://www.spc.noaa.gov/expert/soundings/><<https://no-click.mil/?https://www.spc.noaa.gov/expert/soundings/>>

From: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>  
<mailto:thomas.renkevans@noaa.gov<mailto:thomas.renkevans@noaa.gov>>><mailto:thomas.renkevans@noaa.gov<  
mailto:thomas.renkevans@noaa.gov>>>> Sent: Monday, November 15, 2021 8:20 AM  
To: (b) (6) USN (USA) <(b) (6) @navy.mil<mailto:(b) (6) @navy.mil>



that you are looking for. So depending on what areas of information you are looking for an SME in, I can try to locate the right folks in the right orgs.

Tom

On Mon, Oct 4, 2021 at 3:17 PM (b) (6) (USA) (b) (6) @navy.mil<mailto:(b) (6)@navy.mil>  
<mailto:(b) (6)@navy.mil<mailto:(b) (6)@navy.mil>><mailto:(b) (6)@navy.mil<mailto:  
(b) (6)@navy.mil>>>> wrote:

Hello Tom and Mark,

So we are a bit more settled in our new space and would like to ask for some POCs at the Sterling facility... We are hoping we could make a visit happen sometime in the next several weeks, COVID permitting...

Tom, you mentioned one of your employees, would he/she be a good place to start? And we can be somewhat vague when describing what we're after—I recognize that clearances will be an issue and we'll just have to be somewhat vague.

Many thanks again for all your help with these issues!

Best,

(b) (6)

[Quoted text hidden]

[Quoted text hidden]

[Quoted text hidden]

Cell: (240) 691-2416 Thomas.Renkevans@noaa.gov<http://www.ospo.noaa.gov><<http://www.ospo.noaa.gov>>  
<<http://www.ospo.noaa.gov>><<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevans - Acting Deputy Chief - NESDIS STAR (Center for Satellite Applications and Research)  
NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
5830 University Research Court, College Park, MD 20740  
Office and Fax: (301) 683-3257  
Cell: (240) 691-2416 Thomas.Renkevans@noaa.gov<http://www.ospo.noaa.gov><<http://www.ospo.noaa.gov>>  
<<http://www.ospo.noaa.gov>><<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevans - Division Chief  
NOAA/NESDIS/OSPO Satellite Products and Services Division  
NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
5830 University Research Court, College Park, MD 20740  
Office and Fax: (301) 683-3257  
Cell: (240) 691-2416 Thomas.Renkevans@noaa.gov<http://www.ospo.noaa.gov><<http://www.ospo.noaa.gov>>  
<<http://www.ospo.noaa.gov>><<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevans - Division Chief  
 NOAA/NESDIS/OSPO Satellite Products and Services Division  
 NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
 5830 University Research Court, College Park, MD 20740  
 Office and Fax: (301) 683-3257  
 Cell: (240) 691-2416 [Thomas.Renkevans@noaa.gov](mailto:Thomas.Renkevans@noaa.gov)<mailto:Thomas.Renkevans@noaa.gov>  
 <mailto:Thomas.Renkevans@noaa.gov<mailto:Thomas.Renkevans@noaa.gov>><mailto:Thomas.Renkevans@noaa.gov><mailto:Thomas.Renkevans@noaa.gov>>>  
<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevans - Division Chief  
 NOAA/NESDIS/OSPO Satellite Products and Services Division  
 NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
 5830 University Research Court, College Park, MD 20740  
 Office and Fax: (301) 683-3257  
 Cell: (240) 691-2416 [Thomas.Renkevans@noaa.gov](mailto:Thomas.Renkevans@noaa.gov)<mailto:Thomas.Renkevans@noaa.gov>  
 <mailto:Thomas.Renkevans@noaa.gov<mailto:Thomas.Renkevans@noaa.gov>><mailto:Thomas.Renkevans@noaa.gov><mailto:Thomas.Renkevans@noaa.gov>>>  
<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Tom Renkevans - Division Chief  
 NOAA/NESDIS/OSPO Satellite Products and Services Division  
 NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
 5830 University Research Court, College Park, MD 20740  
 Office and Fax: (301) 683-3257  
 Cell: (240) 691-2416 [Thomas.Renkevans@noaa.gov](mailto:Thomas.Renkevans@noaa.gov)<mailto:Thomas.Renkevans@noaa.gov>  
 <mailto:Thomas.Renkevans@noaa.gov<mailto:Thomas.Renkevans@noaa.gov>><mailto:Thomas.Renkevans@noaa.gov><mailto:Thomas.Renkevans@noaa.gov>>>  
<http://www.ospo.noaa.gov><<https://no-click.mil/?http://www.ospo.noaa.gov/>> \*\* <http://twitter.com/NOAASatellites><<https://no-click.mil/?http://twitter.com/NOAASatellites>>

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Daniel Brewer  
 NWS Sterling Field Support Center<<https://www.weather.gov/soic/>>  
 703-661-1208

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Daniel Brewer  
 NWS Sterling Field Support Center<<https://www.weather.gov/soic/>>  
 703-661-1208

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 703-661-1208

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Daniel Brewer  
 NWS Sterling Field Support Center<<https://www.weather.gov/soic/>>  
 703-661-1208

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Tue, Feb 22, 2022 at 8:52 AM  
 To: Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>  
 Cc: Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>, Gregory Kochanowicz - NOAA Federal <gregory.kochanowicz@noaa.gov>

Hi Ashby,  
 Circling back to the Navy delayed visit to the COVID outbreak, are you OK with me offering the Navy a site visit?  
 -Dan

On Mon, Jan 3, 2022 at 12:33 PM Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov> wrote:

[Quoted text hidden]

[Quoted text hidden]

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**Ashby Hawse - NOAA Federal** <ashby.hawse@noaa.gov> Tue, Feb 22, 2022 at 9:01 AM  
 To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
 Cc: Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>, Gregory Kochanowicz - NOAA Federal <gregory.kochanowicz@noaa.gov>

Dan,  
 We are still under strict COVID-19 restrictions, but I think we are close to a release on these restrictions. I would like to wait just a month longer, but the word could come at any time to proceed to phase II.

[Quoted text hidden]

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Thu, Feb 24, 2022 at 3:45 PM  
 To: (b) (6) USN (USA)" (b) (6) @navy.mil>  
 Cc: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>, Mark Mulholland <mark.mulholland@noaa.gov>, (b) (6) (USA)" (b) (6) @navy.mil>, (b) (6) (USA)" (b) (6) @navy.mil>

Hi (b) (6)  
 I have put in the request to revisit your visit to NWS in Sterling. As soon as I hear something I'll let you know.  
 Dan

[Quoted text hidden]

[Quoted text hidden]  
703-661-1208

(b) (6) USN (USA) (b) (6) @us.navy.mil> Wed, Mar 2, 2022 at 9:54 AM  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>, (b) (6) USN (USA)"  
(b) (6) @navy.mil>  
Cc: "Renkevens, Thomas M CIV (USA)" <thomas.renkevens@noaa.gov>, "Mulholland, Mark F CTR (USA)"  
<mark.mulholland@noaa.gov>, (b) (6) (USA)" (b) (6) @navy.mil, (b) (6) (USA)"  
(b) (6) @navy.mil>

We are looking forward to it. VR (b) (6)

**From:** Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
**Sent:** Thursday, February 24, 2022 3:45 PM  
**To:** (b) (6) USN (USA) (b) (6) @navy.mil>  
**Cc:** Renkevens, Thomas M CIV (USA) <thomas.renkevens@noaa.gov>; Mulholland, Mark F CTR (USA)  
<mark.mulholland@noaa.gov>; (b) (6) (USA) (b) (6) @navy.mil; (b) (6)  
(USA) (b) (6) @navy.mil>  
**Subject:** Re: [URL Verdict: Neutral]Re: [Non-DoD Source] Re: ready for some POCs at the Sterling SOIC

[Quoted text hidden]

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Wed, Jul 20, 2022 at 1:32 PM  
To: Jordan Salem - NOAA Federal <jordan.l.salem@noaa.gov>

Other background info. Check out the PDF with my heart locations for balloon bursts and UFO. The bar is low :)  
Dan

[Quoted text hidden]

**2 attachments**



**UA Station Maps.gif**  
71K

 **balloon\_location\_26april21.pdf**  
306K



Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

**Re: Weather Balloon Questions**

32 messages

**Thomas Renkevans - NOAA Federal** <thomas.renkevans@noaa.gov> Wed, Apr 19, 2023 at 12:02 PM  
To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>  
Cc: "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Mike,

Sorry for my delay here. As far as your questions, those are all in the purview of the radiosonde folks. The site we took other folks to was out at <https://www.weather.gov/soic/>

Our one main POC out there is Daneil Brewer, copied on this email. Hopefully he can address or pass your questions to relevant folks . Mark and I work in the satellite arm of NOAA and know enough about radiosondes (we are both meteorologists by degree) to know enough, but not the details you are asking.

Tom

On Thu, Apr 13, 2023 at 7:23 AM Rabasco, Michael J CIV (USA) <michael.j.rabasco2.civ@mail.mil> wrote:

Mark/Thomas—

I am new to DOD/USDI/AARO and would love to come visit your operations to learn more about weather balloon/radiosonde design and operations. If that is doable for you, please let me know some dates/times that would work for you.

In the meantime, I do have three questions, and that concerns the average speed and length of time it takes for a radiosonde to descend back to the ground once the balloon bursts and the parachute deploys? Second, would there be any scientific reason to have two balloons tethered to the same single radiosonde payload? Lastly, we would like a tutorial on how to use your global weather balloon tracking data set.

Thanks

Mike Rabasco

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\*\*\*\*\*

Tom Renkevans - Division Chief (he/him)  
NOAA/NESDIS/OSPO Satellite Products and Services Division  
NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
5830 University Research Court, College Park, MD 20740  
Office and Fax: (301) 683-3257  
Cell: (240) 691-2416 [Thomas.Renkevans@noaa.gov](mailto:Thomas.Renkevans@noaa.gov)  
<http://www.ospo.noaa.gov> \*\* <http://twitter.com/NOAASatellites>

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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil>  
To: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>  
Cc: "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Wed, Apr 19, 2023 at 12:56 PM

No problem, thank you for redirecting.

Daniel, look forward to hearing from you.

Best

Mike Rabasco

[Quoted text hidden]

---

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>  
Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>

Thu, Apr 20, 2023 at 10:19 AM

Hi Mike,  
Are you in the Washington DC area? If so, we could coordinate a visit to my office in Sterling, Virginia where we could go through the balloon preparation process, release of the balloon, and see the live data. If we aren't in the same area, then there may be a weather office closer to you where you could observe the same thing.

Regarding your questions...

1) The speed the radiosonde falls back to the ground is a curve dependent on height and the state of the parachute. When the balloon bursts, the parachute hasn't opened yet and the atmosphere is very thin so the rates can be greater than 60 m/s. As the atmosphere becomes thicker and the parachute fully opens, the descent rate is around 20 m/s and gradually slower to 3-5 m/s near the surface. The total descent time is about an hour, but can be as quick as 20 minutes if the parachute doesn't fully open or if no parachute is used. Some remote sites are not using a parachute (Alaska and a few select CONUS locations).

2) Radiosondes are light (<100grams), so I cannot think of a reason to have two balloons attached to a radiosonde. Even when we do larger payloads for intercomparisons (a styrofoam crossbeam with 4 radiosondes attached plus a heavier specialized instrument) we just use a bigger balloon. Just spitballing....two balloons would be used because both balloons were undersized for the payload or they were attempting to get a very fast ascent rate or if the balloons are on a spreader bar then I suppose they could act like a giant sail and perhaps increase your horizontal distance. If the two balloons are latex and constantly rubbing against each other then that would create weak spots in the material and they would burst early.

3) The global data set that we have is located at NOAA's National Center for Environmental Information <https://www.ncei.noaa.gov/data/us-radiosonde-bufr/archive/>. I've cc'd Jay Lawrimore as he is the person to coordinate with all things data.

I hope this helps. Let me know if you want more details or thoughts on any of these topics.

Daniel



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Daniel Brewer  
NWS Sterling Field Support Center  
703-661-1208

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**Thomas Renkevans - NOAA Federal** <thomas.renkevans@noaa.gov>  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Thu, Apr 20, 2023 at 10:32 AM

thanks Daniel... I certainly owe you one (or two!)

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\*\*\*\*\*

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JWICS - [trenkevans@doc.ic.gov](mailto:trenkevans@doc.ic.gov)  
SIPR - [thomas.renkevans@commerce.sgov.gov](mailto:thomas.renkevans@commerce.sgov.gov)

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**Jay Lawrimore - NOAA Federal** <jay.lawrimore@noaa.gov>  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Thu, Apr 20, 2023 at 10:37 AM

Hi Daniel,  
Is this related to the UAPs study? I am going to forward this to Imke Durre who is chief of the Products Section and she along with some in her section are the experts who would be able to provide an overview of the upper air data.

Jay

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--

Jay Lawrimore  
Meteorologist, Dataset Section  
Climatic Science and Service Division  
NOAA's National Centers for Environmental Information (NCEI)  
[151 Patton Ave](#)  
[Asheville, NC 28801](#)  
828-271-4750  
fax: 828-271-4022  
Follow NCEI on Facebook and Twitter (@NOAANCEI)

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>

Thu, Apr 20, 2023 at 10:44 AM

Hi Jay,  
Yes, it is related to UAPs. AARO is a new group that was established last summer by congress. Sorry, these groups keep popping up and I keep sending them to you for data. Next time, I'll send them to Imke.

Daniel

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**Jay Lawrimore - NOAA Federal** <jay.lawrimore@noaa.gov>  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Thu, Apr 20, 2023 at 11:18 AM

ok. thanks Dan. good to know. No problem sending to me but Imke will be better able to help you now that all the upper air folks are in her section.  
I'll cc you on my email to her.

Jay

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**Jay Lawrimore - NOAA Federal** <jay.lawrimore@noaa.gov>

Thu, Apr 20, 2023 at 11:23 AM

To: Imke Durre - NOAA Federal <imke.durre@noaa.gov>

Cc: Bruce Hundermark - NOAA Affiliate <bruce.hundermark@noaa.gov>, Bryant Korzeniewski <Bryant.Korzeniewski@noaa.gov>, Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Hi Imke,

I talked to Dan Brewer at NWS (cc'd here) about this and told him I would forward to you as you have all the upper air folks and expertise in your section. This is related to the UAP (Unidentified Aerial Phenomena) issue that congress had initiated a study of. AARO is a new group that was established last summer by congress. The request related to NCEI is question 3 - where they would like someone to walk them through the upper air data available to them; specifically the bufr data.

If I can do anything to help please let me know.

Jay

----- Forwarded message -----

**From: Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Date: Thu, Apr 20, 2023 at 10:19 AM

Subject: Re: Weather Balloon Questions

To: Rabasco, Michael J CIV (USA) <michael.j.rabasco2.civ@mail.mil>

Cc: Renkevans, Thomas M CIV DOC (USA) <thomas.renkevans@noaa.gov>, Mulholland, Mark F CTR (USA) <mark.mulholland@noaa.gov>, Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>

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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil>

Thu, Apr 20, 2023 at 11:43 AM

To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Hi there, yes we are in DC (Arlington) so me and my team (3 people) would be happy to take a field trip to visit you. We would also like to talk about how best to plug into and use/visualize your data sets. Thank you for the information regarding my questions.

If this sounds good to you, let us know what days/times best work for you.

Mike

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**From: Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Thu, Apr 20, 2023 at 2:11 PM

To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>

Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>, Imke Durre - NOAA Federal <Imke.Durre@noaa.gov>

Hi Mike,

Regarding the data sets, I'm cc'ing a new person to the thread, Imke Durr. She also works at NOAA's NCEI and can help you with the data portion. That would probably be best done separate from a visit to our facility. NCEI is in Asheville, NC.

For a visit to our site, how about Wednesday, May 3rd at 10am? We could do sooner if you are OK with just a show & tell.

Daniel

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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil> Thu, Apr 20, 2023 at 3:03 PM  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>  
Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>, "Durre, Imke CIV (USA)" <imke.durre@noaa.gov>

We have a conflict then, how about Thursday or Friday of that week?

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Fri, Apr 21, 2023 at 2:12 PM  
To: Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>

Happy to help! And the whole thing is intriguing...

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Fri, Apr 21, 2023 at 2:13 PM  
To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>  
Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>, "Durre, Imke CIV (USA)" <imke.durre@noaa.gov>

Hi Mike,

How about Thursday May 4th at 10am?

Daniel

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Tue, Apr 25, 2023 at 9:58 AM  
To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>  
Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>, "Durre, Imke CIV (USA)" <imke.durre@noaa.gov>

Hi Mike,

Just checking in to see if that date and time works.

Daniel

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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil> Tue, Apr 25, 2023 at 12:24 PM  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>  
Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>, "Durre, Imke CIV (USA)" <imke.durre@noaa.gov>

Yes that works for me, we might have 4-5 people, is that ok?

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Tue, Apr 25, 2023 at 1:36 PM  
To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>

Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>, "Durre, Imke CIV (USA)" <imke.durre@noaa.gov>

Mike,

Yes, 4-5 people (or more) is fine. I just sent you an invite. You can either distribute to the other attendees or if you provide me with their email addresses, I can add them. While we are doing the overview portion from ~10:15am - 11am, remote attendees can listen in. The rest will be more walking and talking. There should also be directions in the invite. Let me know if it doesn't come through. Looking forward to the visit!

Daniel

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: Imke Durre - NOAA Federal <Imke.Durre@noaa.gov>

Tue, Apr 25, 2023 at 1:37 PM

Hi Imke,

I was wondering if you wanted to be part of this meeting on Thursday May 4th? I encouraged Mike Rabasco to reach out to you separately, but if he doesn't, maybe Thursday would be a good time for introductions?

Daniel

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**Imke Durre - NOAA Federal** <imke.durre@noaa.gov>  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Tue, Apr 25, 2023 at 6:24 PM

Hi Daniel,

I have been watching this thread and monitoring it for a conclusion. I have a conflict at that time. On Thursday, May 4, but I would be happy to meet with Mike Rabasco and his group separately to discuss radiosonde data and answer any questions.

Perhaps it would make most sense to do that after his walk-through with you.

I will reach out to him directly to make that offer.

Thanks for checking in on this,

Imke

On 4/25/23, Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov> wrote:

> Hi Imke,

> I was wondering if you wanted to be part of this meeting on Thursday May

> 4th? I encouraged Mike Rabasco to reach out to you separately, but if he

> doesn't, maybe Thursday would be a good time for introductions?

> Daniel

>

> On Tue, Apr 25, 2023 at 1:36 PM Daniel Brewer - NOAA Federal <

> daniel.brewer@noaa.gov> wrote:

>

>> Mike,

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>> either distribute to the other attendees or if you provide me with their

>> email addresses, I can add them. While we are doing the overview portion

>> from ~10:15am - 11am, remote attendees can listen in. The rest will be

>> more

>> walking and talking. There should also be directions in the invite. Let

>> me

>> know if it doesn't come through. Looking forward to the visit!

>> Daniel

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>> On Tue, Apr 25, 2023 at 12:24 PM Rabasco, Michael J CIV (USA) <

>> michael.j.rabasco2.civ@mail.mil> wrote:

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>>> Yes that works for me, we might have 4-5 people, is that ok?  
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>>> \*From:\* Daniel Brewer - NOAA Federal <[daniel.brewer@noaa.gov](mailto:daniel.brewer@noaa.gov)>  
>>> \*Sent:\* Tuesday, April 25, 2023 9:59 AM  
>>> \*To:\* Rabasco, Michael J CIV (USA) <[michael.j.rabasco2.civ@mail.mil](mailto:michael.j.rabasco2.civ@mail.mil)>  
>>> \*Cc:\* Renkevans, Thomas M CIV DOC (USA) <[thomas.renkevans@noaa.gov](mailto:thomas.renkevans@noaa.gov)>;  
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>>> H CIV (USA) <[jay.lawrimore@noaa.gov](mailto:jay.lawrimore@noaa.gov)>; Durre, Imke CIV (USA) <  
>>> [imke.durre@noaa.gov](mailto:imke.durre@noaa.gov)>  
>>> \*Subject:\* Re: Weather Balloon Questions  
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>>> [michael.j.rabasco2.civ@mail.mil](mailto:michael.j.rabasco2.civ@mail.mil)> wrote:  
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>>> \*From:\* Daniel Brewer - NOAA Federal <[daniel.brewer@noaa.gov](mailto:daniel.brewer@noaa.gov)>  
>>> \*Sent:\* Thursday, April 20, 2023 2:12 PM  
>>> \*To:\* Rabasco, Michael J CIV (USA) <[michael.j.rabasco2.civ@mail.mil](mailto:michael.j.rabasco2.civ@mail.mil)>  
>>> \*Cc:\* Renkevans, Thomas M CIV DOC (USA) <[thomas.renkevans@noaa.gov](mailto:thomas.renkevans@noaa.gov)>;  
>>> Mulholland, Mark F CTR (USA) <[mark.mulholland@noaa.gov](mailto:mark.mulholland@noaa.gov)>; Lawrimore, Jay  
>>> H CIV (USA) <[jay.lawrimore@noaa.gov](mailto:jay.lawrimore@noaa.gov)>; Durre, Imke CIV (USA) <  
>>> [imke.durre@noaa.gov](mailto:imke.durre@noaa.gov)>  
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>>> Hi Mike,  
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>>> Durr. She also works at NOAA's NCEI and can help you with the data

>>> portion.  
>>> That would probably be best done separate from a visit to our facility.  
>>> NCEI is in Asheville, NC.  
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>>> For a visit to our site, how about Wednesday, May 3rd at 10am? We could  
>>> do sooner if you are OK with just a show & tell.  
>>>

>>> Daniel

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>>> On Thu, Apr 20, 2023 at 11:44 AM Rabasco, Michael J CIV (USA) <  
>>> [michael.j.rabasco2.civ@mail.mil](mailto:michael.j.rabasco2.civ@mail.mil)> wrote:  
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>>> Hi there, yes we are in DC (Arlington) so me and my team (3 people)  
>>> would  
>>> be happy to take a field trip to visit you. We would also like to talk  
>>> about how best to plug into and use/visualize your data sets. Thank you  
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>>> the information regarding my questions.  
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>>> If this sounds good to you, let us know what days/times best work for  
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>>> Mike  
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>>> \*From:\* Daniel Brewer - NOAA Federal <[daniel.brewer@noaa.gov](mailto:daniel.brewer@noaa.gov)>  
>>> \*Sent:\* Thursday, April 20, 2023 10:20 AM  
>>> \*To:\* Rabasco, Michael J CIV (USA) <[michael.j.rabasco2.civ@mail.mil](mailto:michael.j.rabasco2.civ@mail.mil)>  
>>> \*Cc:\* Renkevans, Thomas M CIV DOC (USA) <[thomas.renkevans@noaa.gov](mailto:thomas.renkevans@noaa.gov)>;  
>>> Mulholland, Mark F CTR (USA) <[mark.mulholland@noaa.gov](mailto:mark.mulholland@noaa.gov)>; Lawrimore, Jay  
>>> H CIV (USA) <[jay.lawrimore@noaa.gov](mailto:jay.lawrimore@noaa.gov)>  
>>> \*Subject:\* Re: Weather Balloon Questions

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>>> I've cc'd Jay Lawrimore as he is the person to coordinate with all  
>>> things  
>>> data.  
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>>> I hope this helps. Let me know if you want more details or thoughts on  
>>> any of these topics.  
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>>> Daniel

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>>> On Wed, Apr 19, 2023 at 12:57 PM Rabasco, Michael J CIV (USA) <  
>>> [michael.j.rabasco2.civ@mail.mil](mailto:michael.j.rabasco2.civ@mail.mil)> wrote:  
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>>> No problem, thank you for redirecting.

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>>> Daniel, look forward to hearing from you.

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>>> Best

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>>> Mike Rabasco

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>>> \*From:\* Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>

>>> \*Sent:\* Wednesday, April 19, 2023 12:02 PM

>>> \*To:\* Rabasco, Michael J CIV (USA) <michael.j.rabasco2.civ@mail.mil>

>>> \*Cc:\* Mulholland, Mark F CTR (USA) <mark.mulholland@noaa.gov>; Brewer,

>>> Daniel T CIV (USA) <daniel.brewer@noaa.gov>

>>> \*Subject:\* Re: Weather Balloon Questions

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>>> Mike,

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>>> Sorry for my delay here. As far as your questions, those are all in the

>>> purview of the radiosonde folks.

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>>> The site we took other folks to was out at

>>> <https://www.weather.gov/soic/>

>>> <<https://usg01.safelinks.protection.office365.us/?url=https%3A%2F%2Fwww.weather.gov%2Fsoic%2F&data=05%7C01%7Cmichael.j.rabasco2.civ%40mail.mil%7Ce10a9bdab68d47bf978f08db45954bf6%7C102d0191eeae4761b1cb1a83e86ef445%7C0%7C0%7C638180279765725308%7CUnknown%7CTWFpbGZsb3d8eyJWljojMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6Ikk1haWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sdata=bkC6K1o%2BFZtLSalXVIaWX%2BY5II6A0XiU4gzSx6qLSvU%3D&reserved=0>>

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>>> \*\* <http://twitter.com/NOAASatellites>

>>> <<https://usg01.safelinks.protection.office365.us/?url=http%3A%2F%2Ftwitter.com%2FNOAASatellites&data=05%7C01%7Cmichael.j.rabasco2.civ%40mail.mil%7Ce10a9bdab68d47bf978f08db45954bf6%7C102d0191eeae4761b1cb1a83e86ef445%7C0%7C0%7C638180279765725308%7CUnknown%7CTWFpbGZsb3d8eyJWljojMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6Ikk1haWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sdata=t55Hs7d2h2L3f9BOCJqtUxpXfWBU9Letba6l9pzaBc%3D&reserved=0>>

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>>> Daniel Brewer

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>>> NWS Sterling Field Support Center

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7C102d0191eeae4761b1cb1a83e86ef445%7C0%7C0%7C638180279765725308%7CUnknown%7CTWFpbGZsb3d8eyJWljojMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6Ikk1haWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sdata=bkC6K1o%2BFZtLSalXVIaWX%2BY5II6A0XiU4gzSx6qLSvU%3D&reserved=0>

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>>> Daniel Brewer

>>> NWS Sterling Field Support Center

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>>> Daniel Brewer

>>> NWS Sterling Field Support Center

>>> <<https://usg01.safelinks.protection.office365.us/?url=https%3A%2F%2Fwww.weather.gov%2Fsoic%2F&data=05%7C01%7Cmichael.j.rabasco2.civ%40mail.mil%7Ce10a9bdab68d47bf978f08db45954bf6%7C102d0191eeae4761b1cb1a83e86ef445%7C0%7C0%7C638180279765725308%7CUnknown%7CTWFpbGZsb3d8eyJWljojMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6Ikk1haWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sdata=bkC6K1o%2BFZtLSalXVIaWX%2BY5II6A0XiU4gzSx6qLSvU%3D&reserved=0>>

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>>> Daniel Brewer

>>> NWS Sterling Field Support Center

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> NWS Sterling Field Support Center <<https://www.weather.gov/soic/>>  
> 703-661-1208  
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Dictated with voice recognition software -  
Please excuse errors.

"There is nothing so useless as doing efficiently that which should not be done at all." (Peter Drucker)

Imke Durre, PH.D.  
Chief, Products Section  
Climate Science and Services Division  
NOAA's National Centers for Environmental Information (NCEI)  
151 Patton Avenue  
Asheville, NC 28801  
[imke.durre@noaa.gov](mailto:imke.durre@noaa.gov)  
Direct line: +1 828 271 4870

Customer Support: +1 828 271 4800 or <http://www.ncdc.noaa.gov/contact>  
Facebook: <http://www.facebook.com/NOAANCEIclimate>  
Twitter: Climate: @NOAANCEIclimate

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**Imke Durre - NOAA Federal** <[imke.durre@noaa.gov](mailto:imke.durre@noaa.gov)> Tue, Apr 25, 2023 at 6:44 PM  
To: Daniel Brewer - NOAA Federal <[daniel.brewer@noaa.gov](mailto:daniel.brewer@noaa.gov)>  
Cc: "Rabasco, Michael J CIV (USA)" <[michael.j.rabasco2.civ@mail.mil](mailto:michael.j.rabasco2.civ@mail.mil)>, "Renkevans, Thomas M CIV DOC (USA)" <[thomas.renkevans@noaa.gov](mailto:thomas.renkevans@noaa.gov)>, "Mulholland, Mark F CTR (USA)" <[mark.mulholland@noaa.gov](mailto:mark.mulholland@noaa.gov)>, "Lawrimore, Jay H CIV (USA)" <[jay.lawrimore@noaa.gov](mailto:jay.lawrimore@noaa.gov)>

Hello Mike,

I have a conflict at the time of the meeting on May 4, but one or two colleagues here at NCEI and I can meet with you and your group at a separate time to discuss the relevant radiosonde data.

Some possible times include the following:

Thursday, May 4, 3:30-4:30pm

Monday, May 8, before 11:30am

Regards,  
Imke Durre

On 4/20/23, Daniel Brewer - NOAA Federal <[daniel.brewer@noaa.gov](mailto:daniel.brewer@noaa.gov)> wrote:  
> Hi Mike,  
> Regarding the data sets, I'm cc'ing a new person to the thread, Imke Durr.  
> She also works at NOAA's NCEI and can help you with the data portion. That  
> would probably be best done separate from a visit to our facility. NCEI is

> in Asheville, NC.  
>  
> For a visit to our site, how about Wednesday, May 3rd at 10am? We could do  
> sooner if you are OK with just a show & tell.  
> Daniel  
>

> On Thu, Apr 20, 2023 at 11:44 AM Rabasco, Michael J CIV (USA) <  
> [michael.j.rabasco2.civ@mail.mil](mailto:michael.j.rabasco2.civ@mail.mil)> wrote:

>> Hi there, yes we are in DC (Arlington) so me and my team (3 people) would  
>> be happy to take a field trip to visit you. We would also like to talk  
>> about how best to plug into and use/visualize your data sets. Thank you  
>> for  
>> the information regarding my questions.

>>  
>>  
>> If this sounds good to you, let us know what days/times best work for  
>> you.

>>  
>>  
>> Mike

>>  
>>  
>> \*From:\* Daniel Brewer - NOAA Federal <[daniel.brewer@noaa.gov](mailto:daniel.brewer@noaa.gov)>  
>> \*Sent:\* Thursday, April 20, 2023 10:20 AM  
>> \*To:\* Rabasco, Michael J CIV (USA) <[michael.j.rabasco2.civ@mail.mil](mailto:michael.j.rabasco2.civ@mail.mil)>  
>> \*Cc:\* Renkevans, Thomas M CIV DOC (USA) <[thomas.renkevans@noaa.gov](mailto:thomas.renkevans@noaa.gov)>;  
>> Mulholland, Mark F CTR (USA) <[mark.mulholland@noaa.gov](mailto:mark.mulholland@noaa.gov)>; Lawrimore, Jay H  
>> CIV (USA) <[jay.lawrimore@noaa.gov](mailto:jay.lawrimore@noaa.gov)>  
>> \*Subject:\* Re: Weather Balloon Questions

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>> <<https://usg01.safelinks.protection.office365.us/?url=https%3A%2F%2Fwww.ncei.noaa.gov%2Fdata%2Fus-radiosonde-bufr%2Farchive%2F&data=05%7C01%7Cmichael.j.rabasco2.civ%40mail.mil%7C5282518b2f484dd0ab1308db41abae00%7C102d0191eeae4761b1cb1a83e86ef445%7C0%7C0%7C638175977852974273%7CUnknown%7CTWFPbGZsb3d8eyJWljoimc4wLjAwMDAilCJQljoiv2luMzliLCJBTiI6lk1haWwliCJXVCI6Mn0%3D%7C3000%7C%7C%7C&sdata=9jud0O2FoUOtJB2vyk93K0jz5or1rE8SlajhVTckt54%3D&reserved=0>>.

>> I've cc'd Jay Lawrimore as he is the person to coordinate with all things  
>> data.

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>>  
>> I hope this helps. Let me know if you want more details or thoughts on  
>> any  
>> of these topics.

>>  
>> Daniel

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>>  
>> On Wed, Apr 19, 2023 at 12:57 PM Rabasco, Michael J CIV (USA) <  
>> [michael.j.rabasco2.civ@mail.mil](mailto:michael.j.rabasco2.civ@mail.mil)> wrote:

>>  
>> No problem, thank you for redirecting.

>>  
>>  
>> Daniel, look forward to hearing from you.

>>  
>>  
>> Best

>>  
>>  
>>  
>> Mike Rabasco  
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>>

>> \*From:\* Thomas Renkevens - NOAA Federal <thomas.renkevens@noaa.gov>  
>> \*Sent:\* Wednesday, April 19, 2023 12:02 PM  
>> \*To:\* Rabasco, Michael J CIV (USA) <michael.j.rabasco2.civ@mail.mil>  
>> \*Cc:\* Mulholland, Mark F CTR (USA) <mark.mulholland@noaa.gov>; Brewer,  
>> Daniel T CIV (USA) <daniel.brewer@noaa.gov>  
>> \*Subject:\* Re: Weather Balloon Questions

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>> Mike,  
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>> Sorry for my delay here. As far as your questions, those are all in the  
>> purview of the radiosonde folks.  
>>

>> The site we took other folks to was out at <https://www.weather.gov/soic/>  
>> <<https://usg01.safelinks.protection.office365.us/?url=https%3A%2F%2Fwww.weather.gov%2Fsoic%2F&data=05%7C01%7Cmichael.j.rabasco2.civ%40mail.mil%7C5282518b2f484dd0ab1308db41abae00%7C102d0191eeae4761b1cb1a83e86ef445%7C0%7C0%7C638175977852974273%7CUnknown%7CTWFpbGZsb3d8eyJWljiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6Ikl1haWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sdata=tgqYod36NqlxTF9%2BeRbuThP%2FyHg2MzO%2FTmLVbMoGew4%3D&reserved=0>>

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>> \*\* <http://twitter.com/NOAASatellites>  
>> <<https://usg01.safelinks.protection.office365.us/?url=http%3A%2F%2Ftwitter.com%2FNOAASatellites&data=05%7C01%7Cmichael.j.rabasco2.civ%40mail.mil%7C5282518b2f484dd0ab1308db41abae00%7C102d0191eeae4761b1cb1a83e86ef445%7C0%7C0%7C638175977852974273%7CUnknown%7CTWFpbGZsb3d8eyJWljiMC4wLjAwMDAiLCJQIjoiV2luMzliLCJBTiI6Ikl1haWwiLCJXVCi6Mn0%3D%7C3000%7C%7C%7C&sdata=HOV%2FAGd2zeZ%2B9%2B%2BmNzP1TWeTjXsHnrwa75Tug07IHT0%3D&reserved=0>>

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>> Daniel Brewer  
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> Daniel Brewer  
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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil>

Wed, Jul 26, 2023 at 8:09 AM

To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Hi Daniel—

Another general question regarding weather balloon size to weight ratios. I'm trying to get a sense of the lift capacity of balloons based on the size of the balloon. It seems that your standard pico hobbyist balloon with GPS transmitter (about 1-3 meters in diameter) can haul about 16 grams, while weather balloons (3 meters in diameter at launch) can lift upwards of 500 grams or about 1 pound.

Do you have any reference material on this lift/weight ratio to the size of the balloon? I ask, because we see a large number of balloons of this size (1-3 meters in diameter with tethers and some small payloads) over military operating areas. Given the small size, we are trying to get a sense of the weight range such balloons could carry aloft, and then why types of payloads would match that weight.

Thanks

Mike

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Fri, Jul 28, 2023 at 4:20 PM

To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>

Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Hi Mike,

Regarding the visit, the week of Aug 7th isn't going to work for the program manager to be here. We can push it to the following week, but our conference room is in use all week and the next week). So, our best week isn't until the week of Aug 28th. If that works, I'll pick a date. If you'd prefer to visit sooner, we can make it work.

Regarding the balloon lift vs. size, I'm still looking, but I found the calculations we used when testing balloons. The "Calculations Sheet" has the balloon size data. The "Test" Sheet has how much weight and how fast the balloon traveled. I was hoping to tell you this is how much lift you have per cu.ft of gas, but I haven't come across documentation about that yet...besides googling.

Dan

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 **Balloon Worksheet.xls**  
51K

**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil>

Mon, Jul 31, 2023 at 9:28 AM

To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Hi there, thanks for the below, I would love to try to do it sooner, if at all possible (I'll be on TDY to Hawaii, possibly, the week of the 28<sup>th</sup>.) I could bring a much smaller group, maybe 3 people total? Would that help in terms of logistics?

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Mon, Jul 31, 2023 at 10:50 PM

To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>

Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Hi Mike,

I'll shoot for the week of the 14th and get a date or two for you. Let me know how many you'd like to bring and we can make adjustments from there. The space we can use is our lab which has a tv monitor and then demonstrate a weather balloon release.

Dan

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Mon, Aug 7, 2023 at 1:15 PM

To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>

Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Hi Mike,

How about Thursday August 17th at 10am?

Dan

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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil>

Mon, Aug 7, 2023 at 1:22 PM

To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Perfect. I'll prob have 1-3 people with me.

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Fri, Aug 11, 2023 at 9:52 AM

To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>

Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Mike,

I have to ask...is everyone that is visiting NWS U.S. citizens?

Our plan is to show you an overview of NWS operations for weather balloons, do a demonstration flight, and discuss data flow, but any historical data repository questions we would point you to Jay Lawrimore, cc'd. If there's anything

Daniel

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**Jay Lawrimore - NOAA Federal** <jay.lawrimore@noaa.gov>

Fri, Aug 11, 2023 at 10:08 AM

To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Cc: Imke Durre - NOAA Federal <imke.durre@noaa.gov>, Bruce Hundermark - NOAA Affiliate <bruce.hundermark@noaa.gov>

Hi Dan,

If there are any historical data questions for upper air they can be directed to Imke Durre or Bruce Hundermark. cc'd here. Imke is head of the section responsible for upper air data.

Best regards,  
Jay

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--

Jay Lawrimore  
Meteorologist, Dataset Section  
Climatic Science and Service Division  
NOAA's National Centers for Environmental Information (NCEI)  
151 Patton Ave  
Asheville, NC 28801

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**Mark Mulholland** <mark.mulholland@noaa.gov> Fri, Aug 11, 2023 at 11:57 AM  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Dan - It seems like every time there is something in the news about UAPs, you get another set of DoD visitors! 😞 - Mark M

Mark Mulholland  
Office of Space Commerce (MITRE)  
(571) 246-1467 (Texts OK)  
SIPRNET: [mark.mulholland@commerce.sgov.gov](mailto:mark.mulholland@commerce.sgov.gov)  
JWICS: [mfmulholland@doc.ic.gov](mailto:mfmulholland@doc.ic.gov)

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Fri, Aug 11, 2023 at 12:05 PM  
To: Mark Mulholland <mark.mulholland@noaa.gov>  
Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Sure does. Although this group was supposed to come back in May and had to reschedule. I'm hoping the coordination is helpful in the long run!  
Dan

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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil> Tue, Aug 15, 2023 at 9:47 AM  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>  
Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Yes, and we all have TS clearances. Could you please resend the directions etc?

Thanks

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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil> Wed, Aug 16, 2023 at 12:49 PM  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>  
Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Hi there, sorry to ping you again but can you send direction and entrance information?

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>

Wed, Aug 16, 2023 at 1:10 PM

To: "Rabasco, Michael J CIV (USA)" <michael.j.rabasco2.civ@mail.mil>

Cc: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>

Sorry! Here you go. If you run into any issues, my phone number is 703-661-1208.

Our address is:  
NOAA/National Weather Service  
Sterling Field Support Center  
43741 Weather Service Road  
Sterling, VA 20166

Use the Lightning Road entrance (a safer entrance w/ traffic light)  
When you get to the gate, you can say you are visiting Dan Brewer at SFSC.  
Once you get through the gate, follow the signs to SFSC.  
At the front door, ring the doorbell and we'll let you in.

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Date	Time (UTC)	Index #:	Height Angle	Width Angle	Height (m)	Width (m)	Height (ft)
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1/0/00	N/A	2	27	24.5	1.86	1.59	6.11
1/0/00	14:39	3	26.5	23	1.82	1.49	5.98
1/0/00	13:53	4	27.5	25	1.90	1.62	6.25
1/0/00	16:32	5	26	24	1.78	1.55	5.85
1/0/00	0:00	0	0	0	0.00	0.00	0.00
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1/0/00	0:00	0	0	0	0.00	0.00	0.00
1/0/00	0:00	0	0	0	0.00	0.00	0.00
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1/0/00	0:00	0	0	0	0.00	0.00	0.00
1/0/00	0:00	0	0	0	0.00	0.00	0.00
1/0/00	0:00	0	0	0	0.00	0.00	0.00
1/0/00	0:00	0	0	0	0.00	0.00	0.00
1/0/00	0:00	0	0	0	0.00	0.00	0.00
1/0/00	0:00	0	0	0	0.00	0.00	0.00
1/0/00	0:00	0	0	0	0.00	0.00	0.00
1/0/00	0:00	0	0	0	0.00	0.00	0.00
1/0/00	0:00	0	0	0	0.00	0.00	0.00

Maximum			6.25
Minimum			0.00
Average			6.04
ST Dev			



Width (ft)	Diameter (ft)	Radius (m)	Volume (m <sup>3</sup> )
4.99	5.49	0.84	2.45
5.21	5.66	0.86	2.69
4.88	5.43	0.83	2.38
5.32	5.78	0.88	2.87
5.10	5.48	0.83	2.44
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
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0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00
0.00	0.00	0.00	0.00

5.32	5.78	0.88	2.87
0.00	0.00	0.00	0.00
5.10	5.57	0.85	2.56



Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

### Slides from NOAA/NWS & Navy meeting Upper Air Program

13 messages

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Tue, May 3, 2022 at 4:32 PM  
 To: (b) (6) (USA)" (b) (6) @us.navy.mil>, Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>, Bonnie Thompson - NOAA Affiliate <bonnie.m.thompson@noaa.gov>, (b) (6) USN (USA)" (b) (6) @us.navy.mil>, (b) (6) @us.navy.mil, Christopher Pant - NOAA Affiliate <christopher.r.pant@noaa.gov>, Gregory Kochanowicz <gregory.kochanowicz@noaa.gov>, Hiram Escabi - NOAA Federal <hiram.escabi@noaa.gov>, Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>, (b) (6) USN NIMITZ OPINTELCEN DC (USA)" (b) (6) @us.navy.mil>, Mark Mulholland - NOAA Affiliate <mark.mulholland@noaa.gov>, Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>, (b) (6) USN ONI WASHINGTON DC (USA)" (b) (6) @us.navy.mil>, (b) (6) (USA)" (b) (6) @navy.mil>, Thomas Renkevans - NOAA Federal <thomas.renkevans@noaa.gov>, Xungang Yin - NOAA Federal <xungang.yin@noaa.gov>

Good afternoon,  
 Thank you for visiting and participating in today's meeting. Attached are the slides. You have all of the email addresses on this email, but if you need any clarification of who to contact for what, I can point you in the right direction.  
 Dan

--  
 Daniel Brewer  
 NWS Sterling Field Support Center  
 703-661-1208

**Navy Meeting Briefing May 2022.pptx**  
 3431K

**Thomas Renkevans - NOAA Federal** <thomas.renkevans@noaa.gov> Tue, May 3, 2022 at 6:17 PM  
 To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>  
 Cc: (b) (6) (USA)" (b) (6) @us.navy.mil>, Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>, Bonnie Thompson - NOAA Affiliate <bonnie.m.thompson@noaa.gov>, (b) (6) USN (USA)" (b) (6) @us.navy.mil>, (b) (6) @us.navy.mil, Christopher Pant - NOAA Affiliate <christopher.r.pant@noaa.gov>, Gregory Kochanowicz <gregory.kochanowicz@noaa.gov>, Hiram Escabi - NOAA Federal <hiram.escabi@noaa.gov>, Jay Lawrimore - NOAA Federal <jay.lawrimore@noaa.gov>, (b) (6) USN NIMITZ OPINTELCEN DC (USA)" (b) (6) @us.navy.mil>, Mark Mulholland - NOAA Affiliate <mark.mulholland@noaa.gov>, Neal Dipasquale - NOAA Federal <neal.dipasquale@noaa.gov>, (b) (6) USN ONI WASHINGTON DC (USA)" (b) (6) @us.navy.mil>, (b) (6) (USA)" (b) (6) @navy.mil>, Xungang Yin - NOAA Federal <xungang.yin@noaa.gov>

Dan and SFSC team,  
 Thanks for your hospitality and taking the time with us. I think we all learned a lot, and as a meteorologist, I especially enjoyed it.  
 Tom

[Quoted text hidden]  
 --  
 \*\*\*\*\*

Tom Renkevans - Division Chief  
 NOAA/NESDIS/OSPO Satellite Products and Services Division  
 NOAA Center for Weather and Climate Prediction, Room 3600, E/SP05  
 5830 University Research Court, College Park, MD 20740

Office and Fax: (301) 683-3257  
Cell: (240) 691-2416 [Thomas.Renkevans@noaa.gov](mailto:Thomas.Renkevans@noaa.gov)  
<http://www.ospo.noaa.gov> \*\* <http://twitter.com/NOAASatellites>

\*\*\*\*\*

**Mark Mulholland** <[mark.mulholland@noaa.gov](mailto:mark.mulholland@noaa.gov)> Tue, May 3, 2022 at 6:46 PM  
To: Daniel Brewer - NOAA Federal <[daniel.brewer@noaa.gov](mailto:daniel.brewer@noaa.gov)>, Ashby Hawse - NOAA Federal <[ashby.hawse@noaa.gov](mailto:ashby.hawse@noaa.gov)>, Jay Lawrimore - NOAA Federal <[jay.lawrimore@noaa.gov](mailto:jay.lawrimore@noaa.gov)>, Xungang Yin - NOAA Federal <[xungang.yin@noaa.gov](mailto:xungang.yin@noaa.gov)>, Christopher Pant - NOAA Affiliate <[christopher.r.pant@noaa.gov](mailto:christopher.r.pant@noaa.gov)>, Gregory Kochanowicz <[gregory.kochanowicz@noaa.gov](mailto:gregory.kochanowicz@noaa.gov)>, Bonnie Thompson - NOAA Affiliate <[bonnie.m.thompson@noaa.gov](mailto:bonnie.m.thompson@noaa.gov)>, Hiram Escabi - NOAA Federal <[hiram.escabi@noaa.gov](mailto:hiram.escabi@noaa.gov)>, Neal Dipasquale - NOAA Federal <[neal.dipasquale@noaa.gov](mailto:neal.dipasquale@noaa.gov)>  
Cc: Thomas Renkevans - NOAA Federal <[thomas.renkevans@noaa.gov](mailto:thomas.renkevans@noaa.gov)>

Folks -- Seconding Tom's sentiments. Having been in and around the DoD and IC for most of my 46 years in government and FFRDC sectors, I'd say you hit it out of the park. Thanks again!

Best regards - Mark M

Mark Mulholland  
Office of Space Commerce (MITRE)  
(571) 246 1467 (Texts OK)  
SIPRNET: [mark.mulholland@commerce.sgov.gov](mailto:mark.mulholland@commerce.sgov.gov)  
JWICS: [mfmulholland@doc.ic.gov](mailto:mfmulholland@doc.ic.gov)

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**(b) (6)** (USA) **(b) (6)** @us.navy.mil> Wed, May 4, 2022 at 9:33 AM  
To: "Renkevans, Thomas M CIV DOC (USA)" <[thomas.renkevans@noaa.gov](mailto:thomas.renkevans@noaa.gov)>, "Brewer, Daniel T CIV (USA)" <[daniel.brewer@noaa.gov](mailto:daniel.brewer@noaa.gov)>  
Cc: "Hawse, Ashby L CIV NOAA (USA)" <[ashby.hawse@noaa.gov](mailto:ashby.hawse@noaa.gov)>, Bonnie Thompson - NOAA Affiliate <[bonnie.m.thompson@noaa.gov](mailto:bonnie.m.thompson@noaa.gov)>, **(b) (6)** USN (USA)" **(b) (6)** @us.navy.mil>, **(b) (6)** USN ONI WASHINGTON DC (USA)" **(b) (6)** @us.navy.mil>, Christopher Pant - NOAA Affiliate <[christopher.r.pant@noaa.gov](mailto:christopher.r.pant@noaa.gov)>, "Kochanowicz, Gregory M CIV (USA)" <[gregory.kochanowicz@noaa.gov](mailto:gregory.kochanowicz@noaa.gov)>, "Escabi, Hiram CIV (USA)" <[hiram.escabi@noaa.gov](mailto:hiram.escabi@noaa.gov)>, "Lawrimore, Jay H CIV (USA)" <[jay.lawrimore@noaa.gov](mailto:jay.lawrimore@noaa.gov)>, **(b) (6)** USN NIMITZ OPINTELCEN DC (USA)" **(b) (6)** @us.navy.mil>, "Mulholland, Mark F CTR (USA)" <[mark.mulholland@noaa.gov](mailto:mark.mulholland@noaa.gov)>, "Dipasquale, Neal E CIV (USA)" <[neal.dipasquale@noaa.gov](mailto:neal.dipasquale@noaa.gov)>, **(b) (6)** USN ONI WASHINGTON DC (USA)" **(b) (6)** @us.navy.mil>, **(b) (6)** (USA)" **(b) (6)** @navy.mil>, "Yin, Xungang CIV (USA)" <[xungang.yin@noaa.gov](mailto:xungang.yin@noaa.gov)>

Dan, allow me to echo Tom's thanks—really enjoyed meeting you and seeing your fascinating operation. I learned a huge amount and am very appreciative of the time you all took to show us the operations.

We look forward to working with you all more in the future—it will be a real pleasure!

Best,  
**(b) (6)**

**(b) (6)**, Ph.D.

Research Director

Task Force

Naval Intelligence Activity

Phone: (b) (6)

Secure phone: (b) (6)

NIPR: (b) (6) @us.navy.mil

SIPR: (b) (6) @navy.smil.mil

JWICS: (b) (6) @nmic.ic.gov

[Quoted text hidden]

(b) (6) USN (USA) (b) (6) @us.navy.mil> Wed, May 4, 2022 at 10:24 AM  
 To: (b) (6) (USA)" (b) (6) @us.navy.mil>, "Renkevens, Thomas M CIV DOC (USA)"  
 <thomas.renkevens@noaa.gov>, "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>  
 Cc: "Hawse, Ashby L CIV NOAA (USA)" <ashby.hawse@noaa.gov>, Bonnie Thompson - NOAA Affiliate  
 <bonnie.m.thompson@noaa.gov>, (b) (6) USN ONI WASHINGTON DC (USA)"  
 (b) (6) @us.navy.mil>, Christopher Pant - NOAA Affiliate <christopher.r.pant@noaa.gov>, "Kochanowicz,  
 Gregory M CIV (USA)" <gregory.kochanowicz@noaa.gov>, "Escabi, Hiram CIV (USA)" <hiram.escabi@noaa.gov>,  
 "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>, (b) (6) USN NIMITZ OPINTELCEN DC (USA)"  
 (b) (6) @us.navy.mil>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Dipasquale, Neal E CIV  
 (USA)" <neal.dipasquale@noaa.gov>, (b) (6) USN ONI WASHINGTON DC (USA)"  
 (b) (6) @us.navy.mil>, (b) (6) (USA)" (b) (6) @navy.mil>, "Yin, Xungang CIV (USA)"  
 <xungang.yin@noaa.gov>

Dan,

I want to say thank you too. I was a great visit!!!! I learned so much!!!! If we were to visit Wallops NWS, who would be a good POC to coordinate with at their facility. Being that we would be at Wallops NASA, it seems leveraging a visit would be beneficial.

Thank you again,

(b) (6)

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**Thomas Renkevens - NOAA Federal** <thomas.renkevens@noaa.gov> Wed, May 4, 2022 at 10:39 AM  
 To: (b) (6) USN (USA)" (b) (6) @us.navy.mil>  
 Cc: (b) (6) (USA)" (b) (6) @us.navy.mil>, "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>,  
 "Hawse, Ashby L CIV NOAA (USA)" <ashby.hawse@noaa.gov>, Bonnie Thompson - NOAA Affiliate  
 <bonnie.m.thompson@noaa.gov>, (b) (6) USN ONI WASHINGTON DC (USA)"  
 (b) (6) @us.navy.mil>, Christopher Pant - NOAA Affiliate <christopher.r.pant@noaa.gov>, "Kochanowicz,  
 Gregory M CIV (USA)" <gregory.kochanowicz@noaa.gov>, "Escabi, Hiram CIV (USA)" <hiram.escabi@noaa.gov>,  
 "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>, (b) (6) USN NIMITZ OPINTELCEN DC (USA)"  
 (b) (6) @us.navy.mil>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Dipasquale, Neal E CIV  
 (USA)" <neal.dipasquale@noaa.gov>, (b) (6) USN ONI WASHINGTON DC (USA)"  
 (b) (6) @us.navy.mil>, (b) (6) (USA)" (b) (6) @navy.mil>, "Yin, Xungang CIV (USA)"  
 <xungang.yin@noaa.gov>

So at Wallops, there is the Wallops NASA facility <https://www.nasa.gov/centers/wallops/home> , and the Wallops NOAA NESDIS facility - <https://www.ospo.noaa.gov/Operations/WCDAS/index.html>

I work with the NOAA NESDIS Wallops folks closely, so if there is a desire to discuss things on the NESDIS side, I can help coordinate that. We can chat more tomorrow on what you are thinking there.

Tom

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Wed, May 4, 2022 at 10:40 AM  
 To: (b) (6) USN (USA)" (b) (6) @us.navy.mil>

Cc: (b) (6) (USA)" (b) (6) @us.navy.mil>, "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Hawse, Ashby L CIV NOAA (USA)" <ashby.hawse@noaa.gov>, Bonnie Thompson - NOAA Affiliate <bonnie.m.thompson@noaa.gov>, (b) (6) USN ONI WASHINGTON DC (USA)" (b) (6) @us.navy.mil>, Christopher Pant - NOAA Affiliate <christopher.r.pant@noaa.gov>, "Kochanowicz, Gregory M CIV (USA)" <gregory.kochanowicz@noaa.gov>, "Escabi, Hiram CIV (USA)" <hiram.escabi@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>, (b) (6) USN NIMITZ OPINTELCEN DC (USA)" (b) (6) @us.navy.mil>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Dipasquale, Neal E CIV (USA)" <neal.dipasquale@noaa.gov>, (b) (6) USN ONI WASHINGTON DC (USA)" (b) (6) @us.navy.mil>, (b) (6) (USA)" (b) (6) @navy.mil>, "Yin, Xungang CIV (USA)" <xungang.yin@noaa.gov>

Hi (b) (6)

I'm glad we could be helpful! Wallops NWS personnel are really NASA personnel that are contracted to do NWS weather balloons. Their primary role is to do balloons to support NASA launches. So there is a good chance you may already be coordinating with them, but if not, I'm working on getting their POC.

Dan

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(b) (6) USN (USA) (b) (6) @us.navy.mil> Wed, May 4, 2022 at 10:53 AM  
 To: "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>  
 Cc: (b) (6) (USA)" (b) (6) @us.navy.mil>, "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>, "Hawse, Ashby L CIV NOAA (USA)" <ashby.hawse@noaa.gov>, Bonnie Thompson - NOAA Affiliate <bonnie.m.thompson@noaa.gov>, (b) (6) USN ONI WASHINGTON DC (USA)" (b) (6) @us.navy.mil>, Christopher Pant - NOAA Affiliate <christopher.r.pant@noaa.gov>, "Kochanowicz, Gregory M CIV (USA)" <gregory.kochanowicz@noaa.gov>, "Escabi, Hiram CIV (USA)" <hiram.escabi@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>, (b) (6) USN NIMITZ OPINTELCEN DC (USA)" (b) (6) @us.navy.mil>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Dipasquale, Neal E CIV (USA)" <neal.dipasquale@noaa.gov>, (b) (6) USN ONI WASHINGTON DC (USA)" (b) (6) @us.navy.mil>, (b) (6) (USA)" (b) (6) @navy.mil>, "Yin, Xungang CIV (USA)" <xungang.yin@noaa.gov>

Sounds great!

[Quoted text hidden]

**Ashby Hawse - NOAA Federal** <ashby.hawse@noaa.gov>  
 To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Wed, May 4, 2022 at 11:10 AM

Daniel,

I have all the Wallops staff POC information if you require it.

[Quoted text hidden]

--

**Ashby L. Hawse**

Sterling Field Support Center Site Manager

National Weather Service  
 Sterling Field Support Center  
 43741 Weather Service Rd.  
 Sterling, VA 20166  
 (W) (703) 661-1222, (C) (301) 351-1270

#### Contact Center Information

**Main Line:** (703) 661-1268, Backup Line: (703)661-1293

**Email:** [nws.sfsc@noaa.gov](mailto:nws.sfsc@noaa.gov)

**Website:** <https://www.weather.gov/soic/>

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
 To: Ashby Hawse - NOAA Federal <ashby.hawse@noaa.gov>

Wed, May 4, 2022 at 11:15 AM

Thanks, Greg just sent me a NASA Fed POC that Brian recommended who knows what they do.

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**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Wed, May 4, 2022 at 11:21 AM  
 To: (b) (6) USN (USA)" (b) (6) @us.navy.mil>  
 Cc: (b) (6) (USA)" (b) (6) @us.navy.mil>, "Renkevans, Thomas M CIV DOC (USA)" <thomas.renkevans@noaa.gov>, "Hawse, Ashby L CIV NOAA (USA)" <ashby.hawse@noaa.gov>, Bonnie Thompson - NOAA Affiliate <bonnie.m.thompson@noaa.gov>, (b) (6) USN ONI WASHINGTON DC (USA)" (b) (6) @us.navy.mil>, Christopher Pant - NOAA Affiliate <christopher.r.pant@noaa.gov>, "Kochanowicz, Gregory M CIV (USA)" <gregory.kochanowicz@noaa.gov>, "Escabi, Hiram CIV (USA)" <hiram.escabi@noaa.gov>, "Lawrimore, Jay H CIV (USA)" <jay.lawrimore@noaa.gov>, (b) (6) USN NIMITZ OPINTELCEN DC (USA)" (b) (6) @us.navy.mil>, "Mulholland, Mark F CTR (USA)" <mark.mulholland@noaa.gov>, "Dipasquale, Neal E CIV (USA)" <neal.dipasquale@noaa.gov>, (b) (6) USN ONI WASHINGTON DC (USA)" (b) (6) @us.navy.mil>, (b) (6) (USA)" (b) (6) @navy.mil>, "Yin, Xungang CIV (USA)" <xungang.yin@noaa.gov>

(b) (6)  
 The NASA POC that is a good starting place for the group that does balloons for launch support and NWS soundings is:  
 Doug Voss [douglas.g.voss@nasa.gov](mailto:douglas.g.voss@nasa.gov) 757 824-2315

Dan  
 [Quoted text hidden]

(b) (6) S USN (USA)" (b) (6) @us.navy.mil> Wed, May 4, 2022 at 12:43 PM  
 To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Thanks Dan!  
 [Quoted text hidden]

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov> Wed, Jul 20, 2022 at 1:30 PM  
 To: Jordan Salem - NOAA Federal <jordan.l.salem@noaa.gov>

Just some background info on Upper Air program. There are a few slides at the end (pg 18) that show NCEI's part.  
 Dan

----- Forwarded message -----  
 From: **Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
 [Quoted text hidden]  
 [Quoted text hidden]  
 [Quoted text hidden]

 **Navy Meeting Briefing May 2022.pptx**  
 3431K




**NOAA National Weather Service  
Upper Air Program Review for the Navy's UAPTF  
NWS Sterling Field Support Center  
Sterling, Va  
3 May 2022**

**Hiram Escabi, Jr., NCE, CET  
NWS Upper Air Program Manager  
Email: [hiram.escabi@noaa.gov](mailto:hiram.escabi@noaa.gov)  
Cell: 301-325-8650**





# Program Background



Purpose of the Program: Since the late 1930s, NOAA's National Weather Service (NWS) has taken upper air observations with radiosondes.

Goals or Objectives:



Perform 2 synoptic flights twice daily at 00Z & 12Z.

Perform special synoptic flights as needed due to storms.

Maintain an Operational Availability of 96%.

Upper Air Help Desk 16 hours – 365 days a year. Located in Sterling, VA


Over 81,500 radiosondes flights a year between two UA networks.



Scope:

NWS maintains two upper air networks 1) US Network contains 91 upper air stations in CONUS, Alaska, Hawaii, South Pacific, and Puerto Rico. 2) 10

Cooperative Hurricane Upper Air Stations (CHUAS) network in the Caribbean.



Between the two networks a total of 101 radiosonde stations are managed by NWS Office of Observations, NWSHQ Silver Spring, Maryland.

The next few slides will describe these networks.



Note: Chatham, MA station decommissioned waiting for new site.



# US Network

## Consists of 91 upper air stations:

66 Stations in CONUS

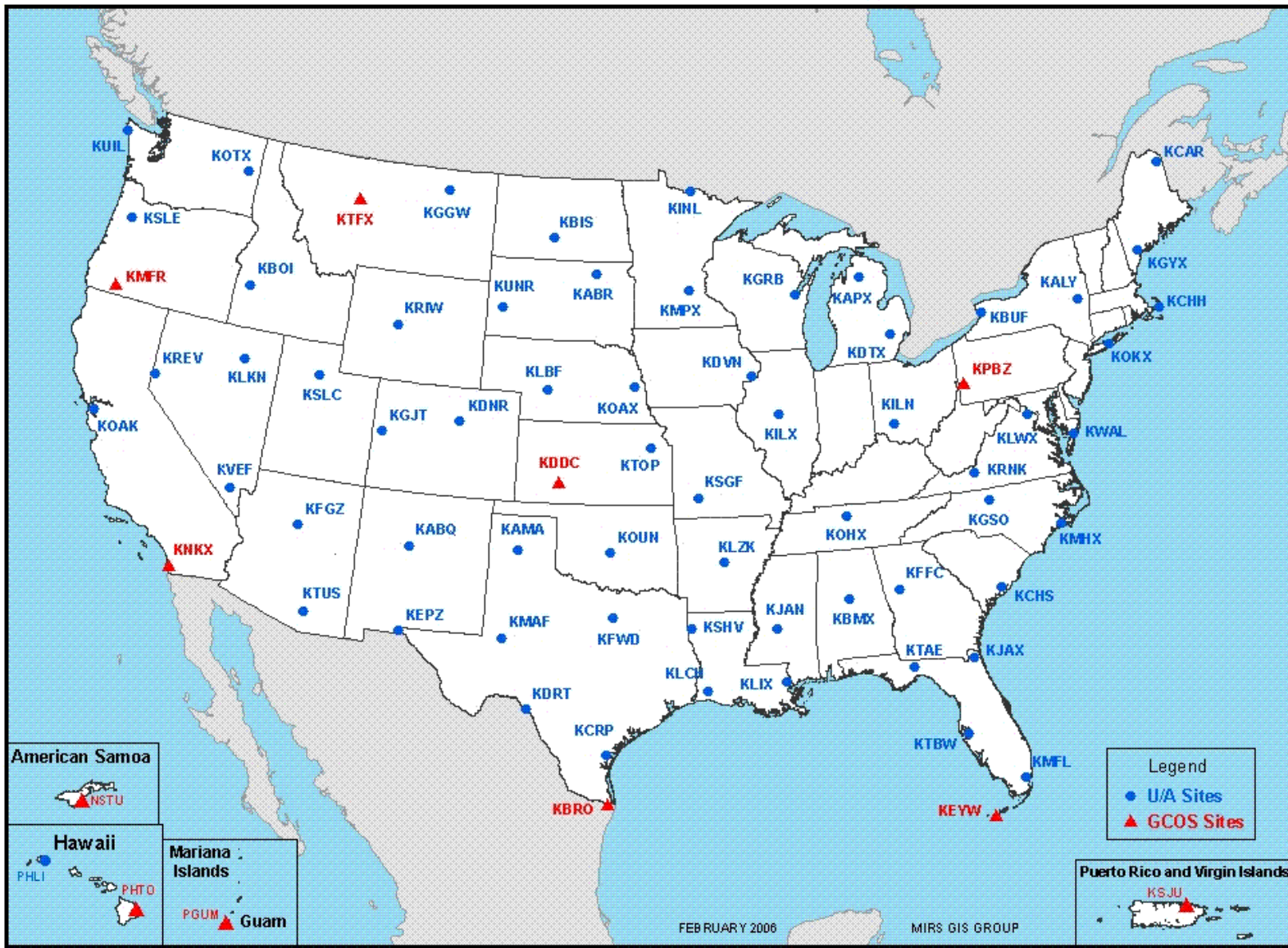
- Chatham, MA decommissioned in 2021

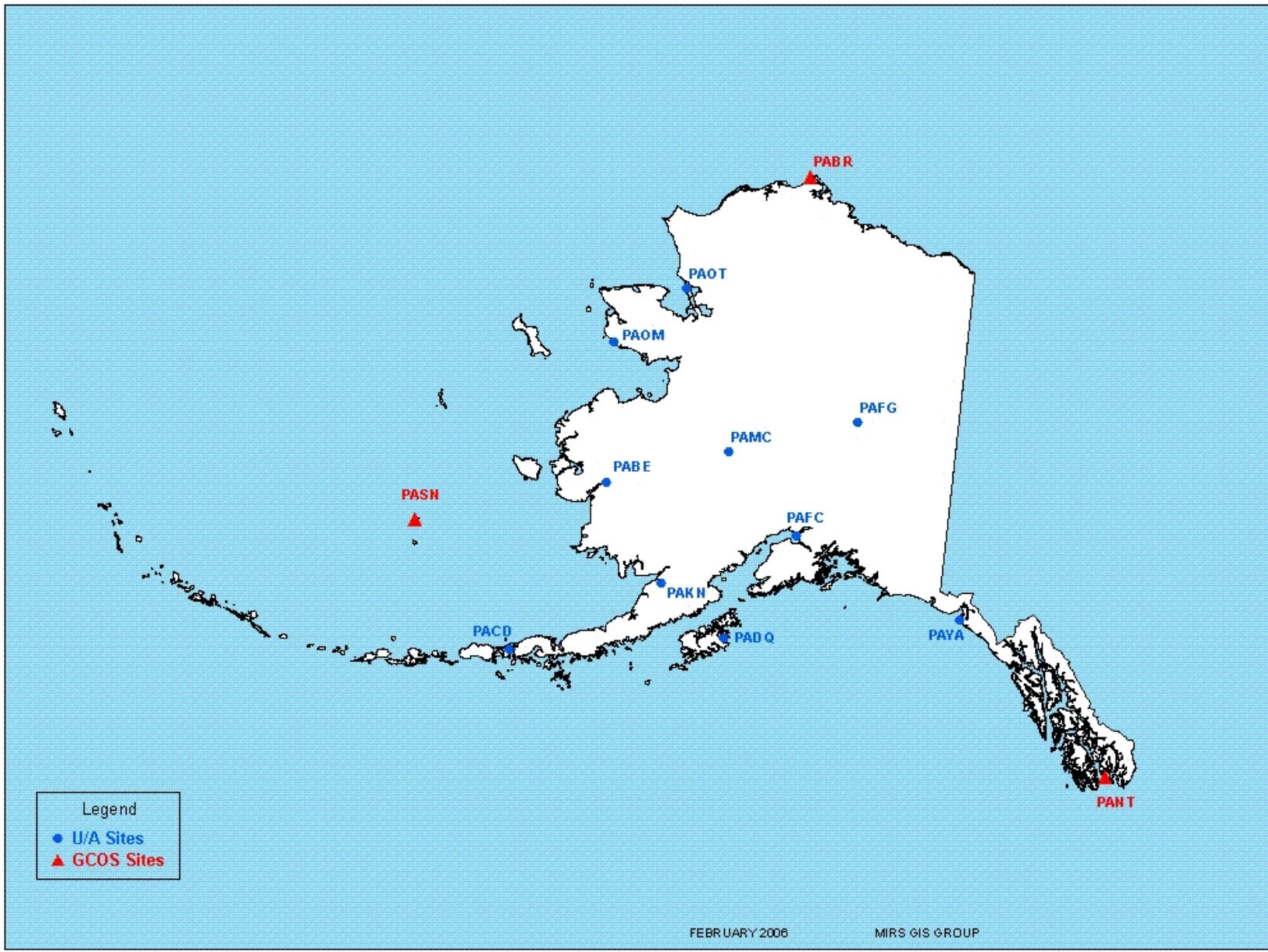
13 Stations in Alaska (Barrow, AK shared with DOE-ARM Program)

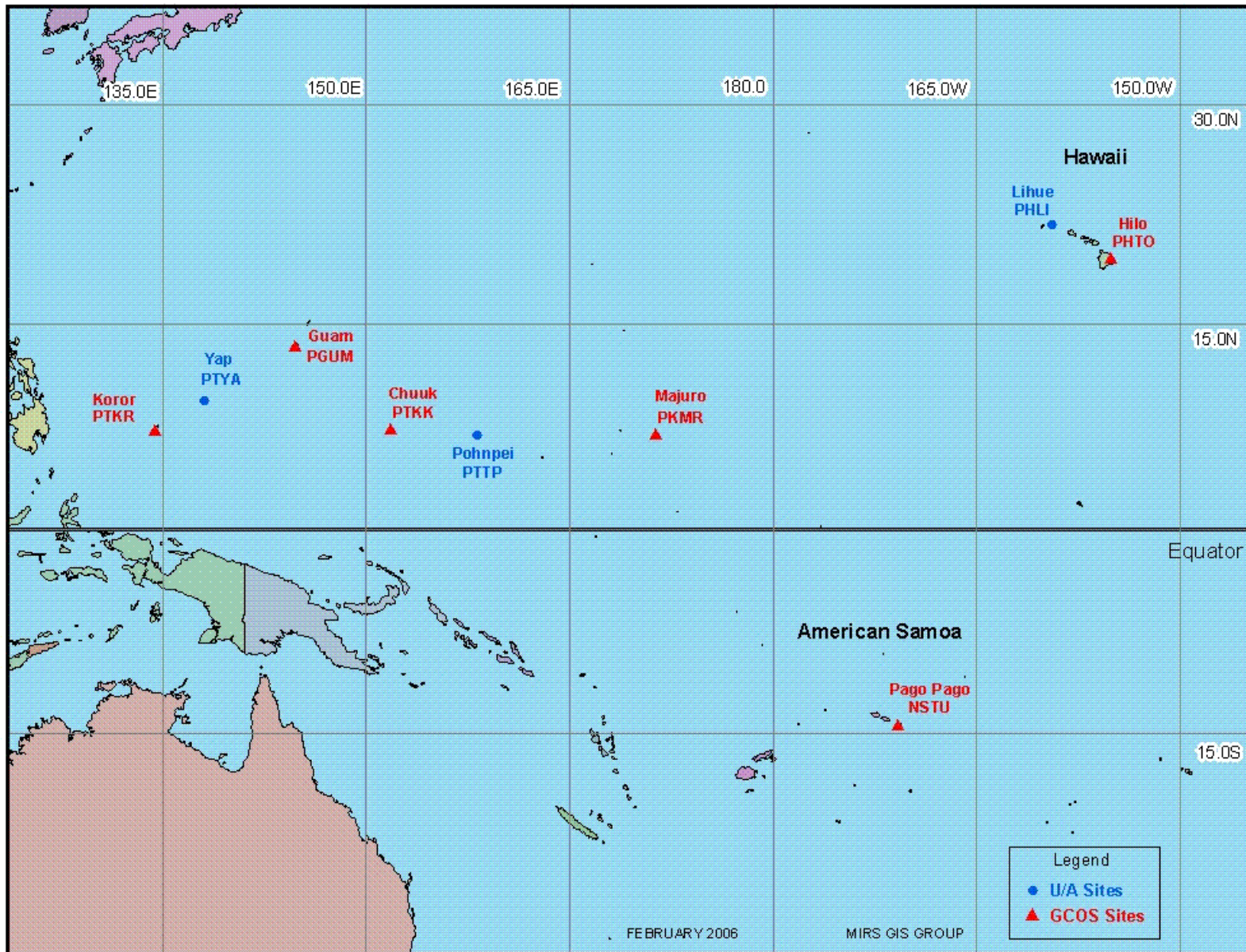
9 Stations in the South Pacific (including Hawaii)

1 Station in the Caribbean (San Juan, PR)

**Stations operated by NWS contractors 10 Stations.**







# CHUAS Network

The Cooperative Hurricane Upper Air Station (CHUAS) is a network of ten upper-air stations covering the Caribbean region. These stations supply observations to the National Weather Service National Hurricane Center (NHC) in Miami, Florida, and the national hydro-meteorological service (NHMS) of each participating Caribbean country in support of its local weather and hurricane forecasting activities. The stations also provide data sets for research. Bilateral agreements between NOAA and the NHMSs were established as early as 1969. The terms of each agreement vary, but the basics include provision of equipment, spare parts and consumables, and assistance with major maintenance and training.

Cooperative Hurricane Upper Air Station Handbook Dated October 2016, Revision D

Radiosonde Ground Equipment (GRAW GS-E).

GRAW DFM-09 radiosonde

350 gram balloons

System Computer. (Fujitsu).

Hydrogen Generator and Storage Tank.

Electrical protection for Hydrogen Generator.

Precision Digital Barometer.

Water Purification System and Reverse Osmosis filters.

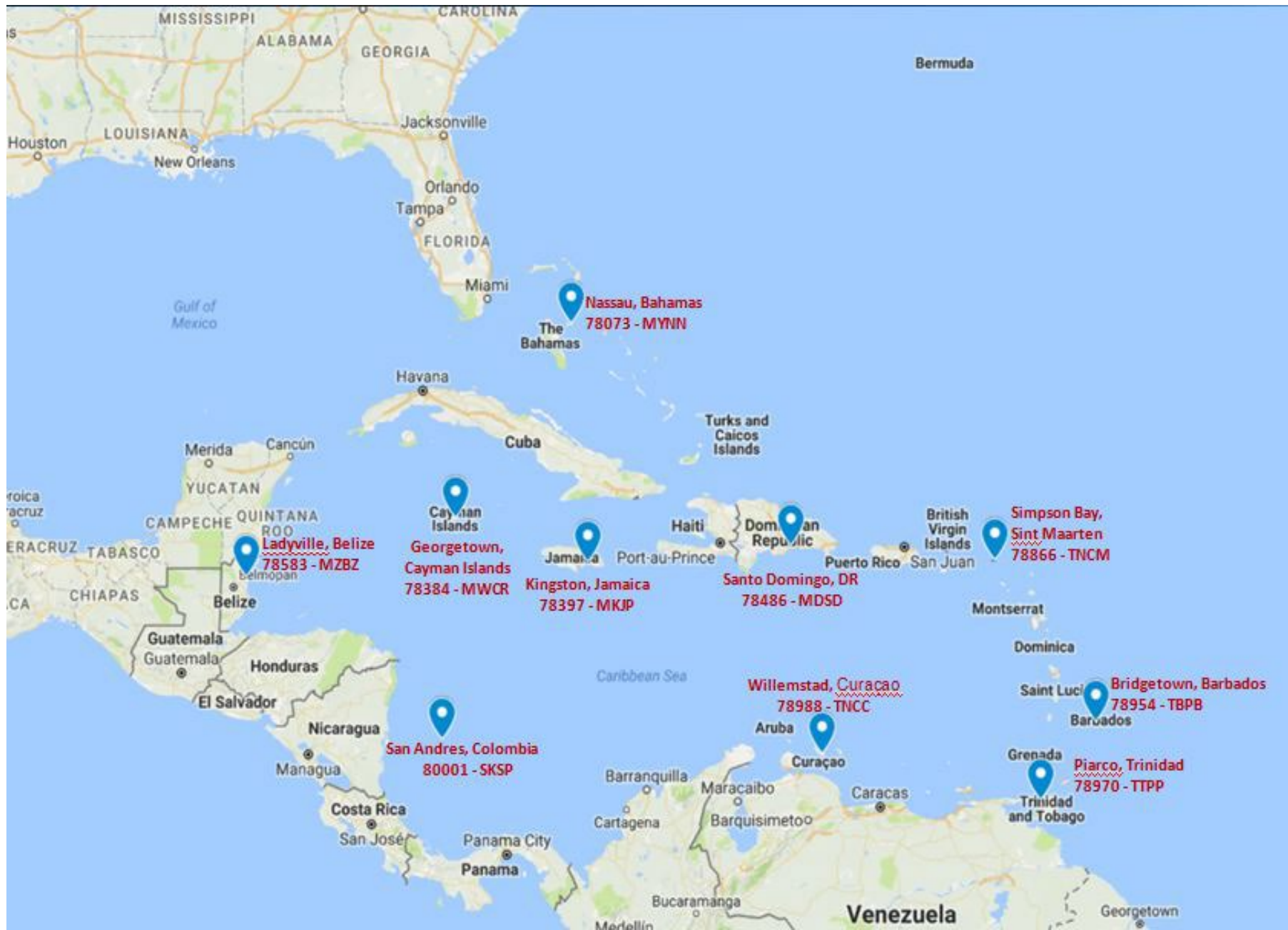
Other Consumables – twine, unwinder.

CHUAS Observer Certification.

CHUAS Equipment Maintenance Training.


First Aid Kits and Safety Glasses.









# Frequency Change





Replace the legacy upper-air tracking system (RRS), which operates at the 1680MHz frequency band, with systems that operate in the 403MHz frequency band.



## Background



As a result of the presidential initiative to repurpose federal radio spectrum for private sector use, the NWS has chosen to replace the existing radiosonde observations network with 403 MHz radio-frequency systems to avoid causing interference with meteorological satellites and industry, rather than redesign the existing equipment.



# The Conversion

NWS has converted some legacy Radiosonde Replacement Systems (RRS) to Vaisala Autosondes (Automated Radiosonde Observing System AROS) in Alaska, Hawaii and some stations in CONUS.

- 21 Stations
- 2 AROS at the Sterling Field Support Center (SFSC) Sterling, VA
- 1 AROS at the National Reconditioning Center (NRC) in Grandview, MO

NWS has converted some legacy RRS stations to the new Manual Radiosonde Observing System (MROS) and will continue to do so.

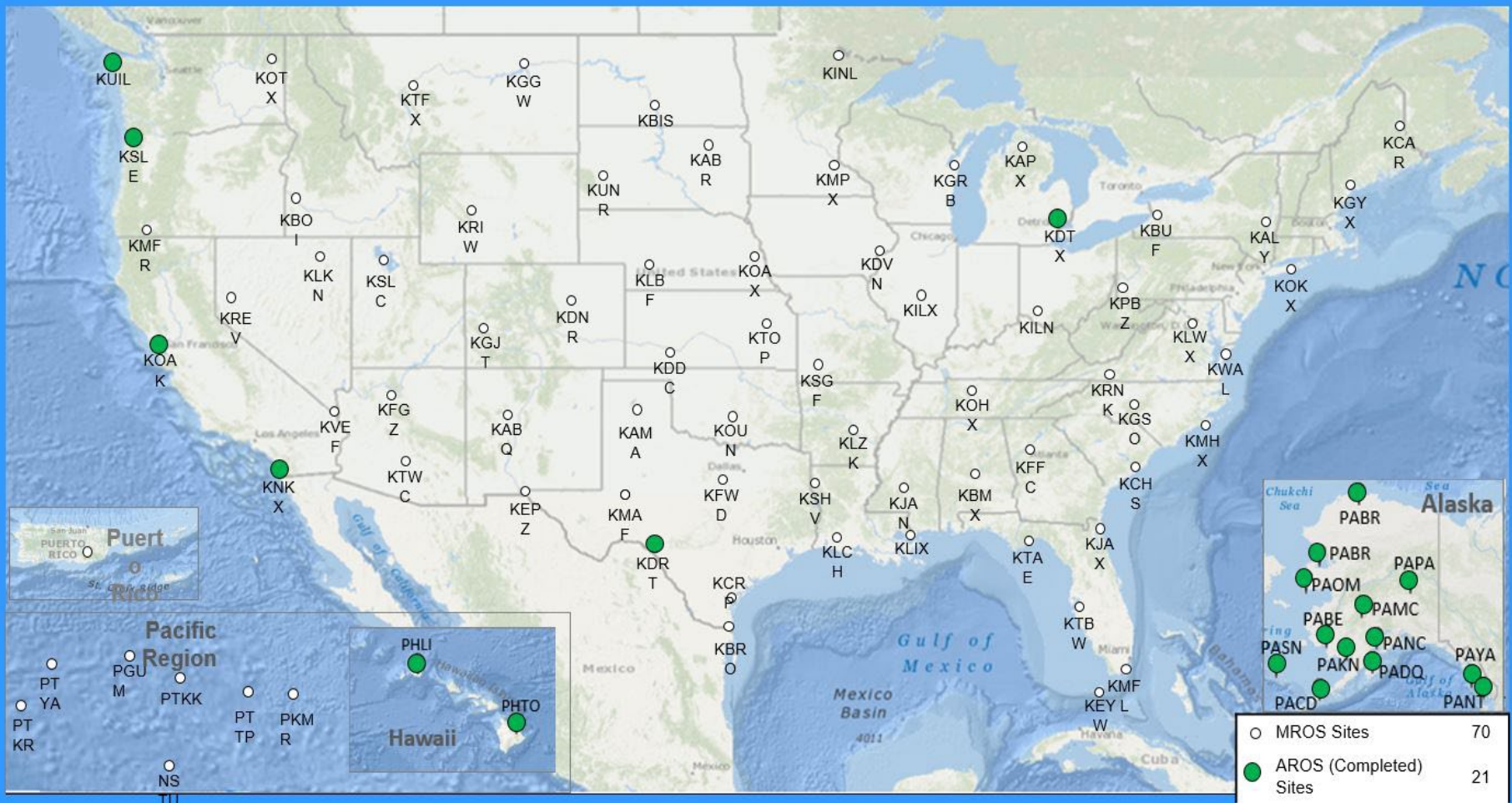
Two vendors were awarded contracts for this effort:

- GRAW from Germany with the DFM-17 radiosonde.
- Vaisala from Finland with the RS41-NG radiosonde.

70 stations are affected 2/3 goes to GRAW, 1/3 goes to Vaisala.



# AROS Site Locations





# MROS Deployments

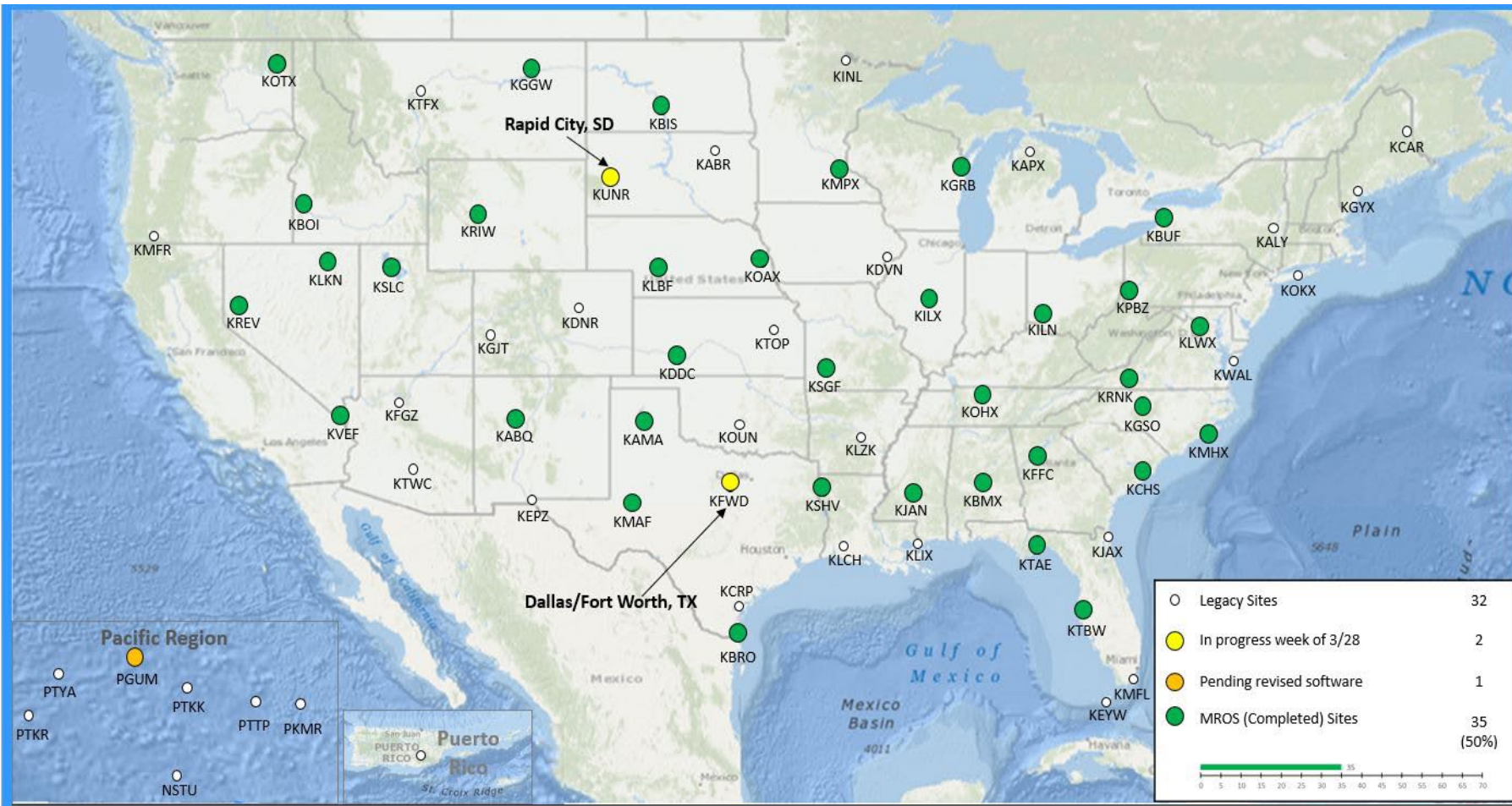
The Manual Radiosonde Observing System (MROS) are being deployed in an accelerated installation schedule:

- Lockheed Martin Sippican (LMS) is exiting the radiosonde market in 2022.\*
- Viasala end of life of the RS92 series radiosondes.

Due to the above issues a traditional Operational Test & Evaluation (OT&E) is not being utilized.


- Normally we perform OT&E, review results, then deployment decision.
- Currently OT&E and deployment in parallel.
- 11 stations are official OT&E sites, but all stations can submit a System Issue Report (SIR).
- System commissioning will start at the end of all depolyments.

# MROS Installations






# The Lifting Gas




**HYDROGEN:** Although hydrogen gas is more volatile than helium (which is non-flammable), most land-based locations use hydrogen because of less cost. The price of hydrogen is only a *fraction of the cost of helium*. Safe practices are strictly adhered to when handling and using hydrogen. Hydrogen is either manufactured and bottled by a gas distributor or produced on site with a hydrogen generator.




40 L Cylinders typical

Proton Hydrogen Generators (34 HOGENS operational) (1 HOGEN at SFSC)



**HELIUM:** Helium is safe and easy to use for inflating balloons. Unlike hydrogen, helium is an inert gas and does not pose a fire potential. However, *helium costs are significantly higher than hydrogen*. Some upper air stations must use helium due to local location safety ordinances, building codes, inside an airport perimeter or Fire Marshall disapproval of hydrogen use.

Hydrogen, the lighter of the two gases, lifts 31.8 grams per cubic foot at sea level while helium lifts 28.2 grams per cubic foot at sea level.



Currently **12 NWS Upper Air Stations use helium as a lifting gas, 89 NWS Upper Air Stations use hydrogen as a lifting gas.** NWS has been using hydrogen as a lifting gas since the 1960s. In the 1970s NWS used the Stuart Electrolizers hydrogen generators.



# Stuart Electrolizer

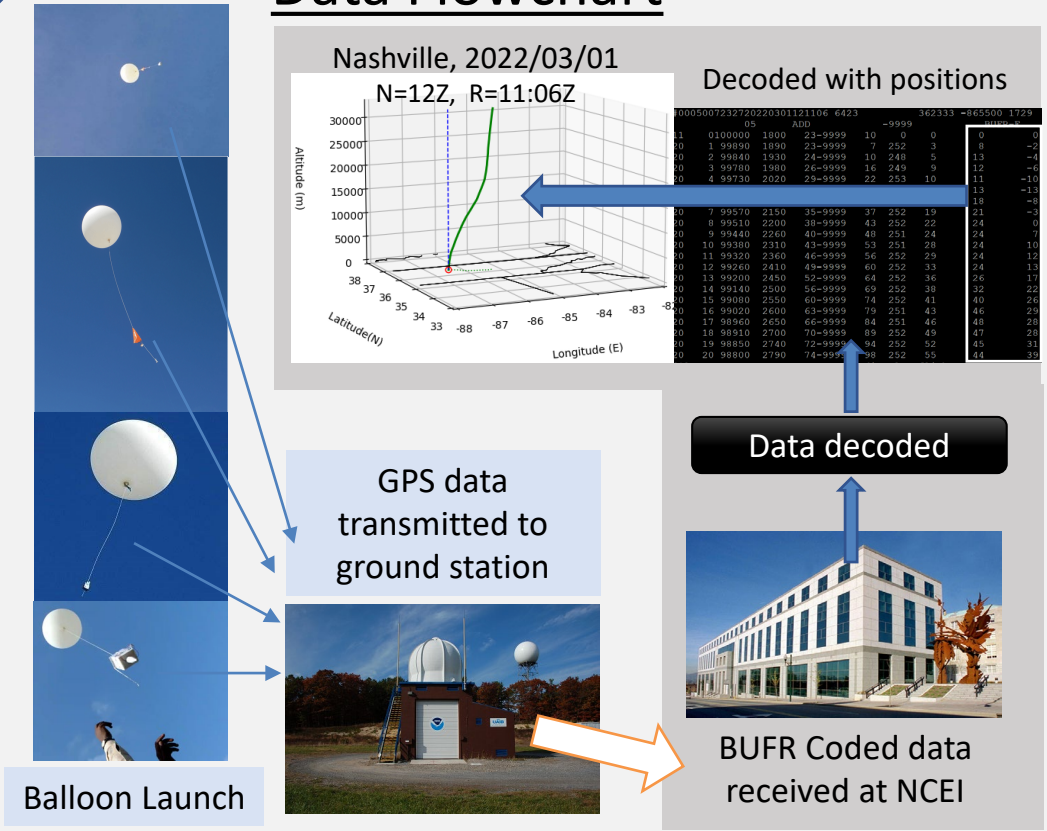


# Nelhydrogen Hydrogen Generator (HOGEN)





# Data Flowchart



## About the Radiosonde data:

- **Data recorded:**
  - **Frequency:** up to 1 second
  - **Levels:** 5-7000
  - **Height:** up to 35 km (or 115k feet)
  - **Drift:** up to 200-300 km (or 120-180 miles)
  - **GPS:** lat/lon displacement
- **Data format:** BUFR format (Binary Universal Form for the Representation of meteorological data)
- Data from 2007.
- **Decoding method:** Using FORTRAN 90, Shell Scripts



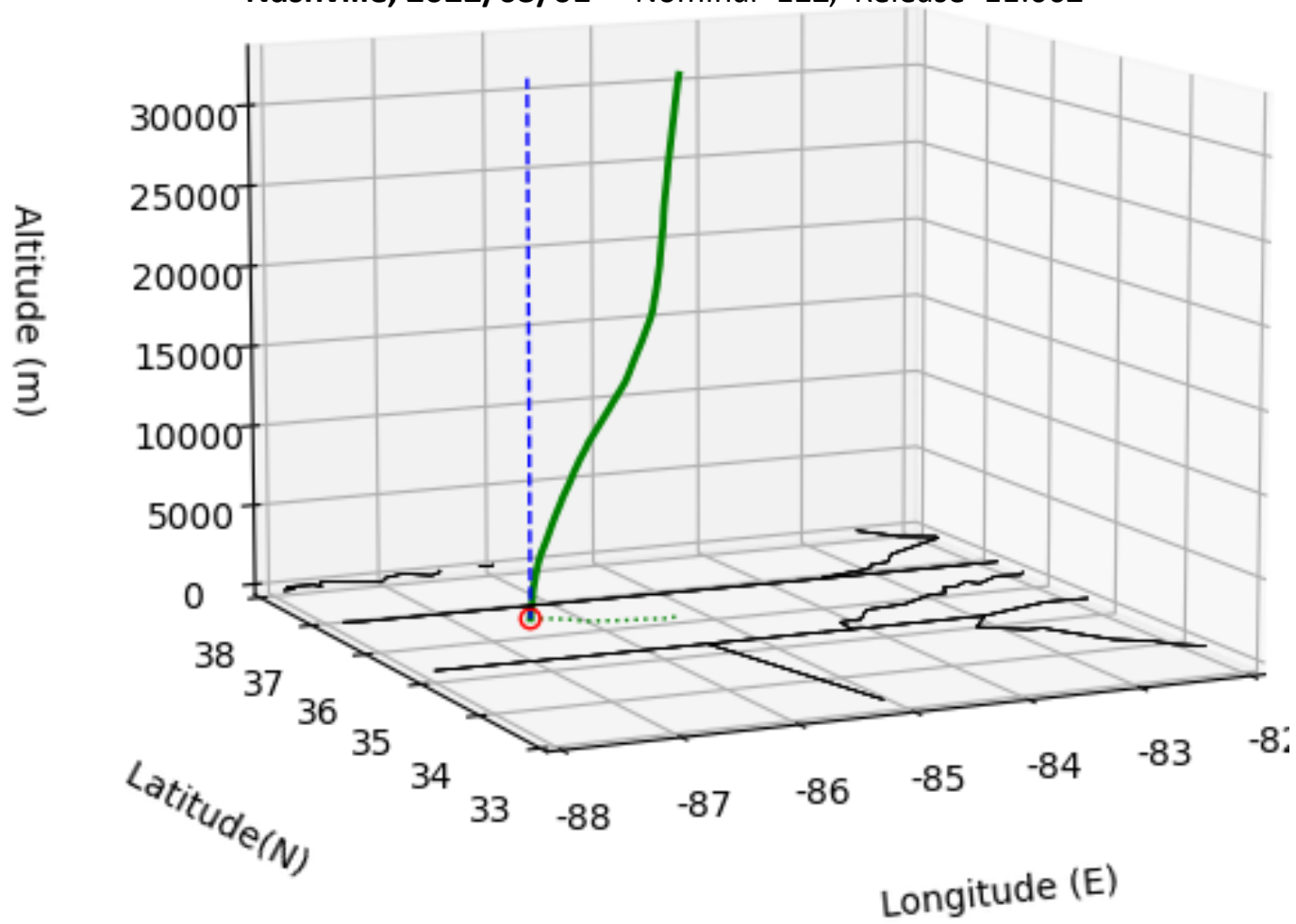
Nashville, 2022/03/01 Nominal=12Z, Release=11:06Z

Elapsed Time (MinSec)		Height (0.10 meter)				Latitude Displacement (10x-5 Deg)	Longitude Displacement (10x-5 Deg)
1	99890	1890	23	252	3	8	-2
2	99840	1930	24	248	5	13	-4
3	99780	1980	26	249	9	12	-6
4	99730	2020	29	253	10	11	-10
....							
....							
10657	680	332220	-421	237	245	-33369	117235
10658	680	332300	-420	237	246	-33361	117253
10659	680	332380	-420	237	247	-33350	117275
10700	680	332460	-419	236	247	-33335	117300
10701	680	332540	-419	236	249	-33320	117331
10702	680	332600	-419	236	249	-33303	117363





Nashville, 2022/03/01 Nominal=12Z, Release=11:06Z





# Questions





Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

### Verifying balloon locations

9 messages

Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Thu, May 12, 2022 at 9:29 AM

To: (b) (6) USN (USA) (b) (6) @us.navy.mil>

Hi (b) (6)

Sorry for the delay. I checked with my supervisor and he said I can help with the list of 15-ish(?) points with the caveat of "as time allows". So I think I can do a few points a week. I'm going to talk to Jay and Yin (NOAA NCEI) and see if there is a way to make the process go a little faster for this batch.

Let me know if this is still helpful and I will wait for the list of locations.

-Dan

--  
Daniel Brewer  
NWS Sterling Field Support Center  
703-661-1208

(b) (6) USN (USA) (b) (6) @us.navy.mil>

Mon, May 23, 2022 at 8:44 AM

To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Cc: (b) (6) (USA) (b) (6) @navy.mil>, (b) (6) (USA)"

(b) (6) @us.navy.mil>

Dan,

Yes, it would be very helpful. I'll put the list together.

Thanks,

(b) (6)

**From:** Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

**Sent:** Thursday, May 12, 2022 9:29 AM

**To:** (b) (6) USN (USA) (b) (6) @us.navy.mil>

**Subject:** [Non-DoD Source] Verifying balloon locations

[Quoted text hidden]

(b) (6) USN (USA) (b) (6) @us.navy.mil>

Tue, Jun 7, 2022 at 8:11 AM

To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Cc: (b) (6) (USA) (b) (6) @navy.mil>, (b) (6) (USA)"

(b) (6) @us.navy.mil>

Dan,

I have attached the list.

Thank you so much,

(b) (6)

**From:** (b) (6) USN (USA) (b) (6) @us.navy.mil>

**Sent:** Monday, May 23, 2022 8:44 AM

**To:** Brewer, Daniel T CIV (USA) <daniel.brewer@noaa.gov>

**Cc:** (b) (6) (USA) (b) (6) @navy.mil>; (b) (6) (USA)"

(b) (6) us.navy.mil>

**Subject:** Re: [Non-DoD Source] Verifying balloon locations

[Quoted text hidden]

 **Date-Time-Location data.xlsx**  
11K

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: Jordan Salem - NOAA Federal <jordan.l.salem@noaa.gov>

Wed, Jul 20, 2022 at 11:00 AM

Hi Jordan,  
Here is the list of lat/lon and times that we need to verify whether an NWS balloon was in that location.  
Dan

[Quoted text hidden]

 **Date-Time-Location data.xlsx**  
11K

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: (b) (6) USN (USA)" (b) (6) @us.navy.mil>  
Cc: (b) (6) (USA)" (b) (6) @navy.mil>, (b) (6) (USA)"  
(b) (6) @us.navy.mil>

Wed, Jul 20, 2022 at 1:18 PM

Hi (b) (6)  
My apologies, but I am just getting to this now. One question: what are the units of the lat/lons? Rows 3 (N3335.6) and 4 (3351.8334) lead me to believe they are Degrees Decimal Minutes, but row 8 (N31114500) leads me to believe it is decimal degrees. Or maybe it is neither? Could you help me decipher the formatting?  
Dan

[Quoted text hidden]

(b) (6) USN (USA)" (b) (6) @us.navy.mil>  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>  
Cc: (b) (6) (USA)" (b) (6) @navy.mil>, (b) (6) (USA)"  
(b) (6) @us.navy.mil>

Fri, Aug 5, 2022 at 10:45 AM

Dan,

Sorry about the confusion. I have added a column and made sure that the locations are all units of degrees, minutes, and seconds format.

Thank you for your assistance,

(b) (6)

**From:** Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

**Sent:** Wednesday, July 20, 2022 1:19 PM

To: (b) (6) USN (USA)" (b) (6) @us.navy.mil>  
Cc: (b) (6) (USA)" (b) (6) @navy.mil>; (b) (6) (USA)"  
(b) (6) @us.navy.mil>

[Quoted text hidden]

[Quoted text hidden]

 **Copy of Date-Time-Location data-rev1.xlsx**  
11K

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: Jordan Salem - NOAA Federal <jordan.l.salem@noaa.gov>

Fri, Aug 5, 2022 at 11:09 AM

Hi Jordan,  
Here is the clarification from the Navy on the lat/lon format. Does that change how you were plotting them?  
Dan

----- Forwarded message -----

From: (b) (6) USN (USA) (b) (6) @us.navy.mil>  
Date: Fri, Aug 5, 2022 at 10:47 AM  
Subject: RE: [URL Verdict: Neutral]Re: [Non-DoD Source] Verifying balloon locations  
To: Brewer, Daniel T CIV (USA) <daniel.brewer@noaa.gov>

[Quoted text hidden]  
[Quoted text hidden]  
[Quoted text hidden]

 **Copy of Date-Time-Location data-rev1.xlsx**  
11K

**Jordan Salem - NOAA Federal** <jordan.l.salem@noaa.gov>  
To: Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

Fri, Aug 5, 2022 at 11:11 AM

Looking at it first hand I think they are the same as what I came up with, but I am going to create a new csv with this and I will upload and compare!  
Thank you  
[Quoted text hidden]

**Daniel Brewer - NOAA Federal** <daniel.brewer@noaa.gov>  
To: (b) (6) USN (USA)" (b) (6) @us.navy.mil>  
Cc: (b) (6) (USA)" (b) (6) @navy.mil>, (b) (6) (USA)" (b) (6) v@us.navy.mil>

Fri, Aug 5, 2022 at 11:26 AM

Thank you (b) (6) We are working on this now.  
Dan  
[Quoted text hidden]



Daniel Brewer - NOAA Federal <daniel.brewer@noaa.gov>

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## Visit Tomorrow

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**Rabasco, Michael J CIV (USA)** <michael.j.rabasco2.civ@mail.mil>  
To: "Brewer, Daniel T CIV (USA)" <daniel.brewer@noaa.gov>

Wed, May 3, 2023 at 6:37 AM

Daniel—

Thanks again for arranging this information session and tour. Happy to give you a quick back brief on our mission while we are there.

As of now, I think we will have the following people in attendance in addition to myself, and will arrive in two cars.

Tina Wyant

James Stevens

Wayne Moticka

Free Robinson

James Bowers (maybe)

Thank you

Mike