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Forecasters Looking Beyond El Niño Predict Cold, Snow for the East

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Like all good bettors, climate forecasters have a system, except that theirs is a bit better than counting on a football team to "never" lose on snow. To predict a coming winter's weather, many use the El Niño Southern Oscillation, an ocean current in the tropical Pacific.

But this year there is neither a strong El Niño, which brings a mild winter to the northern U.S. and extra precipitation from Texas to Florida, nor its opposite, La Niña. As a result, ENSO-smitten meteorologists are as lost as those football bettors faced with a game in sunny Miami.

The National Oceanic and Atmospheric Administration, for instance, predicts a winter that's warmer than the 30-year average in the central and western U.S. But it says the Northeast, the East Coast, the Gulf Coast states and the Southern California coast have equal chances of being warmer or colder than usual. In other words, flip a coin.

As for precipitation, NOAA says that although Florida and parts of the Southeast and Gulf Coast will dry off, the rest of the country has equal chances of being wetter or drier than average. Another coin flip. With no strong signals for either above- or below-normal conditions, says NOAA's Mike Halpert, they fall back on a statistical technique that assumes the trend of the past 10 years is likely to continue.

Fed up with wishy-washy forecasts, scientists are looking for influences on winter weather that have nothing to do with El Niño but hit the mark more often. "By focusing so strongly on El Niño," says meteorologist Judah Cohen of Atmospheric & Environmental Research Inc., Lexington, Mass., "you leave a lot on the table." And, as a National Science Foundation report found, "the predictive [power] of El Niño-based temperature forecasts outside of the tropics often has been far off the mark."

Dr. Cohen's preferred crystal ball: October snow cover in Eurasia. When snow blankets more of Siberia than usual, he calculates, it amplifies certain waves in the atmosphere, directing energy into the stratosphere. This upper-level warming induces large-scale circulation changes, which eventually travel down to Earth's surface, where they cause hemisphere-scale anomalies of pressure, temperature and winds that push the jet stream south.

Arctic air also dips south, making the eastern U.S. and Western Europe shiver. And the southerly jet stream pushes storm tracks south, says Dr. Cohen, "so there is a higher likelihood of northeasters and snowstorms to the south and east."

His snow-cover-based forecasts have regularly bested El Niño-based ones. In the winter of 2002-2003, for instance, a moderate El Niño was supposed to drive the atmosphere toward a milder-than-average season in the East. Dr. Cohen broke with the pack. Based on greater-than-average snow cover in Siberia in October 2002, he forecast a bitterly cold and snowy winter in the eastern half of the U.S., and warmth for the West. Bingo. January was frigid, and heavy snows in February paralyzed roads and rails in Eastern cities.

As he told the annual meeting of the American Geophysical Union this week, "The snow-based forecast was superior to the El Niño-based government forecast." The latter predicted a warmer-than-normal winter for most of the country, which was way off.

Last winter, too, Dr. Cohen accurately forecast the overall temperature pattern, calling for above normal for most of the country and below normal for the interior Northeast. Government forecasts missed the extensive balminess in the Midwest and incorrectly predicted abnormal cold for the Southeast.

His current winter forecast also differs from the government's, and he is far from alone. He thinks the western two-thirds of the U.S. will be warmer than normal, while the eastern third (especially around the eastern Great Lakes) will get the icebox treatment.

Weather 2000, a New York firm whose clients include energy, agriculture and insurance companies, is backing the same horse. "The consensus from NOAA and some other forecasters is for a very mild winter, but we see the opposite," says Michael Schlacter, chief meteorologist. "This one will be comparable to 1995-'96 and 2002-'03, with a warm West and a cold, snowy East. This could be the fourth winter in a row that New York City gets more than 40 inches of snow."

Weather 2000 bases its forecast partly on the North Atlantic Oscillation, a pattern of pressure and temperature waves centered over Greenland. When the NAO is in its so-called negative phase, it sets up a "blocked" weather pattern that weakens westerly winds and brings Europe and the eastern U.S. extreme cold.

How do you know which phase will likely dominate the NAO? Northern Hemisphere snow cover in July may offer a clue. When it is less extensive than usual, says meteorologist Adam Lea of University College London, the NAO is more likely to be in its positive phase, which strengthens westerly winds and brings Europe and the eastern U.S. a wetter but milder winter.

But the abundant snow cover last summer portends a negative NAO, which the London scientists calculate is three times as likely as a positive one. Parkas ready?

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