

New Technologies for Weather Information Communication (WINCOMM)



Johns Hopkins University Applied Physics Laboratory and Ohio Aerospace Institute

TECHNOLOGY

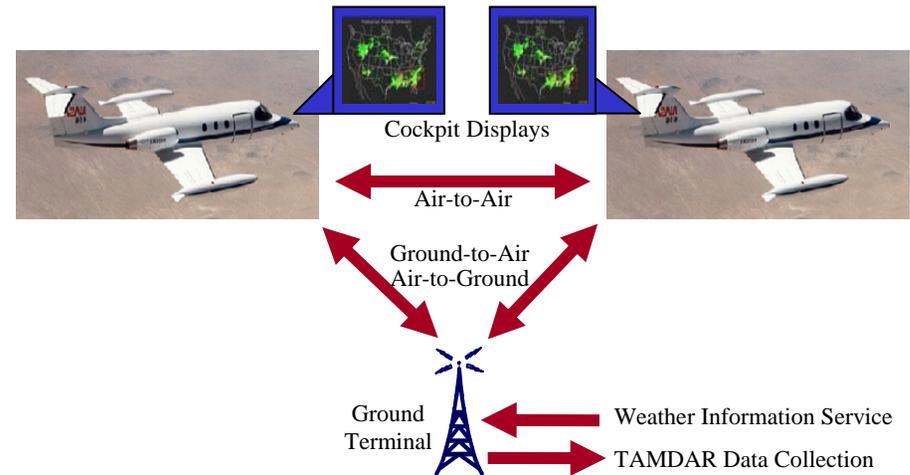
WINCOMM is the element of the Weather Accident Prevention Project that develops advanced communication networks and datalinks for the dissemination of weather data to and from the cockpit. WINCOMM's goal is to develop advanced communications and information technologies to enable high quality and timely dissemination of strategic weather information between the ground and flight deck (ground-to-air) as well as tactical turbulence and icing hazard information transmission between relevant aircraft (air-to-air) as well as to the ground (air-to-ground).

COMMERCIAL APPLICATION

- ◆ Develop communications technologies that provide a 20-100 times increase in delivery of real time graphical and textual weather reports from the ground to pilots and hazardous weather warnings and alerts between aircraft and ground for increased situational awareness and safety of flight.
- ◆ Another aspect of WINCOMM is the automatic collection of weather data from the Tropospheric Airborne Meteorological Data Reporting (TAMDAR) weather sensor. The TAMDAR weather sensor will transmit ownship real-time atmospheric weather data to surrounding aircraft and to ground weather service providers that will use the data to validate, enhance and improve weather forecasting and mobility for all on land, sea and air.

SOCIAL / ECONOMIC BENEFIT

- ◆ Develop enabling technologies to reduce weather-related accident causal factors by 25-50% and turbulence-related injuries by 25-50% by 2007. Web Site: <http://wxap.grc.nasa.gov>



WINCOMM successfully simulated, modeled, developed and flight tested aviation communication data links and architectures that addressed the more stringent design requirements needed for the timely delivery of weather information, including: connectivity (ground-to-air, air-to-ground, and air-to-air), signal latency (<1 minute), and bandwidth (>31.5 kbps) while costing less than the currently utilized product (<\$17K).

NASA APPLICATIONS

- ◆ The validation of WINCOMM weather datalinks was accomplished through a collaborative effort between NASA, FAA, industry and academia, leveraging existing East Coast and Ohio ground station network infrastructure during flight experiments using NASA Glenn's Lear Jet aircraft.

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