Geophysical Research Abstracts
Vol. 12, EGU2010-3561, 2010
EGU General Assembly 2010

Themis observations of the LLBL spatial profile

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A study of spatial and temporal profiles of the Low-latitude boundary layer (LLBL) is important for our understanding of processes involved in formation of this layer as well as in plasma transfer processes at the boundary between the magnetosheath and plasma sheet. In situ observations by five Themis spacecraft during their "string-of-pearls" configuration provide us with the comprehensive data set for a detail analysis of the LLBL structure. Preliminary results revealed smooth and monotonous changes of the ion density and temperature over a whole thickness of the LLBL that is near 1 Re under steady upstream conditions and the positive Bz component of the interplanetary/magnetosheath magnetic field. We present a case study under both quiet conditions and sudden changes of the magnetic field orientation leading to reformation of the LLBL profile from smooth to non-monotonous. We found distortions of the magnetopause surface as the main reason of apparent non-monotonous LLBL structure.