

## **Operational Space Weather Support for the Commercial Airlines**

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A number of airlines are now flying routes that transit the polar regions. This path presents economies to the carriers, in terms of transit time and payload. However, these same polar areas are preferred locations for impacts of space weather events, as the geomagnetic field converges there and focuses the trajectories of charged particles accelerated in the night side magnetosphere as well far removed, back at the Sun. These energetic particles penetrate well into the Earth's atmosphere, causing elevated radiation levels at lower altitudes, plus unfavorable conditions for HF radio propagation. The recent severe space weather event of January 20, 2005 serves to illustrate each of the components in the process: the initiation at the Sun, the transit through interplanetary medium, the shower of energetic particles in the polar regions, and the subsequent impact on airlines operating polar routes.

The presentation will offer details on this extraordinary event of January 20, 2005, by some measures the second largest recorded in the space age (i.e., the last 40 years). Particular problems related to forecasts will be discussed, and suggestions will be made regarding how the airlines might integrate the space weather information into their own dispatch and route planning. Finally, there will be a look forward to the future of space weather services to the airlines, with some exciting new data soon to be available that will improve forecast accuracy and value for airline operations.