RESEARCH INTO SOLAR-TERRESTRIAL CONNECTIONS AND PHYSICAL PROCESSES IN SUN–EARTH SYSTEM FOR POLAR REGIONS

Contact: uzel@iszf.irk.ru

Research activities
I. Complex investigations of the dynamics of the Earth’s magnetosphere and geomagnetic activity using cosmic and ground-based measurements.
II. Research into the physical processes of the polar and subpolar ionosphere and the influence of high-latitude disturbances on the mid-latitude ionosphere on the base of cosmic and ground-based observations.
III. High-latitude monitoring of the fluxes of charged particles, including cosmic rays, in polar Earth’s atmosphere and their connection with solar and geomagnetic disturbances.

Main objectives of the study.
1. Ascertainment of the cause-effect relations, research of the space-time structure and magnetosphere dynamics depending on the characteristics of solar wind and interplanetary magnetic field.
2. Investigation of the mechanisms of the energy receipt into the polar and subpolar ionosphere from the outer magnetosphere regions and the following redistribution of this energy into the low-latitude region.
3. Quantitative description of the manifestations of the magnetosphere–ionosphere connections in the polar and subpolar areas and their man-caused effect (monitoring and space weather prediction).
4. Research of the cosmic rays, processes of the generation of the high-energy particles on Sun, in heliosphere and Earth’s magnetosphere, as well as the influence of the cosmic rays on the atmosphere processes.
5. Making the geophysical data base.

Field activities
The experimental works will take place in the polar regions of Russia from Kolsky peninsula to Chukotka.