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The effect of turbulence on solar wind magnetosphere coupling: case studies

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Recent research indicates that solar wind turbulence appears to be a mixture of propagating Alfvénic fluctuations and convected 2D coherent structures. At the same time, the background local magnetic field plays a key role in the dynamical evolution of turbulence. Intermittency in solar wind turbulence is mainly attributed to flux-tube like coherent structures, discontinuities and scalar gradient structures. The resulting intermittent, multi-scale and anisotropic fluctuations can affect the efficiency of solar wind magnetosphere coupling. In order to study the effect of turbulence on the efficiency of coupling we investigate higher order statistical properties of anisotropic fluctuations together with mean values of other known parameters which control the reconnection of magnetic field lines at the magnetopause. To this end we use magnetic data obtained by several spacecrafts (Interball, Geotail etc.) in the Earth's magnetosheet.