DO WE NEED THE NATIONAL WEATHER SERVICE?

by JEFFREY ROSENFELD

Private forecasters are taking over more and more of the responsibilities that were traditionally fulfilled by government meteorologists

You're getting ready for an adventure, packing up for a pleasure cruise from New England to the warmer climes of Bermuda. Next to your life vest, your charts and your provisions, what you need most is an accurate weather forecast. The forecast had better last you a good four days, close to the limit of reliable prediction.

"Most people know it's risky behavior to take a boat out into the open ocean," says Ken McKinley of Locus Weather, a one-man meteorological bureau in Camden, Me., that helps mariners reduce that risk. Every year hundreds of them plunk down about $100 for McKinley's advice before embarking on an ocean voyage, even though they can get a free five-day forecast from the National Weather Service (NWS). They prefer McKinley's customized assessments of wind shifts and wave heights to the generalized statements from the government agency. Even crusty old Yankee skippers, self-sufficient types who can make their own forecasts, will hire McKinley for a consultation.

McKinley's business is proof that when the stakes are high, people are willing to pay for a forecast. To decide whether to take an umbrella to work, people tune in to the TV or radio or check a newspaper or Web site. In turn, these media buy their forecasts from commercial meteorologists. The private forecasters purchase the weather data they use to make predictions from commercial data vendors who have contracts to obtain and process the raw radar, weather balloon and satellite readings from the NWS. In addition to supplying the basic data, the NWS also makes its own forecasts.

The way some leaders in the forecasting business are talking, this supply chain will change dramatically in the new century. Today the NWS is the hub of the nation's weather infrastructure. But if the speculations of Joel N. Myers, chairman of AccuWeather, the largest private forecasting company, turn out to be true, the NWS may eventually cease to exist. Last October, in a speech at NWS headquarters in Silver Spring, Md., Myers suggested that private firms might eventually launch their own satellites, run their own models of weather conditions, merge disparate private radar networks and expand their deployment of observing instruments, all jobs currently carried out by the NWS. The implications of what Myers depicts are clear: technology and efficiency will render the NWS redundant.

Anticipating Crowds at the Mall

In this vision, the broadened capabilities of private services would expand coverage greatly, supplying a neighborhood-by-neighborhood picture of what the weather is doing. In this new world, a few large private companies like AccuWeather, by assuming these responsibilities, would substantially increase the size

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NWS, INC.: AccuWeather, the largest private forecasting firm, employs a team of 93 meteorologists in its operations room at State College, Pa. Companies like AccuWeather may take over more of the government's weather responsibilities.

of their markets, mainly by selling meteorological data and forecasts to smaller weather services companies.

These ideas may seem farfetched, but in fact at least 300 firms nationwide already sell meteorological services of some kind. Most are small and make do with NWS forecasts, or else they focus on consulting, such as providing expert testimony in weather-related court cases. But others, especially bigger firms, also make their own forecasts using NWS data on wind speeds, temperatures and other observations. Based in State College, Pa., AccuWeather employs 93 forecasters. "I think most people don't realize that 85 percent of their weather information comes from private weather providers," says Jeffrey Wimmer, who is both president of Fleet/Compuweather, a forecasting firm in Dutchess County, New York, and current chairman of the forecasting industry's lobbying arm, the Commercial Weather Services Association (CWSA). The industry tops $1 billion in sales each year, at least 50 percent more than the annual budget of the NWS itself.

Private firms add value to the government information by tailoring weather forecasts to serve specific customers' needs. McKinley's clients have included movie production companies looking for on-location sunshine; other meteorological firms advise such clients as local TV and radio stations, retailers, construction firms and amusement parks.

Despite the availability of free government forecasts, the private services find clients because they are so good at handholding. Many forecasting firms offer unlimited telephone consultation in addition to sending a forecast daily to the client's e-mail. School districts hire forecasters to predict icy road conditions; the meteorologists will call the superintendent at a specified predawn hour to help make cancellation decisions. Other conveniences include beeper services that relay NWS announcements and 900 numbers for windsurfing or skiing outlooks.

Specialization is another rationale. At EarthSat in Rockville, Md., meteorologists examine government satellite imagery that gauges vegetation quality, then put together daily updates of harvest expectations. Commodities traders buy these images to make estimates about crop yields and ensuing fluctuations in commodity prices. Similarly, Climaton Research in Fairfax, Va., gives utilities a daily updated report of projected weekly energy

demands based on expected temperatures.

The CWSA and its 33 member firms continually press Congress to bar the NWS from supplying services that companies can provide on their own. They lobby for legislation to reduce the role of the NWS over time as technology progresses. They want to limit the agency to running computer models, performing data collection and research management, and issuing public warnings to save life and property. Confining itself to these tasks would let the NWS avoid competing with the private sector, which it promised not to do in a 1991 policy statement.

But privatizing weather forecasting presents its own hazards. In 1996 the CWSA helped to persuade Congress to eliminate the frost-warnings program of the NWS. Many farmers were reluctant to pay for services that had been free for decades. The repercussions were harsh when a cold snap hit Florida in 1997 and caused $100 million in crop damages. Private weather services say they saved some of their clients from the freeze, for fees from $50 to $100 a month. They claim, moreover, that the NWS would not have done much better. But too many farmers were hurt by the freeze.

Severe-weather warnings pose the biggest challenge to those who advocate taking over NWS responsibilities. Even the most diehard advocates of privatization often acknowledge that there is a legitimate place for the government in making these warnings. It's not that private firms can't issue hurricane warnings, given proper resources, but any company that mistakenly puts out a warning might face huge litigation exposure. Every mile of coastline evacuated erroneously costs coastal economies close to $1 million.

The idea of getting rid of the NWS starts to break down when Myers talks about taking over the government's data-gathering responsibilities. Developing and launching weather satellites (now a duty of the National Aeronautics and Space Administration) costs hundreds of millions a year; the upgrades of NWS radar and computers in the 1980s and 1990s required an investment of billions. No private company could bear the burden of these expenses.

Myers's vision suggests that, as private weather services grow, a firm like his own might be able to muster the necessary financial wherewithal to supplant government data services. Such a development, however, might have the unwanted consequence of endangering the existence of smaller forecasting firms. Those companies might end up paying dearly to the company with the biggest data-

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TWISTER BEEPER: AccuWeather sends severe-weather updates to word-message pagers.

gathering network, resulting in less competition in the field. Worse yet, all meteorologists would lose government involvement in incubating the basic science that drives their predictions: the history of forecasting in America shows that progress at the NWS helped to hatch the very industry that may ultimately destroy it.

The National Weather Service was born in 1870, when Congress directed the U.S. Army to begin forecasting weather. The act was a direct response to two years of maritime disaster on the stormy Great Lakes: 500 people drowned and more than 3,000 ships sank or ran aground in 1868 and 1869. The new service immediately reduced the tragic losses, and by 1891, when the army handed weather duties over to civilian oversight, Americans considered their free weather forecasts essential to daily life.

Over the next 50 years, however, the U.S. Weather Bureau (as the NWS was then called) advanced sluggishly. It refused to issue tornado warnings, which were still unreliable. It was slow to focus on tailoring fog and thunderstorm prediction to the needs of aviators. Worst of all, old-guard forecasters at the bureau ignored helpful new discoveries about the basic science of meteorology, such as the existence of cold fronts. They clung to the belief that forecasting was an art, not a science. They weren't alone: the public shared their view, and so did many scientists. As a result, few universities bothered to teach meteorology. This attitude partly explains why private forecasting was practically impossible at the time: without objective standards, the most prominent private weather practitioners (outside the airline industry) were con men who claimed that they could make rain.

In the 1930s the Weather Bureau rapidly modernized, remaining an oasis of credibility while shedding its former scientific malaise. After World War II, the reputation of meteorology improved dramatically. The technology of battle bred tools for science—radar, satellites and computers, to name a few. The Weather Bureau helped to adapt them to meteorology. Computerized predictions in particular transformed weather forecasting into an objective, scientific process. Finally, private meteorologists had something worthwhile to sell, and a few of the thousands of soldiers trained in meteorology during the war went into business for themselves, making forecasts using data from the government.

In the 1950s their annual sales only amounted to a few million of today's dollars, but private meteorologists were primed for new business by the mass media in the 1970s and 1980s. For this development, they could again thank advances at the NWS and associated federal agencies. Government satellite imagery proved immensely popular on TV, and better severe-storm warnings from government radar enticed competitive broadcasters to begin installing their own radars for local forecasting. Private companies supplied the graphics and forecasting necessary to adapt this technology for a wide audience.

AccuWeather now furnishes forecasts to more than 1,000 TV and radio stations, all from its headquarters in Pennsylvania. The advent of the Weather Channel in 1982 spurred broadcasters to rely even more heavily on private meteorologists to retain their edge in local forecasting. To compete, local broadcasters had to turn to private services to improve their reports, introducing high-powered

THE WAY THE WIND BLOWS: Windsurfers turn to private weather services to learn about the winds they might encounter while cavorting in the Columbia River Gorge.

WARREN MORGAN *Corbis*

graphics that showed weather conditions in their small markets.

By serving the media's special needs, private forecasters usurped the presence of the NWS in making direct forecasts. Today the forecasts that come straight from the NWS are mostly severe-weather warnings for hurricanes, tornadoes and the like, which can be seen scrolling across the bottom of television screens when a storm is approaching. As eminent free-marketers, Myers and others criticize the freely accessible NWS Web pages that disseminate and discuss routine forecasts, radar imagery and more. The business leaders say that the pages compete with Web sites supplied with weather information and forecasts from commercial vendors—the government, they reason, should not be doing something that the private sector can do better.

Betting on the Thermometer

NWS-driven expansion of the private sector continues. When the NWS enhanced climate modeling in the 1990s, it could make generalized predictions covering an unprecedented year into the future. Private firms quickly adopted similar techniques and assisted in interpreting the new forecasts, refining the basic reports they received from the NWS. This work became more prominent when El Niño turned into a household word in 1997—a result, in part, of the success of computer modeling at the NWS and research institutions. This event gave the financial industry the confidence to back a new form of investment: "weather derivatives." These contracts, written months in advance, pay a designated amount when temperatures are abnormal. In particular, derivatives help utilities hedge against widespread losses from weather-influenced price changes. An over-the-counter market for derivatives developed, prompting the Chicago Mercantile Exchange to begin electronic trading of them in September 1999. Corporate clients have also turned to private forecasters for advice on pricing and trading these new financial instruments.

Government-funded university researchers have contributed to the expansion of the capabilities of the private firms as well. Windsurfers in the West routinely place calls to forecasting companies plugged into the results of high-quality computer modeling programs run at the University of Washington that discern tricky local wind patterns. And the latest advances in modeling thunderstorms—made at a National Science Foundation–sponsored center at the University of Oklahoma—were tested in a partnership with meteorologists at American Airlines.

Perhaps someday computers will be so fast and cheap that all firms will be able to run their own forecast models. But private firms will only outstrip the NWS if the weather service stands still—and many have no wish to unbalance the status quo. Says Lee Branscome of Environmental Dynamics Research, a Palm Beach Gardens, Fla., meteorological firm that chooses not to make its own forecasts: "We'll always be a step behind them. Our approach is, 'Why reinvent the wheel?' The real key is to interpret the forecasts."

In this sense, both the forecasting business and the NWS are likely to occupy complementary niches: predicting windsurfing conditions in the Columbia River Gorge may remain the bailiwick of private specialists. But the NWS still has a major role to play in improving forecasts. Its funding and expertise mean that it may be the only institution able to develop and implement new observing systems and computer models. Despite the dreams of Joel Myers and the like, the outlook for a continuing role for the National Weather Service is fair to good. W

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