



Manifestation of strong heliogeophysical disturbances in the troposphere on 31 January 1982 and 14 July 2000

Sergey Molodykh, Gely Zherebtsov, Vladimir Kovalenko, and Olga Rubtsova
Institute of Solar-Terrestrial Physics, Irkutsk, Russian Federation (sim@iszf.irk.ru)

A complex analysis of changes of the Earth's troposphere conditions associated with strong heliogeophysical disturbances on 31 January 1982 and 14 July 2000 was carried out. Average daily data from NCEP/NCAR reanalysis were used to construct sequences of maps of different tropospheric characteristics using a set of standard levels for 33 days (15 days before and 17 days after disturbances).

It was shown that after the strong heliogeophysical disturbances moving structures (both positive and negative anomalies in temperature, pressure, and velocity fields) stopped, their amplitude and size increased. Horizontal gradients in temperature and pressure fields considerably rose. Changes in the temperature field have opposite signs at heights below and above 400 GPa. Seven–ten days later, these structures started moving again, and their amplitude decreased. The global heat content of the troposphere below 400 GPa was shown to increase after the heliogeophysical disturbances considered.