Geophysical Research Abstracts
Vol. 21, EGU2019-3529-1, 2019
EGU General Assembly 2019

Predicted statistics of coronal mass ejections observed by Parker Solar Probe and forward modeling of their in situ magnetic field

Christian Möstl (1), Tanja Amerstorfer (1), Martin A. Reiss (2), Rachel L. Bailey (3), Jürgen Hinterreiter (1), Ute V. Amerstorfer (1), and Noe Lugaz (4)

(1) Space Research Institute, Austrian Academy of Sciences, Graz, Austria (christian.moestl@oeaw.ac.at), (2) NASA Goddard Space Flight Center, Greenbelt, MD, USA, (3) ZAMG, Vienna, Austria, (4) Space Science Center, Institute for the Study of Earth, Oceans, and Space, University of New Hampshire, Durham, NH, USA

We give an update on the statistics and expected parameters of coronal mass ejections (CMEs) to be observed in the upcoming years by Parker Solar Probe (PSP) and other spacecraft in the inner heliosphere such as BepiColombo. Predictions include the CME impact frequency, their duration and their magnetic field strength, based on an extensive catalog including ∼700 in situ CME observations during solar cycle 24 from the EU HELCATS project. PSP will be able to verify exponents of power laws regarding the CME evolution at < 0.3 AU, which feeds into models of CME flux ropes useful for interpretation of in situ solar wind data and space weather forecasting at various planets. Such a semi-empirical flux rope model, 3DCORE, is used here in a seminal manner to forward model the in situ CME magnetic field profiles, to be observed by PSP. A first test of a simulated CME in situ observation with PSP at < 0.3 AU and the challenges associated with this type of modeling are presented here.