



NOAA *Backgrounder*

NWS Aviation Weather Forecasting Critical To Air Flight Safety

To fly or not to fly? That is the question pilots and air traffic controllers answer thousands of times each month. In recent years, a record number of commercial flights crisscrossed the American skies, and the travel industry expects the numbers to increase. The latest weather forecast is crucial in making the right decisions about whether to fly, or land. NOAA's National Weather Service uses a combination of high-technology and skilled meteorologists to develop aviation weather forecasts for each flight in the United States, and for two-thirds of air traffic around the globe.

A WORD ABOUT NOAA. . .

The National Oceanic and Atmospheric Administration (NOAA) conducts research and gathers data about the global oceans, atmosphere, space, and sun, and applies this knowledge to science and service that touch the lives of all Americans.

NOAA warns of dangerous weather, charts our seas and skies, guides our use and protection of ocean and coastal resources, and conducts research to improve our understanding and stewardship of the environment which sustains us all.

A Commerce Department agency, NOAA provides these services through five major organizations: the National Weather Service, the National Ocean Service, the National Marine Fisheries Service, the National Environmental Satellite, Data and Information Service, and Office of Oceanic and Atmospheric Research; and numerous special program units. In addition, NOAA research and operational activities are supported by the Nation's seventh uniformed service, the NOAA Corps, a commissioned officer corps of men and women who operate NOAA ships and aircraft, and serve in scientific and administrative posts.

For further information: NOAA Office of Public Affairs, 14th Street and Constitution Avenue NW, Room 6013, Washington, D.C. 20230. Phone: (202) 482-6090.

Aviation Weather Forecasting Behind-the-Scenes

The NWS issues a total average of nearly 4,000 aviation weather forecasts each day. The 121 NWS weather forecast offices issue close to 2,500 aviation weather forecasts to 537 airports around the nation every day. The local offices also issue nearly 1,300 en route flight forecasts a day. Meteorologists at the Aviation Weather Center (AWC) in Kansas City, Mo., and the Alaska Aviation Weather Unit (AAWU) in Anchorage issue a combined 275 weather products—forecasts, warnings and advisories—daily.

Additionally, Center Weather Service Unit meteorologists, positioned at 21 FAA Air Route Traffic Control Centers across the country, provide in-person guidance to air traffic controllers about threatening weather conditions as they happen.

In Anchorage, the AAWU's forecasts cover Alaska, parts of the North Pacific Ocean, Bering Sea and Arctic Ocean, extending to the North Pole and a large area of northeast Russia. Elliott Barske, the Meteorologist-in-Charge at the AAWU, says "with so much of the region's economy dependent on flying, it is crucial that decision makers have aviation weather forecasts they can trust."

Creating Aviation Weather Forecasts

To generate aviation weather forecasts, meteorologists at the AWC and AAWU use images from satellites circling the globe, improved model data from NOAA's

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National Centers for Environmental Prediction, real-time weather data from Doppler radar and Automated Surface Observation System units at America's airports. ASOS provides minute-by-minute updates on vital weather information, including cloud heights, wind speed and precipitation. That information is available to forecasters around the clock.

Aviation Weather History At A Glance

After the Wright Brothers' historic flights of 1903, the nation was awestruck by planes soaring through the air. Years later, on Dec. 1, 1918, the National Weather Service, then called the U.S. Weather Bureau, issued its first aviation weather forecast—for the Aerial Mail Service route from New York to Chicago. On May 20, 1926, Congress passed the Air Commerce Act, which included legislation directing the Weather Bureau to "furnish weather reports, forecasts, warnings...to promote the safety and efficiency of air navigation in the United States."

Mark Andrews, chief of the NWS Aviation Weather Services Branch says, "Back then, the early forecasters had little experience with aviation weather phenomena of thunderstorms, fog, low clouds, icing and turbulence that impact today's flights."

Andrews adds that advanced computer technology, combined with the skill and experience of meteorologists, have helped improve the speed, accuracy and quality of aviation forecasts, which are critical for flight safety. "Air traffic controllers and pilots are receiving more information today than ever before, which helps them make smarter decisions about whether to fly in marginal weather."

The NWS uses a broad range of new technology, including Internet chat rooms, that result in faster, more accurate aviation forecasts. After a two-year test, the *Collaborative Convective Forecast Product*, created by the AWC, became operational on April 1, 2000, in time for the spring/summer thunderstorm season. The CCFP—an interactive forecast technique that allows meteorologists from the AWC, FAA and the airlines to agree on a weather forecast in an Internet chat room—provides extended outlooks of up to six hours and aims to reduce weather-related flight delays and cancellations. The NWS also is using more technology to develop new products that would continue its momentum of improving aviation weather forecasts and strengthening its commitment to meeting the needs of the aviation community.

The AWC recently introduced the "Aviation Test Bed," giving the center the capability to test new forecast products from the research community. "From this research, we expect greater skills in forecasting turbulence, thunderstorms and icing," says Jim Henderson, the AWC's deputy director.

On The Horizon

While the NWS and FAA continue to fine-tune the CCFP, another aviation weather forecast tool in development is the *National Convective Weather Forecast*. Once it is ready, this forecast product will take the current radar tracks of storms and project where they will be one hour later. It will be automatically updated every five minutes and give forecasters more focused and precise weather data to make better aviation forecasts. ☺

For more information contact National Weather Service Public Affairs at (301) 713-0622.

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