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Super Storm Dependence upon Solar-Wind-Magnetosphere Coupling GEORGE CLARK, University of Texas at San Antonio, JERRY GOLDSTEIN, JOERG-MICHA JAHN, Southwest Research Institute, RADIATION BELT STORM PROBE TEAM — Statistical relationships were explored between super geomagnetic storms (Dst < -200 nT) and solar wind parameters. We consider coupling parameters such as the Akasofu epsilon parameter, total energy input into the magnetosphere, Kan and Lee electric field, solar wind electric field, and the IMF components. Correlations between super storms and the solar wind help us understand how energy is transferred into the magnetosphere. Data was obtained using the OMNIWeb data center. OMNIWeb complies magnetic field and plasma measurements from a suite of spacecraft (ACE, Geotail, Wind, IMP-8, ISEE3) and Dst measurements from the NOAA and Kyoto data hubs. Results show a strong correlation (r > 0.8) between the solar wind electric field and IMF components as a function of Dst. Moderate correlations (r > 0.6) exist upon the Akasofu epsilon parameter, total energy input, and Kan and Lee electric field with Dst. The total energy input during a super storm is about a factor of two greater than a normal storm and about a factor of six greater in comparison to the solar wind electric field. Results also suggest a natural separation between normal storms and super storms, which suggest different energization mechanisms. Practical applications of this study relate to radiation belt dynamics which threaten our spacecraft and astronauts.

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