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Cold dense plasma observed at the magnetopause

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The Low-latitude boundary layer (LLBL) is generally formed by lobe reconnection during periods of the northward IMF orientation, thus it would be populated with accelerated magnetosheath plasma. However, quite often we can observe plasmaspheric plumes containing cold and dense ions of the ionospheric origin in the vicinity of the magnetopause. In situ observations by the 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. 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. We have found that the presence of the plume plasma influences the pressure balance at the magnetopause and thus the magnetopause can be found far away from its nominal location.