

The Relative Contribution of the Electric Field and Ionospheric Conductivity to the Auroral Electrojets

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Plasma convection patterns obtained from the Super Dual Auroral Radar Network(SuperDARN) are compared with simultaneously measured ground magnetic disturbance. Specifically, the electric field detected with Goose Bay and Stokkseyri radars and Magnetograms obtained from the west coast chain of Greenland are compared. The strength and poleward and equatorward borders of the auroral electrojets are determined using the X and Z components obtained from latitudinal profiles. With this information, the relative contributions of the electric field to the auroral electrojets is assessed as a function of magnetic local time. Once the electric field contributions is determined, it is further possible to estimate indirectly the contributions of ionospheric conductivity to the auroral electrojets. Since it has been proposed that the ionospheric conductivity can be estimated from ground magnetic disturbance, we can compare the ionospheric conductivity distribution thus obtained with the one based on model calculation which utilize the empirical relationship between ionospheric conductance and ground magnetic disturbances.