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Clock angle dependence of magnetopause energy transfer

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Currently, the global simulations based on the magnetohydrodynamic (MHD) theory provide the only self-consistent method to describe the coupled solar wind - magnetosphere - ionosphere plasma system using upstream solar wind conditions as input. Global MHD models have been used to investigate energy input into the magnetosphere and they have suggested that Poynting flux focussing controls the magnetopause energy transfer both spatially and temporally. The MHD simulations indicate that the energy transfer at the magnetopause occurs in the high latitudes and has a clear clock angle dependence. Here, we investigate the energy transfer both from the MHD simulations and from observations by Cluster spacecraft.