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WORK & FAMILY

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In Weather Forecasting, Expect High Pressure

Meteorologists Cope With Anxiety, Backlash When Calls Go Wrong, Even as Predictions Are More Accurate

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Weatherman Jay Trobec has been giving the forecast to 90,000 viewers of his Sioux Falls, S.D., TV station for 14 years, and he is usually right. But "if I blow a forecast, I hear about it," he says.

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HURRICANE ISABEL. Forecasters were able to accurately predict the path of this 2003 storm days in advance.

When he predicted six inches of snow in Sioux Falls that never arrived, "people were coming up to me in the coffee shop and berating me," says Dr. Trobec, chief meteorologist at KELO-TV. "People who lay concrete for a living, people who put roofs on houses, don't like it when the forecast isn't correct."

This year has already seen 10 weather disasters each costing more than $1 billion in damage, making it the most costly since the government started keeping records in 1980. And it has been one of the toughest years in memory for meteorologists. The technology used for forecasting has improved,

and forecasts are more accurate compared with the past. But the job of the meteorologist is still both an art and a science.

Millions of people's lives are affected by their predictions, so it's no surprise being a weather forecaster is a stressful job. Sue Shellenbarger and Fox News meteorologist Janice Dean discuss on Lunch Break.

A lot of decisions hinge on forecasters' words. When Scott Nogueira, a meteorologist who specializes in aviation, told airline managers from Washington, D.C., to Philadelphia that a massive blizzard was expected to dump up to 27 inches of snow on airports in the region, "they gasped," he said.

In turn, the airlines began planning to cancel hundreds of flights, inconveniencing thousands of people.

Later at home, Mr. Nogueira, who works for WSI, a forecasting unit of the Weather Channel Cos., stayed up until 1:30 a.m. tracking computer-forecasting models online. "Geez," he told his wife Alison, "I hope that forecast pans out."

Good Calls, Bad Calls: a Recent History

Some recent meteorological high points and low points, based on input from weather experts:

GOOD CALLS

Hurricanes Irene (2011) and Isabel (2003): Thanks to computer modeling and on-target analysis, government advisories days in advance predicted the storms' likely courses with unusual accuracy.

Super outbreak (2011): In April, residents in the Southeast were alerted several days before hundreds of tornados devastated parts of Alabama, Arkansas, Mississippi and other states.

Snowmageddon (2010): Forecasters started raising warning flags nearly a week before record snowfall hit Virginia, Pennsylvania, Maryland and Washington, D.C., enabling officials to order emergency preparations and retailers to stock up with storm merchandise.

Super Tuesday storm (2008): As long as six days in advance, residents of several states heard predictions of a severe weather outbreak that unleashed dozens of deadly tornados on Primary Election day.

BAD CALLS

Wayward hurricane (2004): Roaring toward Florida at a sharp angle, Hurricane Charley veered unexpectedly and caught many people off-guard by plowing into the coastline 70 miles south of where it was expected.

It did. Two days later, the Feb. 5-6, 2010, storm dubbed "Snowmageddon" began.

But when Mr. Nogueira failed to foresee the duration of a line of severe thunderstorms that forced numerous flight diversions, "we heard about it that day," he says. "That caused big problems for Miami." After making a mistake, "you sort of tuck your tail between your legs and think, 'Oh, geez, I wish I had made a better call.' " Then he studied the storm, to help him foresee similar patterns in the future.
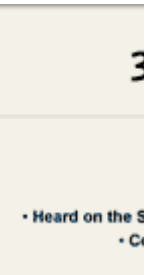
"Every day meteorologists are sticking their necks out, sometimes into the guillotine," says Peter Neilley, vice president of global forecasting services for Weather Channel Cos. in Atlanta. "With a volatile weather year like we've had in 2011, it leads to a higher level of stress overall."

Snowy surprise (2000): Computer models failed to predict a January blizzard in the Carolinas and mid-Atlantic states until a few hours before it brought entire regions to a standstill.

No-show snow (2000): Forecasters predicted a heavy December snow in Washington, D.C., and Baltimore a week in advance, but the blizzard never materialized.

Working alone or in teams, some meteorologists specialize in certain industries, others in specific locales. All base their forecasts on computer models; radar and satellite images; and wind, temperature and precipitation data collected from hundreds of sources on land and sea and in the atmosphere.

Improved data gathering, computer modeling and scientific analysis have made seven-day forecasts of broad weather patterns as accurate as five-day forecasts were 20 to 25 years ago, and five-day forecasts as accurate as three-day forecasts were then, says David B. Parsons, director of the school of meteorology at the University of Oklahoma in Norman.

Forecasts of precipitation and temperature also have become slightly more accurate in recent years, says Eric Floehr, founder and owner of ForecastWatch, a Marysville, Ohio, company that tracks the accuracy of weather forecasts, based on an analysis he conducted for this column. A one-day forecast comes within three degrees of hitting the mark, on average; a three-day forecast is usually accurate within four degrees.

Getty Images

SNOWY SURPRISE. Residents on the eastern seaboard had only a few hours to prepare for a major blizzard in 2000.

There is still plenty of room for error. Storm fronts often move more slowly or quickly than expected, causing forecasters to "do a very poor job of predicting specifically where snow is going to land, and how much," Mr. Floehr says. Also, meteorologists often fail to predict the exact intensity of hurricanes because of a lack of data; the storms tend to destroy ocean buoys that measure wind speed and prevent piloted aircraft from getting close enough to analyze them.

Adding to the pressure: People increasingly look to meteorologists not only to predict the weather, but to tell them what to do about it. Nearly 9 out of 10 Americans look at or listen to daily weather forecasts, usually more than three times a day, according to a 2009 survey of 1,520 people by the National Center for Atmospheric Research.

When Hurricane Irene roared up the Atlantic seaboard in August, dozens of anxious people asked meteorologist Elliot Abrams where to park their cars or how much food to buy. Mr. Abrams, a senior vice president with AccuWeather Inc. in State College, Pa., broadcast hurricane updates on 15 radio stations and responded to callers who wanted to know, "Should I board up my windows?"

"You don't want to make it sound so bad that people take risks and hurt themselves," Mr. Abrams says. "On the other hand, they need to take the right action."

Likewise, James Franklin was staying up most of the night helping figure out what forecasts the government should deliver. As a branch chief at the government's National Hurricane Center in Miami, Mr. Franklin barely slept as Irene churned toward the East Coast. He and the 10 meteorologists on his team agonized over the wording of the center's four daily advisories. Forecasters on each of three shifts held conference calls with other meteorologists and officials to discuss exactly where to issue hurricane watches versus warnings. When Irene's winds seemed to weaken, Mr. Franklin urged caution over making sudden changes in their forecasts; too abrupt a shift might force a reversal later.

"So many people are making decisions based on what we say, that I'm always worried," he says. Although his team forecast slightly stronger winds than Irene actually delivered, the center's predictions of Irene's path were among the most accurate on record.

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