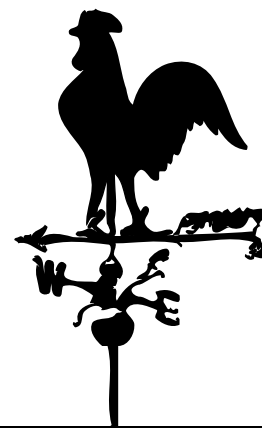
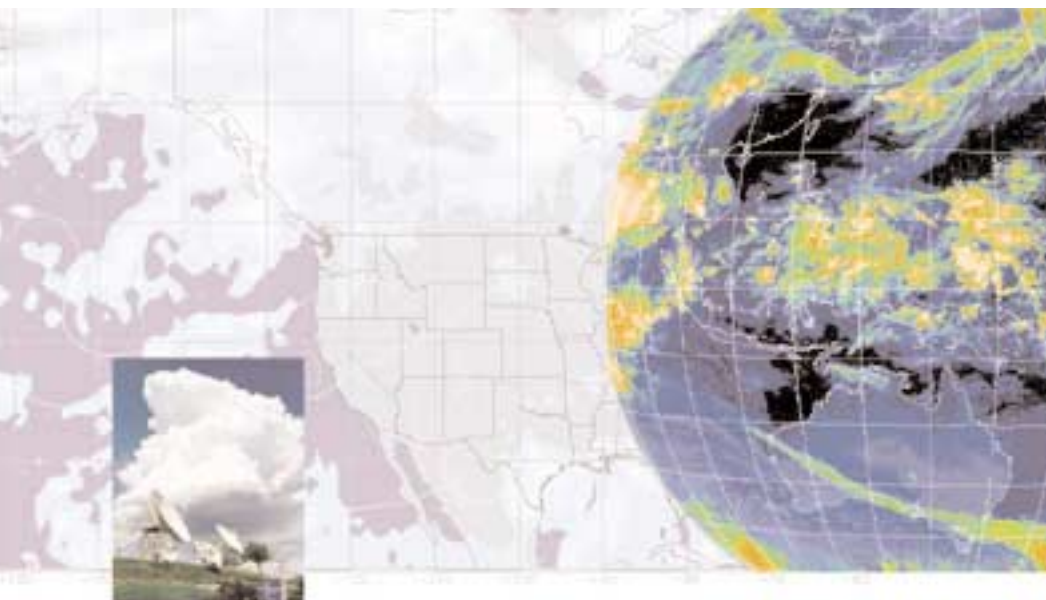


Gauging the weather



WILL ADVANCES IN METEOROLOGY AFFECT INSURANCE PRICING?



Students of journalism are taught early on that when they compose a basic news article their lead sentence should address five “Ws”: who, what, when, where, and why.

One could say that property insurance rating addresses three “Ws” of its own.

“Who,” the property owner, is addressed through rating factors that reflect the credit standing of a commercial insured or the credit-based score of a personal insured. In both cases, credit is seen as a reflection of the insured’s ability to manage its affairs and maintain a property.

“What,” the property itself, is addressed through rating factors that reflect the characteristics of a structure (brick, frame, etc.) and the presence or absence of loss control features, such as sprinklers.

“Where,” the territory, is addressed through rating factors that reflect recognized hazards (windstorm, earthquakes, crime, etc.) of an area.

So, what about “when?” Are there points in time when there is a greater risk of loss than others? Can we anticipate them and rate for the higher probability of loss?

Major reinsurers are enlisting the

aid of meteorologists to seek an answer to those questions. If their efforts prove fruitful, they may add a new dimension to insurance ratemaking.

Watching the cycles

For millennia, people have understood that seasons for tropical storms, blizzards, and other weather events come and go with predictable regularity. What we haven’t known, until recently, was whether a coming season was likely to be more or less stormy than previous ones.

That’s changed. Drawing on correlations between various natural phenomena, particularly ocean temperatures, atmospheric scientists are predicting storm conditions up to a year in advance with growing accuracy.

Perhaps the best known example is Dr. William Gray’s team of researchers at Colorado State University, whose work predicting the number and severity of hurricanes has been subsidized, in part, by major insurance organizations.

There is a demonstrably greater frequency of hurricanes and tropical storms in the Gulf & Atlantic following an occurrence of “La Niña,” a period when tropical waters cool, says Michael R. Smith, founder and chief executive of WeatherData Incorporated, Wichita, Kan., a commercial meteorological firm that serves the insurance industry, among others.

"You can anticipate [the increased storm activity] about a year in advance," he says. "I would want to be paid more to take a risk during and following a La Niña year."

According to Smith, some meteorologists are now at work trying to link oscillations in water temperatures in the Pacific and North Atlantic to the frequency of snow and ice storms in the northeastern U.S.

"If successful, that effort could be hugely [important] to the insurance industry," he says.

"We can quantify how risk varies between different states of the climate, as between El Nino and La Niña years, or relative to long-term hurricane forecasts," says Dr. Robert Muir-Wood, managing director of global risk modeling at Risk Management Solutions (RMS), Newark, Calif., a provider of products and services for managing risks from natural hazards.

Major insurers and reinsurers in the U.S. are starting to entertain the idea of pricing for climate conditions, says Fielding "Fid" Norton, global pricing and underwriting integration leader for the ERC Group, Overland Park, Kan., the parent company for Employers Reinsurance.

"Some of the most sophisticated players are asking 'Where are we in the climate cycle?,'" Norton says, adding that ERC now incorporates climate analysis into its underwriting of client company treaties.

"A company that is not doing that is doing so at its own peril," he says.

American Re-Insurance, Princeton, N.J., recently added its first meteorologist to the company's geoscience department.

"One of my mandates is to understand the meteorological part of the pricing equation," says Mark Bove, who came to American Re from Florida

State University. "This work will involve finding ways to better manage a book of business from a meteorological perspective."

(Bove's comments come from an in-house interview with him available at www.amre.com.)

Weather risk management

While atmospheric scientists have been enhancing their ability to predict weather patterns, others have been making strides in pricing weather-related risk.

As this article is written, someone may be getting paid for the fact that, for the first two weeks in June, it was unseasonably cool in Chicago.

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—Dr. Robert Muir-Wood
managing director of
global risk modeling
Risk Management Solutions (RMS)
Newark, Calif.

The beneficiary of such largesse might be a soft drink distributor, the operator of a major water park, or another organization that depends on hot, humid weather for significant revenue—and which had the foresight to hedge its risk by purchasing a weather risk management contract.

Weather risk management contracts, introduced in the late 1990s, are structured as derivatives or insurance contracts that protect the issuers from losses due to fluctuations in temperature, precipitation, and windstorm activity.

The Weather Risk Management

Association (WRMA) reported that the number of weather risk management contracts sold worldwide tripled between April 2002 and May 2003, and continues to grow rapidly.

While the vast majority of contracts cover fluctuations in temperature (principally for energy companies), small but growing percentages are being issued to cover precipitation and windstorms.

"These instruments are increasingly becoming essential tools in a company's risk management portfolio," says Lynda Clemmons, WRMA president.

Swiss Reinsurance trades extensively in weather risk management contracts. "We smooth out the volatility associated with the weather," says Mark Tawney, managing director of weather risk management.

Weather insurance

Separate from weather risk management contracts, a small but growing market has arisen in specialty insurance contracts that cover losses caused by bad weather.

Standard property insurance typically covers income losses only when they result from direct physical damage to insured property by a covered peril. Weather insurance fills a gap by providing coverage when weather causes a loss in income or increase in expenses, but with no attendant physical damage.

Weather insurance is available for a wide range of applications. Individuals can purchase coverage for losses in the event a wedding must be postponed, and organizations can purchase coverage for income lost in the event that bad weather forces cancellation of a sales promotion or special event.

On a larger scale, municipalities purchase insurance to cover themselves in the event higher than expected snowfalls force them to exceed their snow

removal budgets. Conversely, ski resorts purchase insurance for losses in projected revenue when lower than expected snowfalls depress turnout.

Good Weather Insurance Agency, Inc., Salem, Mass., provides several examples of weather insurance coverage on its Web site (www.goodweather.net). Among them:

- A whale watch tour company that bought coverage for days when rain exceeded certain levels during insured hours;
- A car dealer that bought rain coverage in the event it had to make good on its promise that “If it rains on July 4th, your lease is free;” and
- A soccer promoter that bought coverage for when rain fell for more than two hours during a game.

“Meteorological data was certainly used to develop these [types of] custom insurance products,” says Norton at ERC Group.

Limitations

There’s a long way to go, however, before climate conditions can be incorporated into pricing for standard property insurance.

“How pricing should be adjusted because of weather-related events is a very complex question,” says Bove. “All it takes is one storm to strike in the wrong place, which is exactly what happened when Hurricane Andrew made landfall.”

Several sources for this article cited Hurricane Andrew, which struck in 1992, a low-level year for hurricane activity, as an indication that atmospheric science cannot yet establish a correlation between storm activity and storm damage.

“For a sample of 2-5 years, one could expect to find years of high

activity and almost no loss, and [years] of low activity with high loss, as in 1992,” says Muir-Wood at RMS. “Therefore, for most applications we recommend [insurance] companies continue to use the long-term baseline perspective on risk.”

“Insurance companies would never consider insuring a chemical plant without a fire detection system. But, those same companies routinely insure high risk businesses without a weather detection system, let alone a weather mitigation plan.”

— Michael R. Smith
founder and chief executive
WeatherData Incorporated
Wichita, Kan.



Conclusions like that frustrate Smith at WeatherData.

“Insurance companies tend to evaluate meteorological risk through short-term experience that I liken to driving forward while looking in a rear-view mirror,” he says. “It’s very unreliable.

“There are much better and more reliable techniques for evaluating risk from weather hazards.” Their connections to insurance pricing remain elusive, however.

Conjecture?

Bill Bailey, special counsel to the Insurance Information Institute and host of the nationally syndicated radio show “It’s Your Money!,” follows the work of Dr. Gray’s Colorado State team closely and is bullish on the prospects for improved management of weather-related risk.

“We’re getting better at predicting,” Bailey says, “but once you’re beyond 48 hours (from when a storm actually strikes), there’s a lot of conjecture.”

To illustrate the shortcomings of weather forecasting for risk management, Bailey cites the example of Hurricane Floyd, in 1999. The initial path of the storm prompted public officials to order evacuations in parts of Florida, he recalls, but the storm never struck the state, making landfall instead in South Carolina.

Forecasting plays almost no role in the underwriting of specialty weather insurance, says Patricia Sleicher, founder and president of Global Weather Insurance Agency, Great Neck, N.Y.

“They can’t even tell me what will happen six days from now,” she says. (Her minimum time period to bind coverage is seven days before it takes effect.)

Even if meteorologists learn to predict with greater accuracy when and where storms will occur, it’s unclear whether regulators will accept such predictions as part of the rating process.

“Basing part of your premium charge on projections [might] be seen as too speculative,” says Bailey. Would insurers be required to refund money if predicted storms did not occur?

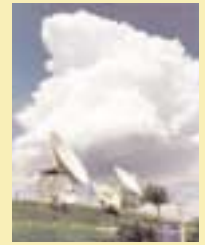
Coming impact

Whether climate cycles ever find their way into primary insurance rating, primary carriers will no doubt feel the impact of growing reinsurer interest in weather forecasting.

If climate studies indicate that a coming season is likely to be more stormy than usual, primary carriers can expect to see more rigorous scrutiny of their concentration of risk in affected areas, and a firming of reinsurance prices.

Primary carriers will benefit, however, if advanced warning of weather conditions allows for targeted, cost-efficient implementation of underwriting safeguards and loss control measures.

Modern meteorology has many applications in property/casualty insurance



Whether its application ever finds its way into insurance pricing (see main story), modern meteorology has come a long way from government forecasting and your local weatherman.

Commercial meteorology is an industry with hundreds of firms employing professional meteorologists who help a wide range of businesses manage risks and opportunities arising from the weather.

Those firms are getting plenty of work from insurers, says Michael R. Smith, founder and CEO of WeatherData, Wichita, Kan. (For links to Web sites of commercial meteorology firms go to <http://www.weather.gov/im/more.htm>, on the National Weather Service Web site.)

Among the things Smith does for P/C carriers is provide quick notice of exactly where a weather disaster is impending or has occurred.

"We let our clients know so they can get people on the scene quickly," he says. "If an adjuster can get to a damaged home quickly, additional damage can be mitigated."

"Insurers [use meteorologists] to choose 'safe cities'," says Steven Drews, a meteorologist with Aon Impact Forecasting, Chicago. "[Those are] places where claims agents can be located so they can move in immediately following a storm to provide service to their clients, who may have sustained damage."

Commercial meteorology firms follow up by helping with claims verification.

"Sometimes people make suspicious claims," Smith says. "We will research weather conditions which may have affected a situation, and we can verify if the event occurred or not." He frequently appears as an expert witness on behalf of insurers, as well.

Meteorology firms provide critical data for building catastrophe analysis models used to assess risk in property/casualty books of business, says Dr. Robert Muir-Wood, managing director of global risk modeling at Risk Management Solutions (RMS), Newark, Calif.

According to Muir-Wood and others, catastrophe modeling incorporates data on the characteristics of storms with data on the value of property in an area to predict what losses will be under certain conditions.

"Meteorologists are increasingly involved in developing the new generation of catastrophe analysis models," he says, "and the models themselves are becoming increasingly detailed around specific meteorological components."

Smith would like insurers to be more supportive of a particular service offered by commercial meteorological firms: weather risk management plans for businesses.

"Insurance companies would never consider insuring a chemical plant without a fire detection system," he says. "But, those same companies routinely insure high risk businesses without a weather detection system, let alone a weather [damage] mitigation plan."

"Why don't you give businesses with a weather loss mitigation plan a break on pricing?," Smith asks. "As a way of increasing an insurance company's bottom line, this is very low hanging fruit."