

FAA William J. Hughes Technical Center

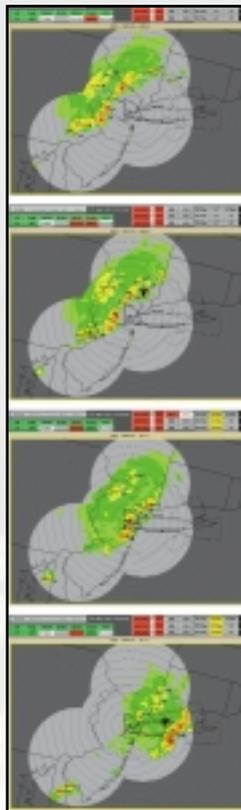
Integrated Terminal Weather System (ITWS)

The Integrated Terminal Weather System (ITWS) was initiated by the Federal Aviation Administration (FAA) to produce a fully-automated, integrated terminal weather information system to improve the safety, efficiency and capacity of terminal area aviation operations.

ITWS will provide an integrated set of safety and planning weather products to air traffic managers and supervisors. The dissemination of these products is critical toward maintaining and enhancing terminal area safety and air traffic planning during periods of hazardous weather. An additional benefit of this system is a reduced controller workload.

BACKGROUND

ITWS will be installed in the 45 Terminal Doppler Weather Radar (TDWR) airports, in the towers, Terminal Radar Approach Control Facilities (TRACONs), and Air Route Traffic Control Centers (ARTCCs). Graphical and textual products will be delivered to air traffic users and displayed on Ribbon Display Terminals (RBDT) and Situation Displays (SD). ITWS will acquire data from FAA and National Weather Service (NWS) sensors, as well as from in-flight aircraft in the terminal area. ITWS will provide aviation-oriented weather products to Air



ITWS displays from New York



Traffic Control (ATC) personnel that are immediately usable without further meteorological interpretation. Available products include: windshear/microburst detection and prediction, gust front detection and forecast, precipitation levels (from 5 to 200 nm), storm cell speed, motion and extrapolated position, and lightning, tornado, and storm cell information (hail, tornado, echo tops, mesocyclone).

ITWS will provide for more efficient planning of aircraft movements in the terminal area by significantly increasing local weather awareness and timeliness. Identification of weather impacting specific approach and departure corridors, corner posts, runways, and the airport surface will enable for more efficient coordination of routing strategies.

The ITWS consists of a number of elements which must be developed and properly integrated to provide the required capability. These elements include, but are not limited to, weather data processing algorithm software; computer processing and communications hardware and interconnecting links; connections to external sensors and data sources; and dissemination of products to displays or communications ports.

The ITWS algorithm and display software was developed by the Massachusetts Institute of Technology/Lincoln Laboratory (MIT/LL).

Efficiency
System



System Efficiency

ACCOMPLISHMENTS:

ITWS prototypes have been in operation since 1993 at airports in:

- Orlando, FL
- Memphis, TN
- Dallas/Fort Worth, TX

The Weather Branch has performed a formal Demonstration-Validation (DEMVAL) of the system (1994) and has performed subsequent prototype performance and user evaluations.

- ITWS contract award (January 1997)
- System Design Review (July 1997)
- Software Requirements Review (December 1997)
- Preliminary Design Review (March 1998)
- Critical Design Review (October 1998)

A fourth ITWS prototype, which is funded by The New York Port Authority (NYPA), began operation in August 1998. This system serves LaGuardia, Newark, and John F. Kennedy (JFK) Airports.

FUTURE WORK

The Weather Branch will provide government representation for the following:

- Design Qualification Testing (DOT)
- Factory Acceptance Testing (FAT)
- First Article Testing on ITWS systems delivered to:
 - FAA William J. Hughes Technical Center (December 2000)
 - Kansas City (January 2001)
 - Houston (February 2001)

Full-scale production of the ITWS systems is expected to commence in the year 2001.

For additional information regarding the Integrated Terminal Weather System program, please contact:

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Convective activity in airport environment

Photo provided by the National Severe Storms Laboratory (NSSL)