



Large-scale structures of solar wind: several results obtained with a catalogue of interplanetary phenomena during 1976-2000

Yu. I. Yermolaev, N. S. Nikolaeva, I. G. Lodkina, and M. Yu. Yermolaev

Space Research Institute, Russian Academy of Sciences, Profsoyuznaya ul. 84/32, Moscow, 117997 Russia (Yermol@iki.rssi.ru)

Large-scale phenomena in the solar wind (SW) play important role in the transportation of energy from the Sun to the Earth. On the basis of the OMNI database of interplanetary measurements we identified SW types for all time intervals during 1976–2000. Our classification includes quasi-steady types: (1) heliospheric current sheet (HCS), (2) slow and (3) fast SW streams, and disturbed types: (4) corotating interaction regions (CIR), (5) sheath and (6) magnetic cloud (MC) and (7) ejecta as well as (8) direct and (9) reverse interplanetary shocks (see catalogue on site <ftp://ftp.iki.rssi.ru/pub/omni/>). We discuss several preliminary results obtained with our catalogue (see more details in http://www.iki.rssi.ru/people/yermol_inf.html) including variations of yearly occurrence rates of SW types during 2 solar cycles. We found that though the lowest values of the B_z -component of IMF are observed in the MC, the lowest values of the Dst -index are achieved in the Sheath. Thus, the strongest magnetic storms are induced, on average, during the Sheath rather than during the MC/ejecta body passage, probably owing to higher value and variations of pressure and IMF in the Sheath. The work was supported by the RFBR, project nos. 04-02-13161 and 07-02-00042.