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Observations of the cold dense plasma at the magnetopause

J. Simunek (1), O. Tkachenko (1), G. Granko (2), J. Safrankova (2), and Z. Nemecek (2)

(1) Institute of Atmospheric Physics, Prague, Czech Republic, (2) Charles University, Faculty of Mathematics and Physics, Department of Surface and Plasma Science, Prague, Czech Republic

The Low-latitude boundary layer (LLBL) is believed to be formed by lobe reconnection during periods of the northward IMF orientation, thus it would be populated with accelerated magnetosheath plasma. However, several observations of plasmaspheric plumes containing cold and dense ions of the ionospheric origin in the vicinity of the dayside magnetopause were reported. 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 and sources of the LLBL plasma. Preliminary results revealed simultaneous presence of both magnetosheath and ionospheric populations inside the LLBL and gradual acceleration of ionospheric ions to magnetosheath energies. The contribution deals with a detail analysis of the LLBL feeding with these populations and with the role of cold dense ions in the formation of magnetopause layers via reconnection process.