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Deciphering Solar Wind Influences at Saturn

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Abstract

The effects of the solar wind on Saturn?s magnetosphere are poorly understood because there are no consistent means of direct detection of the solar wind at Saturn. This limits our knowledge of the solar winds impact to case studies of single or few events where Cassini was outside the magnetopause. By statistically comparing solar wind propagation models to Cassini data sets when the Saturn-Sun-Earth angle is < 50 degrees, we can identify proxies for the solar wind behaviour at Saturn. Finding and confirming the relation of these indirect proxies to solar wind propagation models presents the opportunity to open up years of data to interpretation with respect to the solar winds behaviour at the outer planets, using data sets from past missions such as Cassini. This will improve our understanding of how planetary magnetospheres respond to changes in the solar wind.