



Tracing of solar wind discontinuities near the Earth orbit at the beginning of Solar Cycle 24

Jakub Enzl, Kostiantyn Grygorov, Oleksandr Goncharov, Lubomir Prech, Jana Safrankova, and Zdenek Nemecek
Charles University, Faculty of Mathematics and Physics, Department of Surface and Plasma Science, Prague, Czech Republic
(jakub.enzl@seznam.cz)

After the end of long Solar Cycle 23 minimum, the solar activity has risen again during last 18 months, as demonstrated by several Coronal Mass Ejections (CME) launched towards the Earth during this time. Solar wind structures like CMEs or Corotating Interaction Regions are usually forerun by shock-like discontinuities (interplanetary shocks) causing abrupt changes of solar wind plasma parameters and therefore changes in magnetospheric boundary positions and various geomagnetic disturbances both in the magnetosphere and on the ground. The discontinuities observed near the L1 point by ACE, Wind, and SOHO can be compared with observations of the spacecraft orbiting in the near-Earth space, where the spacecraft such as Themis/Artemis, Cluster, GEOTAIL, and GOES provide necessary data to study these phenomena. In this study we aim to analyze the observed solar wind discontinuities and describe their propagation from the L1 point through different magnetospheric regions to the Earth. Local and multispacecraft-derived properties of the observed interplanetary shocks are compared and the bow shock dynamics as a consequence of these solar wind discontinuities is studied as well.