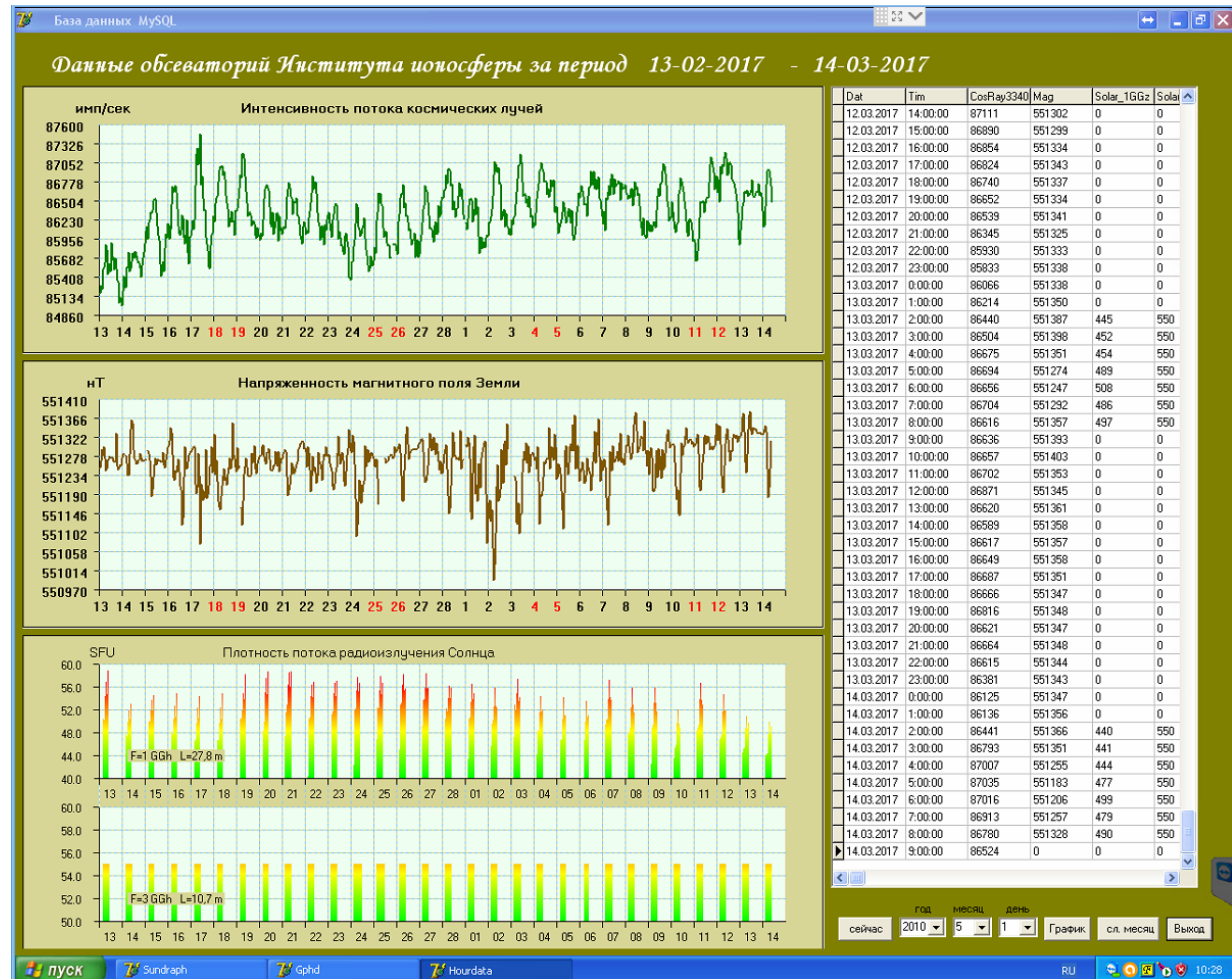


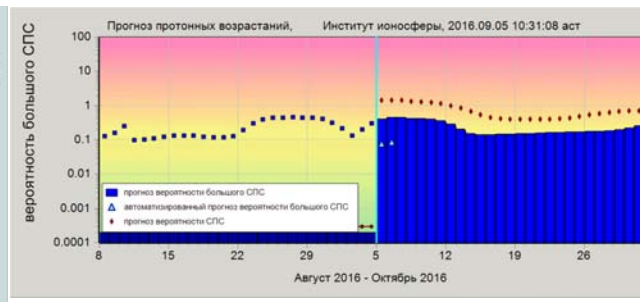
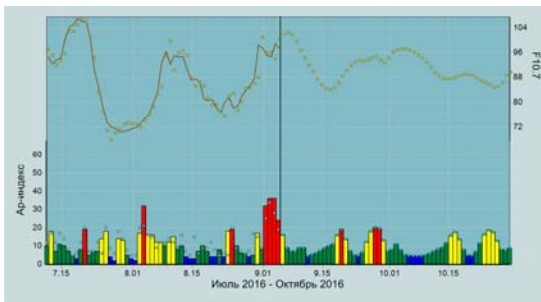
REPORT OF ISWI RELATED ACTIVITIES FOR 2017 IN KAZAKHSTAN

Annexure VIII



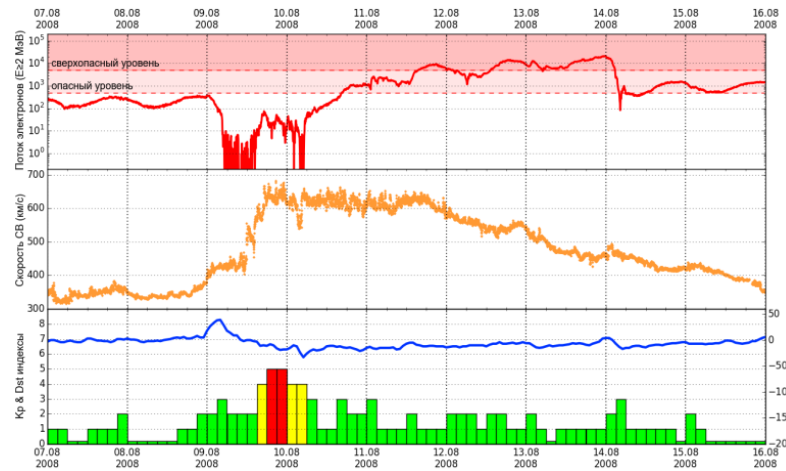
Kazakhstan's multi-level system of key space weather parameter measurements

KAZAKHSTAN SPACE WEATHER PREDICTION CENTER

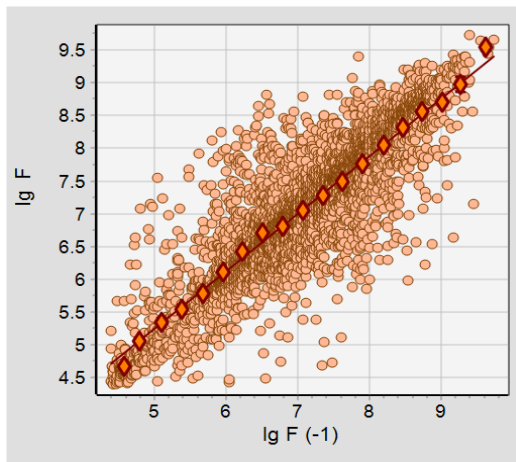


Kazakhstan Space Weather Prediction Center works daily (<http://ionos.kz/?q=en/node/21>). We issue the short-term and long-term forecasts of the magnetic activities (Ap-indexes) and solar activity (F10.7) for 55days, the forecast of probability of a large proton enhancement for 28 days and the forecast of fluence of magnetospheric electrons with energy > 2 MeV at geostationary orbit for 28 days and provide this information to all interested organizations in Kazakhstan.

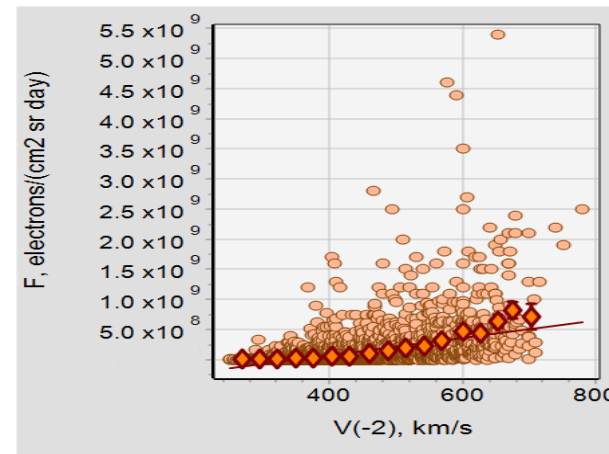
The study of the behavior of high-energy magnetospheric electron fluence at geostationary orbit in 1987-2015 and its connection with the parameters of near space



A typical increase of the electron flux on August 10-15, 2008 after a small magnetic storm and an increase of solar wind speed up to 650 km/s.

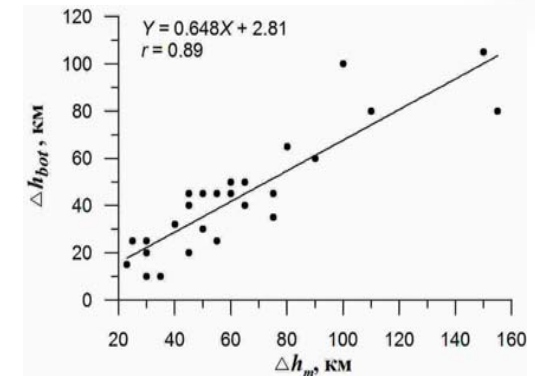
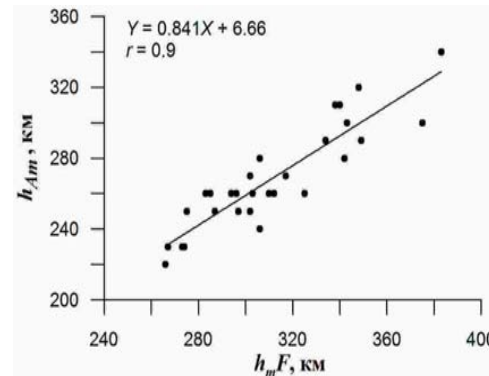
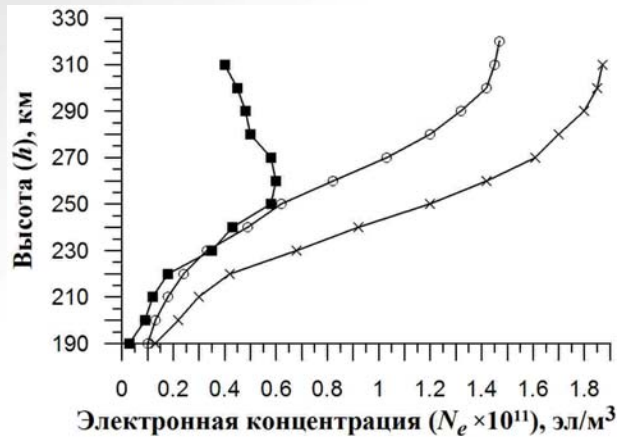


The connection of the daily fluence of the electrons F with the yesterday's fluence $F(-1)$. The number of points is 3970, $r = 0.88$.

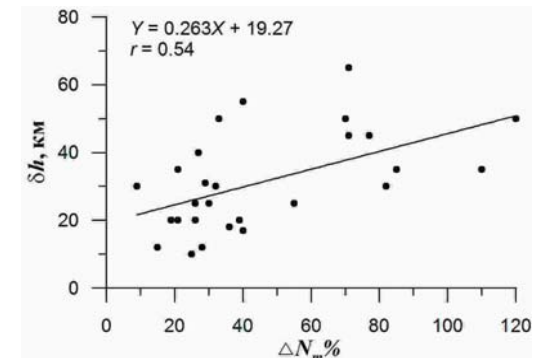
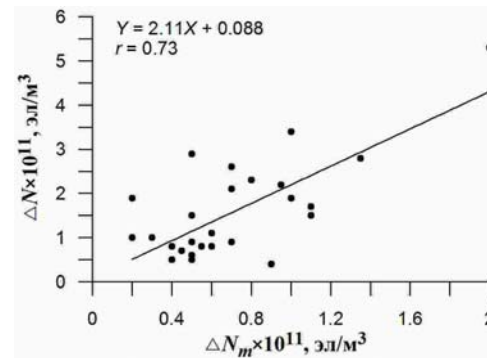
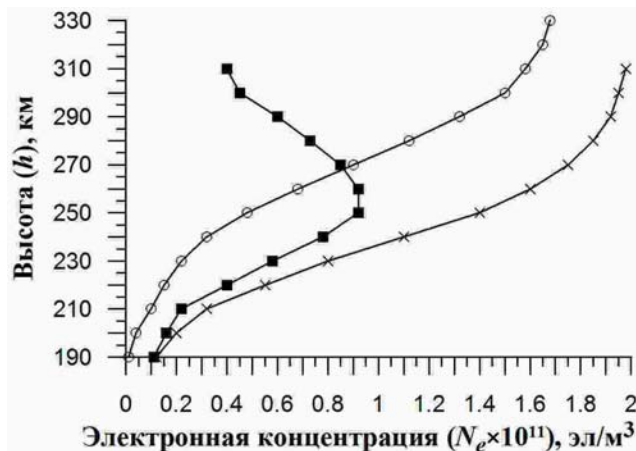


The relation between the electron fluence and the solar wind speed measured 2 days earlier.

BEHAVIOR OF PARAMETERS OF NIGHTTIME ENHANCEMENTS OF ELECTRONIC CONCENTRATION OF IONOSPHERIC F2 LAYER



Scattering diagrams between the heights h_{Am} and $h_m F$ (left panel) and between Δh_{bot} and Δh_m (right panel)



Diagrams of scattering between the amplitude of the enhancements of the electron concentration at the maximum of the layer ΔN_m and the maximum amplitude of the enhancements ΔN (left panel) and between δh and $\Delta N_m \%$ (right panel)

Typical altitude profiles of the enhancements of the electron concentration (■) and $N(h)$ – profiles of the beginning (o) and the end (x) of the enhancements