



## **Statistics and parameters of solar coronal mass ejections in the inner heliosphere: what to expect for Parker Solar Probe?**

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Solar storms, known as coronal mass ejections (CMEs), play a pivotal role in space weather and heliophysics. The Parker Solar Probe (PSP) will observe CMEs in situ where no man-made object has gone before. In order to anticipate CME observations by PSP, we clarify the dependence of basic properties of CMEs for the first time for both the heliocentric distance and the phase of the solar cycle. We derive CME statistics to be observed by PSP which seem likely from the point of view of the current progress in solar cycle 24. This is done with the most extensive catalog of in situ observed CMEs to date, with 686 events observed at heliocentric distances from 0.31-1.67 AU at Mercury, Venus, Earth and Mars and in the solar wind. This is an outcome of the European Union HELCATS project, with data taken from MESSENGER, STEREO, Venus Express, Wind and MAVEN. The power law describing the CME total magnetic field seems valid up to the solar corona, with an exponent of -1.7. We focus on CME impact frequencies, their magnetic fields, durations and how much time a spacecraft or planet spends inside a CME. These results provide us with a baseline for in situ observations not only by PSP but also for Solar Orbiter, Bepi Colombo and the Cubesat for Solar Particles, CuSP.