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Estimating the nightside ionospheric reconnection electric field

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Plasma flow through the polar cap boundary (PCB) in the ionosphere can be used for estimating the reconnection electric field as a measure of the energy transfer from the open magnetic field lines to the closed field line region. In this study, the plasma flow vectors in the nightside ionosphere are determined by the dual-beam measurement of the EISCAT VHF radar and the location of the PCB is estimated from the EISCAT measurements on the mainland and on Svalbard. The reconnection electric field is calculated for a substorm period on November 25 2000. Furthermore, the EISCAT data are compared with optical satellite measurements by Polar UVI and equivalent east-west electrojets calculated from MIRACLE magnetic measurements by 1D upward continuation.