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A study of the large scale magnetotail current sheet from low altitude ion precipitation

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We present a study of the properties of the magnetotail current sheet deduced from measurements of ion precipitation made onboard the Cluster fleet above the auroral zones. We are particularly interested in the dynamics of the plasma sheet during quiet geomagnetic conditions and during substorm growth phases, when Velocity Dispersed Structures (VDIS) are detected. In such conditions the encounter of multiple VDIS substructures at the poleward part of the auroral oval indicates that the magnetotail current sheet is reconfiguring with a quasi period of several minutes even for stationary interplanetary conditions. We show that periods when the usual energy dispersion in VDIS almost disappear correspond to the cancellation of the ion dispersion induced by time of flight effects by the ion dispersion resulting from a strong convection related to a large magnetotail current sheet intensity.