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Variability of ULF wave power at the magnetopause: a study at low latitude with Cluster data

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Strong ULF wave activity has been observed at magnetopause crossings since a long time. Those turbulent-like waves are possible contributors to particle penetration from the Solar Wind to the Magnetosphere through the magnetopause.
Statistical studies have been performed to understand under which conditions the ULF wave power is the most intense and thus the waves can be the most efficient for particle transport from one region to the other. Clearly the solar wind pressure organizes the data, the stronger the pressure, the higher the ULF power (Attié et al 2008). Double STAR-Cluster comparison has shown that ULF wave power is stronger at low latitude than at high latitude (Cornilleau-Wehrlin et al, 2008). The different studies performed have not, up to now, shown a stronger power in the vicinity of local noon. Nevertheless under identical activity conditions, the variability of this power, even at a given location in latitude and local time is very high. The present work intends at understanding this variability by means of the multi spacecraft mission Cluster. The data used are from spring 2008, while Cluster was crossing the magnetopause at low latitude, in particularly quite Solar Wind conditions. The first region of interest of this study is the sub-solar point vicinity where the long wavelength surface wave effects are most unlikely.