

Advanced Weather Interactive Processing System (AWIPS)

Program Description

AWIPS is an integrated suite of automated data-processing equipment that supports complex analysis, interactive processing, display of hydrometeorological data, and the rapid dissemination of warnings and forecasts in a highly reliable manner. This system is now being used at National Weather Service (NWS) Weather Forecast Offices, River Forecast Centers, and National Centers for Environmental Prediction to support our weather and hydrologic forecast and warning operations. AWIPS is used to:

- Provide computational and display functions at operational NWS sites;
- Provide open access, via NOAAPORT, to extensive NOAA data sets that are centrally collected and/or produced;
- Acquire and process data from an array of meteorological sensors (e.g., Weather Surveillance Radar-88 Doppler, Geostationary Operational Environmental Satellite, and Automated Surface Observing System) and local sources;
- Provide an interactive communications system to interconnect NWS operations sites and to broadcast data to these sites; and,
- Disseminate warnings and forecasts in a rapid, highly reliable manner.

AWIPS has capitalized on recent advances made in relevant technologies. AWIPS development activities employ an incremental, evolutionary build approach where functionality is developed and implemented in multiple stages. This allows for more frequent integration and evaluation of system components and the realization of the benefits of this system as rapidly as possible. AWIPS development is a joint effort of the National Weather Service, NOAA's Forecast Systems Laboratory, and Northrop Grumman Information Technology (NGIT).

The AWIPS site architecture is an Open System implementation. The use of open systems has been a key aspect of the AWIPS design and will continue to influence design and implementation decisions. This approach has resulted in a standards-based, client/server system that provides isolation of applications, data, and system-level functions from hardware implementation and software services, thereby eliminating dependency on vendor-unique products. The system architecture emphasized the use of commercial-off-the-shelf (COTS) hardware and software and functional independence of components to deliver a system that is flexible, expandable, and portable. This approach maximizes the intended long-term life of the system.

All site systems are linked to the AWIPS Communications Network. A wide-area network connects sites for multi-point-to-point and point-to-point communications. A satellite broadcast network provides for point-to-multi-point communication of NOAA's centrally-collected and produced real-time environmental data. This satellite broadcast network, known as NOAAPORT, provides both internal and external users open access to this data stream.

The Network Control Facility is responsible for managing the AWIPS Communications Network and supporting the operation and maintenance of systems in the field. The NCF, operated by NGIT 24 hours per day, acquires and distributes forecasts, warnings, observations, and model data from the NWS Telecommunications Gateway, and geostationary satellite data from the National Environmental Satellite, Data, and Information Service. All data streams are transmitted to a Master Ground Station for uplink to SpaceNet 4, a GTE communications satellite. SpaceNet 4 then broadcasts these data to satellite receive antennas at AWIPS sites and private sector sites.

In support of the field systems, the NCF:

- manages systems maintenance
- restores sites to operation in real time, if failed
- dispatches technicians to sites to maintain/repair hardware
- refers software discrepancies to NGIT or NWS/FSL, as appropriate
- distributes software
- provides central site support
- archives and replenishes data
- monitors site performance

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