

THE MICROSATELLITE COMPASS-2: THE FIRST IZMIRAN'S REMOTE SENSING PROJECT TO SEARCH FOR SEISMO-IONOSPHERIC PRECURSORS

Vitaly Kim

IZMIRAN, Troitsk, Moscow Region, Russia

kimvp@izmiran.rssi.ru

There are numerous reports of ground-based and satellite observations of various ionospheric anomalies before earthquakes. The observed effects include variations in plasma density, airglow intensity, precipitating energetic particle fluxes, and electromagnetic field. Nevertheless, there are still many doubts that the observed ionospheric variations have really been stipulated by pre-earthquake seismic activity. It is because ionospheric perturbations are caused by many factors, mainly of solar and magnetospheric origin. Therefore, goal-directed high sensitive ionospheric observations specially dedicated to the search of ionospheric precursors of earthquakes are required to hit the target. With that end in view, the Russian microsatellite COMPASS-2 has been launched in 2006 within the first IZMIRAN's satellite project to study seismo-ionospheric coupling. COMPASS-2 is a microsatellite specially designed to search for earthquake precursors in the near Earth environment. Total weight of the satellite is about 80 kg. The instrument package include the Dual Frequency Radio Transmitter designed for high-precision measurements of space-time distribution of the electron density, the Radio Frequency Analyser to register the electric component of plasma oscillation spectrums in the 50 KHz - 17.9 MHz frequency band, the Total Electron Content Detector, the Low Frequency Wave Complex to measure low frequency electromagnetic fields in the 1 Hz - 20 KHz frequency band, and the Radiation and Ultraviolet Detector. The scientific objective of the COMPASS-2 mission is to search for ionospheric precursors of earthquakes as well as to study ionospheric effects associated with meteorological and volcanic activities and major technogenic accidents.