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News

Investigation of Cosmic Rays on Atlantic Voyage

An expedition for the study of cosmic rays in the Atlantic area departed from Riga on the "Kislovodsk" on 26 November 1967. The expedition was organized by the Siberian Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation. The vessel returned to Leningrad on 10 March 1968. About 40 tons of special cargo had to be carried, including 10 tons of balloons with hydrogen under a pressure of 150 atm. Cosmic ray observations were made with a three-section neutron monitor, a stabilized system of 35 meson and electron-photon telescopes and with stratospheric balloons. About 40,000 individual measurements were made on shipboard and 64 balloons were launched for measuring cosmic rays and stratospheric temperature. The charged component was registered with a crossed azimuthal telescope which made it possible to use 35 channels for registry of the soft and hard components from different directions at angles 0, 45, 55, 65, 70 and 76° to the vertical. Six additional channels were used for checking telescope operation and determining random coincidences. A neutron monitor was used for studying the planetary distribution of cosmic ray intensity. It was an IGY monitor with Simpson geometry consisting of three sections, each with four SNM-8 counters. The statistical error for the monitor was about ± 0.7 percent during 2 hours of registry. It was calibrated using a radium-beryllium neutron source. Sixty-four of 74 balloon launchings were successful (complete data for each launching are given in a table). The collected information will make it possible to find the barometric coefficients for different cosmic ray components and estimate their dependence on the energy of primary particles in the range $1\text{-}20 \cdot 10^9$ eV.
(Abstract: "Investigations of Cosmic Rays in the Atlantic," by L. I. Dorman; Moscow, Geofizicheskiy Byulleten', No 21, Izd-vo "Nauka," 1970, pp 51-55)

Cosmic Ray Expedition

In accordance with the recommendations of the Section on Cosmic Rays and Radiation Belts of the Soviet Geophysical Committee and the Scientific Council on the Problem "Cosmic Rays," an integrated expedition was organized for investigating the distribution of the intensity of cosmic rays during the period of low solar activity over the territory of the USSR. The expedition was organized by the Siberian Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation Siberian Department Academy of Sciences USSR; the scientific director was Doctor of Physical and Mathematical Sciences L. I. Dorman.

The first stage of the expedition took place during July-October 1965 along the profile Irkutsk-Krasnoyarsk (along the Yenisei), Dudinka (Arctic Ocean), Murmansk-Kandalaksha (White Sea - Baltic Canal; Volga, Don, Sea of Azov), Tbilisi-Ashkhabad-Kushka-Tashkent-Alma-Ata-Novosibirsk-Irkutsk. The apparatus included two neutron monitors with different geometry; a complex counter telescope with 24 different channels for the registry of the μ-meson, electron-photon and general components. Measurements in the stratosphere were made with balloons. Investigations of the distribution of cutoff rigidities important for study of the world picture were made; correlation coefficients between primary and different secondary components of cosmic rays were found (including for oblique telescopes); total multiplicities were found for the generation of secondary particles of different types.

The second stage in the expedition for investigating the distribution of cosmic ray intensity over the territory of the USSR, organized by the Siberian Institute of Terrestrial Magnetism, Ionosphere and Radio Wave Propagation Siberian Department Academy of Sciences USSR under the direction of Doctor of Physical and Mathematical Sciences L. I. Dorman was in August-September 1966. The route covered the eastern regions of the USSR: Irkutsk, Ust'-Kut, then along the Lena River to Tiksi, then by the Northern Sea Route through Bering Strait into the Pacific Ocean to Vladivostok. For this stage of the investigations a special expeditionary 12-counter neutron monitor was developed; it consists of three independently operating sections. The monitor was designed for work in the Arctic at low temperatures and also under conditions close to tropical, a high temperature and humidity. A series of tests made it possible to find measures for improving operation of the monitor. In addition, measurements were made with a telescope and measurements were made in the stratosphere with balloons. These data were processed for finding the spatial distribution of cosmic rays, the correlation coefficients and total multiplicities of generation of secondary particles.

The total results of the expedition will be published in the Rezul'taty Issledovaniy po Mezhdunarodnym Geofizicheskim Proyektam (Results of Investigations Under International Geophysical Projects), a series published by the committee. They are also to be published in the journal "Nuovo Cimento" (Italy).
(Complete translation: "Throughout the Soviet Union," unsigned; Moscow, Geofizicheskiy Byulleten', No 20, 1969, pp 66-67)

JPRS 50591, 26 May 70, S-BGAS No 229, pp 59-60

V. UPPER ATMOSPHERE AND SPACE RESEARCH

News

Cosmic Ray Station at Irkutsk 2216422 ?

The Irkutsk cosmic ray station includes a neutron supermonitor (3 sections), azimuthal telescope (four telescopes of cubic geometry), a 42-channel automatic recording system and an auxiliary recording device. The mean value of the supermonitor (operative since 1967) intensity is 506,000 pulses/hours; for the aximuthal telescope it is 246,000 pulses/hour. The instrument error for the supermonitor is ± 0.35%; for the azimuthal telescope it is ± 0.2%.

(Abstract: "Technical Data for the Cosmic Ray Station at Irkutsk", by M. A. Kovalenko and L. A. Shapovalova; Apatity, Trudy 6-y Vses. Yezhegodn. Zimn. Shkoly po Kosmofiz., Part 2, 1969, p. 129)

/From: Moscow, Referativnyy Zhurnal, Geofizika, Svodnyy Tom, No. 3, 1970, 3A86/

Modification of Dipoles for Rocket Measurements

This article shows wind profiles to altitudes of 32 km obtained on 22 April 1968 using N5, CJ-5/1 and CJ-5/2 dipoles. The author describes the merits of a new type of dipole (CJ-5/2) in comparison with type N5 used earlier. The new type is a standard wind sensor for Polish meteorological rockets. A method for designing dipoles for wind measurements is described on the basis of the new type (CJ-5/2) of dipole.

(Abstract: "Modification of Dipoles for Rocket Measurements), by Jacek Walczewski; Warsaw, Wiadom. Sluzby Hydrol. i Meteorol., 5, No. 3, 1969, pp. 53-59)

/From: Moscow, Referativnyy Zhurnal, Geofizika, Svodnyy Tom, No. 3, 1970, 3A87/

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