

Ionospheric currents driven by mesoscale disturbances in the polar thermosphere

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Recent observations have indicated that very complicated and severe mesoscale (10 km - 1000 km) neutral winds are generated in the polar thermosphere associated with auroral activities. Ionospheric currents driven by the dynamo electric field associated with the global thermospheric convection have been studied in detail. On the other hand, small-scale ionospheric currents driven by mesoscale disturbances have not been fully understood. Although magnitude of such current systems is not so large as a whole, fairly strong current could be locally driven by the mesoscale wind system. We are studying the ionospheric current systems generated by the mesoscale thermospheric disturbances using our high-resolution thermosphere-ionosphere model. Results of model calculations of ionospheric currents generated by local thermospheric winds driven by sudden heating will be presented.