

Propagation Model for Nowcasting of HF Communications with Aircraft on Polar Routes

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Airlines use the polar routes because for some flights the shortest route (the great circle) takes them over the polar regions. However, a lack of VHF ground stations over the oceans and within polar regions means that aircraft have to rely on long-range HF communications via the ionosphere. The ionosphere is affected by space weather more intensively in the high latitude regions. In severe space weather conditions, ionospheric HF communications become impossible, and aircraft have to be re-routed to lower latitudes. This increases the flight time, cost, passenger and flight loadings and impact on the environment. The research reported in this thesis designs a model of HF propagation that can provide



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