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Determination of the LLBL profile under different IMF conditions using Te-Ne plots

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The structure of the magnetopause has been a subject of an intensive study for many years. At low latitudes, one can identify the low-latitude boundary layer (LLBL) on the magnetospheric side and rather often a depletion layer (DL) on the magnetosheath side of the magnetopause. The LLBL is encountered as the interface between two plasma regions - the magnetosheath and plasma sheet and contains a mixture of both plasma populations. Plasma parameters inside the LLBL are variable and several mechanisms including magnetic reconnection, impulsive penetration of magnetosheath plasma, and viscous/diffusive mixing of plasma have been proposed to explain this phenomenon. In our work, we analyze possible mechanisms of formation of the LLBL. We found very useful to draw the electron temperature as a function of the electron density to analyze LLBL profiles under different upstream conditions. We discuss the results of IMF BZ and IMF BY influences on the LLBL profile based on these plots.