

Project Title:

Determination of solar wind correlation scales using upstream solar wind observations, the implications for space environment forecasting: how many spacecraft and where do we put them?

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Solar wind variations and transient events are the drivers of geomagnetic disturbances which can affect technological systems. A reliable space weather forecasting system will require monitoring of the solar wind conditions upstream of Earth, but the optimal location or locations for such monitoring have not yet been established. Previous and ongoing missions provide a great deal of multipoint data on the upstream solar wind. We will use these data sets to address a number of questions concerning the positioning of a solar wind monitor, including: Over what distance can an upstream monitor reliably predict behavior at a downstream monitor under various solar wind flow conditions? Can a single point monitor provide adequate determination of the orientation of solar wind fronts? A number of existing studies have examined the linear correlation coefficient between pairs of spacecraft, but this technique is a poor indicator of agreement whenever conditions are not rapidly changing. We propose to develop new tools for relating the measurements at multiple upstream spacecraft, including measurements from three spacecraft.

ROSES ID: NRA-00-OSS-01**Duration:****Selection Year:** 2001**Program Element:** Independent Investigation: LWS

Citations: