

Modelling Magnetodisc Response to Solar Wind Events

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Abstract

Theoretical models play an important role in the Planetary Space Weather Services, due to their ability to predict the physical response of magnetospheric environments to compressions or rarefactions in the upstream solar wind flow. We illustrate this aspect by presenting results of some calculations done with the UCL Magnetodisc Model in both ‘Jupiter’ and ‘Saturn’ mode.

For each planet’s space environment, we present model outputs showing the effect of compressions and rarefactions on the global magnetic field, plasma pressure and azimuthal current density. We quantify these effects by comparing these outputs to a nominal ‘average state’ model, reflecting more typical solar wind dynamic pressures. These are examples of the kind of model outputs we aim to make available through the PSWS framework.

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