

The Global Interactions Between the Solar Wind and Magnetosphere

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A Dst index model has been developed and has achieved great success in predicting the Dst variations using the solar wind as the only input [1]. The accuracy of such predictions shows that the Earth's magnetospheric current systems are directly driven by the solar wind and are predictable in a rather deterministic sense. Because of its accuracy, the model has been used as a tool to investigate various physical processes associated with the correlation between solar wind parameters and the different current variations in the magnetosphere. We can also infer the solar wind speed, when it is not measured well, based on the our model prediction, assuming the Dst index and interplanetary magnetic field and solar wind density are accurate. A parametric study of the sensibility of the modeled Dst to various wind parameters will also be discussed in this presentation.

References

- [1] Temerin M., and X. Li, A New Model for the Prediction of Dst on the Basis of the Solar Wind, *Journal of Geophysical Research*, Vol. 107, No. A12, 1472, 2002