New Study Tests Effectiveness of Using STEREO Heliospheric Imagers in Space Weather Forecasting Research

**NASA STEREO** mission data on over 1300 coronal mass ejection (CME) events were used in a recent study in the *Space Weather* journal testing the effectiveness of using **heliospheric imagers** in predicting space weather events at various vantage points in space. These results provide new research that could help develop forecasting models that better predict space weather at Earth, other planets and that could even support NASA activities such as a human exploration at Mars.

The **STEREO data** was sampled over a period of eight years and included information on CME speed, direction, and the width of areas affected by a CME event. The researchers incorporated this information into a model, which allowed them to produce hindcasts of the likelihood that a CME would have encountered a planet (and, if entirely likely, what time the encounter would have taken place). They found that of all the CMEs the model would have predicted, only about a third of them were actually detected by in situ measurements obtained throughout the inner solar system (the rest would have been false alarms).

But even though these hindcasts were far from perfect, those that were not false alarms were accurate to within about 2.5 hours compared to the actual time the solar activity hit Earth. Furthermore, the researchers found that prediction accuracy did not decrease depending on the imager’s distance from Earth. The results have important implications for space weather missions carrying a heliospheric imager at the various Sun-Earth Lagrangian points (e.g., L5 or L1) other locations within the solar system.