



Large-scale structures of solar wind and dynamics of parameters in them

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On the basis of OMNI dataset and our catalog of large-scale solar wind (SW) phenomena (see web-site <ftp://ftp.iki.rssi.ru/pub/omni/> and paper by Yermolaev et al., 2009) we study temporal profile of interplanetary and magnetospheric parameters in following SW phenomena: interplanetary manifestation of coronal mass ejection (ICME) including magnetic cloud (MC) and Ejecta, Sheath—compression region before ICME and corotating interaction region (CIR)—compression region before high-speed stream (HSS) of solar wind. To take into account a possible influence of other SW types, following sequences of phenomena, which include all typical sequences of non-stationary SW events, are analyzed: (1) SW/ CIR/ SW, (2) SW/ IS/ CIR/ SW, (3) SW/ Ejecta/ SW, (4) SW/ Sheath/Ejecta/ SW, (5) SW/ IS/ Sheath/ Ejecta/ SW, (6) SW/ MC/ SW, (7) SW/Sheath/ MC/ SW, (8) SW/ IS/ Sheath/ MC/ SW (where SW is undisturbed solar wind, and IS is interplanetary shock) (Yermolaev et al., 2015) using the method of double superposed epoch analysis for large numbers of events (Yermolaev et al., 2010). Similarities and distinctions of different SW phenomena depending on neighboring SW types and their geoeffectiveness are discussed. The work was supported by the Russian Science Foundation, projects 16-12-10062.

References:

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