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# The Predictability of the Magnetosphere and Space Weather

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Just how predictable is Earth's magnetosphere? With all the recent emphasis in the space physics community on 'space weather,' this has become an important practical question. The question is also fundamental to understanding the dynamics of the magnetosphere. For some years now there has been a mild controversy simmering between those who emphasize that the magnetosphere is mostly driven by the solar wind and thus its variability is due to the variability of the solar wind and those who emphasize that some of its variability is internally generated. Recent studies [Li et al., GRL, 2001; Temerin and Li, JGR, 2002] show that daily averaged radiation-belt electron fluxes at geosynchronous orbit and the Dst index, which measures the disturbance level of the Earth's magnetosphere, are predictable in a rather deterministic sense using solar wind as the only input. The accuracy of these predictions suggests that such large-scale magnetospheric features have a systematic response to the solar wind and chaotic behavior within the magnetosphere has little influence on the global outcome of such large features. In this presentation, I will focus on the Dst index: its derivation, measurements, and prediction.