# Flux transfer event in a wavy dayside low-latitude boundary layer seen by THEMIS under northward interplanetary magnetic field

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On 8 June 2007, the THEMIS satellites with a string-of-pearls configuration traversed a low-latitude boundary layer (LLBL) at ˜16 MLT (magnetic local time) during an extended interval of northward interplanetary magnetic field. Data from the TH-A satellite show quasi-periodic (1-3 min period) entries from the LLBL to the plasma-depletion-layer (PDL) part of the magnetosheath and vice versa, suggestive of a surface wave on the magnetopause. Flux transfer events (FTEs) were identified often when the satellite crossed the wavy boundary from the LLBL to PDL. Grad-Shafranov and MHD reconstructions of the velocity and magnetic fields show that Kelvin-Helmholtz (KH) waves with a length of ˜1 Re and width of less than 2000 km were propagating tailward along the magnetopause and that a magnetic island was embedded between two KH vortices. We thus infer that FTEs in this particular event are generated by magnetic reconnection initiated at the trailing (subsolar-ward) edge of the KH waves where the magnetopause current sheet, though its magnetic shear being low, can be compressed by vortex flow. The aspect ratio of the vortices suggests that the KH instability (KHI) is not (yet) in the nonlinear stage, and the vortex width, which is smaller than the LLBL width (˜0.5 Re) estimated from the multi-point observations, suggests that dense magnetosheath-like ions in this LLBL is due to capture of solar wind via double cusp reconnection or to diffusive transport rather than to the KHI. The wavy LLBL interval occurred immediately after a sudden decrease in the solar wind dynamic pressure that caused expansion of the magnetosphere, from which seed perturbations for the KHI may have resulted.