Geophysical Research Abstracts
Vol. 20, EGU2018-3458, 2018
EGU General Assembly 2018

Automated Warnings of Earth arrivals (AWARE)

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A new service to automatically detect and classify solar wind disturbances as they arrive in the L1-point upstream of Earth has been federated as part of the ESA/SSA services in the Heliospheric Expert Service Centre. The focus of the service is to detect arrival of disturbances with potential to create geomagnetic storms.

The input to the service is solar wind in situ magnetic field and plasma observations in L1, currently provided in near real-time by NOAA/NASA from the DSCOVR satellite. Periods of significantly enhanced magnetic field are identified and classified according to their most likely cause, being either interplanetary coronal mass ejections (ICMEs) or high speed streams creating stream interaction regions (SIRs). Arrival of significant interplanetary shocks is also detected and included in the classification procedure. The output of the service is a web-display illustrating arrivals for the last 3 days, including alerts for arrivals within the last 24 hours. The display is updated every second minute.

Statistics of the performance of the service is presented and its possible use for geomagnetic storm risk assessment is discussed.