

## The Ionospheric Conductance Distribution Over The Polar Cap Region

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The important input specifications for simulation models of thermosphere/ionosphere electrodynamics and the study of solar wind-magnetosphere coupling processes are the high-latitude distributions of the ionospheric quantities, such as electric field, currents and Joule heating rate etc. Moreover, it has been demonstrated that ionospheric quantities estimated from magnetogram inversion techniques sensitively depend on the ionospheric conductance distribution. Recently, ionospheric conductance models over the auroral region based on the Chatanika incoherent scatter radar data and ground magnetic disturbance data have been developed. However, they are applicable only to the auroral region. Thus, it is desired to construct an ionospheric conductance model applied to the entire polar region including the polar cap. For this purpose, empirical relationships are obtained between the ionospheric conductance over the polar cap region deduced from the Sondrestrom incoherent scatter radar data and simultaneously recorded magnetic disturbances from the nearby magnetic station. Furthermore, the conductances obtained are compared with those obtained from precipitating auroral particle measured by the polar DMSP satellites. Based on the conductances and electric fields measured from the Sondrestrom radar data, the electric currents in the polar cap region are estimated. They are also compared with ground magnetic disturbances.