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Large-scale plasma transport in the magnetotail during different solar wind conditions

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We present results from a study on how solar wind conditions affect the energy and plasma transport in the geomagnetic tail and how they modify the large-scale magnetotail configuration. We study the large-scale plasma transport in the magnetotail using tail observations from the five THEMIS spacecrafts during 2008-2011. During this period the THEMIS spacecraft spent a considerable time in the geomagnetic tail allowing us to compile statistical maps of plasma flow and energy transport properties. Furthermore, this time period corresponds to the extended and prolonged solar activity minimum between solar cycle 23 and 24 and relatively quiet rising phase of cycle 24. This allowed us to investigate magnetospheric processes and solar wind-magnetospheric coupling during relatively quiet state of the magnetosphere. In order to separate the role of different solar wind parameters and their activity level on the average sunward and tailward plasma flows and the occurrence rate of fast plasma bursts, the magnetospheric data was binned according to solar wind speed, dynamic pressure and IMF measurements. Our results show that the tailward flow bursts are not dependent on the solar wind conditions, but that the sign of the IMF z-component (GSM coordinates) causes the most visible effect to the occurence rate and pattern of sunward flows.