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Analysis of solar wind observed at Lagrangian point L1 over the last two decades

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The causes of disturbances of the solar wind are either high-speed streams originating in coronal holes or coronal mass ejections (CME). The central meridian passage of the coronal holes precedes the occurrence of high-speed streams in the vicinity of the Earth's magnetosphere by about 3 days. The ion concentration increases at the head of the high-velocity stream and the proton temperature exceeds 100 000 K. According to the velocity of ejection, CMEs can be divided into slow (about 300 km/s) and fast (about 1000 km/s). Slow CMEs are very closely related to eruptive prominences, the visible manifestation of which are disappearing filaments. Fast CMEs, released as a rule from the edges of active regions, are associated with X-ray flares. A distinct feature of CMEs is their low proton temperature. Fast CMEs are often preceded by enhanced flux of solar energetic protons.
Computer based analysis of the solar wind parameters enabled us to judge the causes of disturbances of the solar wind and to estimate the time of the corresponding event on the Sun. The analysis was based on the OMNI2 data sets. We present summary data as well as some interesting examples