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Analysis of cusp and cusp boundary layer plasmas during magnetic field line conjunctions of Polar and Cluster spacecraft

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We have conducted analysis of particle data from the lower-altitude Polar and higher-altitude Cluster spacecraft, when these spacecraft were in magnetic field conjunction on field lines that intercepted the dayside cusp and cusp boundary layer. From this analysis we obtain a better understanding of the accelerated, injected plasma and the nature, source, and extent of electric fields associated with inverted-Vs observed in this region. We are particularly interested in mapping the inverted-Vs to higher altitude regions observed by Cluster. The results of the study shed light on the plasma processes associated with dayside reconnection and the formation and maintenance of the cusp boundary layer.