

Forecast

for success

Knowing what's happening with the world's weather is critical to Boeing flight-test programs By Kate Zaranek

Many people probably check the local news for weather reports to determine how to dress for the day. Mike Patnoe and Matt Grzych check weather conditions around the world—but not to find out what to wear.

They are atmospheric scientists with Boeing Test & Evaluation. The company's flight-test planners depend on them in picking the most appropriate locations for testing airplanes such as the 787 Dreamliner and 747-8 Freighter.

Today, flight testing of new aircraft can occur anywhere in the world, wherever weather conditions exist that will allow the airplane to be tested to its performance limits, including extreme conditions from subzero temperatures to hot and humid environments.

The two meteorologists monitor and track flight conditions and predict with a great deal of accuracy where proper conditions will be present.

"We can help determine the forecast for the next five days to predict crosswinds, icing and other specific conditions that are needed, depending on the flight test being performed," Grzych said.

For certification purposes, some flights require extreme conditions to determine that the aircraft and systems can withstand the various environments that Boeing products operate in, he said.

In addition to finding the weather required for certain flight tests, both scientists work with planners to ensure test teams avoid bad weather, or conditions that could impact or slow test flights. They also assist with long-range projects by providing climatological data for product development programs.

Because they are a team of two located states apart—Patnoe in Washington and Grzych in Colorado—they divide work based on tasks and often collaborate by Instant Messenger.

Each has his area of expertise.

Patnoe, recently named an Associate Technical Fellow, specializes in icing issues and is part of an International Civil Aviation Organization committee that is developing procedures for communicating with government agencies, airplane operators and other entities that need to be notified in the event of volcanic eruptions.

Grzych, an occasional storm chaser in his personal time, specializes in convective storms.

Tools provided by the National Weather Service and the National Oceanic and Atmospheric Administration help Patnoe and Grzych build their midrange forecasts up to five days in advance. After that, accuracy decreases.

"The biggest surprise in my career has been that one accurate forecast carries far more weight than four inaccurate ones," Patnoe said. "I've had dead-on forecasts that make people really happy and then they forget the ones that were wrong."

They also use a tool developed by the University of Wisconsin-Madison called McIDAS, or Man computer Interactive Data Access System, a data service that provides imagery and radar and also archives climatological data that can be used during accident investigations—if investigators suspect weather is a factor.

Why would two atmospheric scientists choose to work at Boeing instead of a news outlet or the National Weather Service?

"Because there is a wide variety of work," Grzych explained, "with the opportunity to do lots of different things." ■

katryzina.p.zaranek@boeing.com

PHOTO: Atmospheric scientist Mike Patnoe checks conditions at Boeing Field in Seattle. JIM ANDERSON/BOEING