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The active Sun and its implication for the heliosphere
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Sun-to-Earth propagation of CMEs and connection with in situ signatures

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The wide-angle imaging observations from STEREO provide a unique capability to characterize CME propagation from the Sun all the way to the Earth. Evolving CME properties determined from imaging observations can also be compared with in situ measurements for a better understanding of the CME-ICME relationship. We have analyzed about 10 Earth-directed events with coordinated imaging observations and in situ measurements, in an effort to investigate CME propagation in interplanetary space. In this presentation we will summarize the results from this statistical analysis, focusing on (1) predicting CME arrival and speed at the Earth; (2) CME interaction with the heliosphere including CME acceleration and deceleration; (3) imaging CME-driven shocks in interplanetary space; and (4) CME-CME interaction. We will also discuss a triangulation concept for future CME observations and space weather forecasting based on the results.