Not so windy: Research suggests winds dying down

June 10 2009, By SETH BORENSTEIN , AP Science Writer

In a Dec. 30, 2008 file photo two wind turbines stand near a traditional windmill on a farm near Mount Carmel, Iowa. A first-of-its-kind study suggests that average and peak wind speeds have been noticeably slowing since 1973, especially in the Midwest and the East. (AP Photo/Charlie Neibergall/file)

(AP) -- The wind, a favorite power source of the green energy movement, seems to be dying down across the United States. And the cause, ironically, may be global warming - the very problem wind power seeks to address.

The idea that winds may be slowing is still a speculative one, and scientists disagree whether that is happening. But a first-of-its-kind study suggests that average and peak wind speeds have been noticeably slowing since 1973, especially in the Midwest and the East.

"It's a very large effect," said study co-author Eugene Takle, a professor of atmospheric science at Iowa State University. In some places in the Midwest, the trend shows a 10 percent drop or more over a decade. That adds up when the average wind speed in the region is about 10 to 12 miles per hour.

There's been a jump in the number of low or no wind days in the Midwest, said the study's lead author, Sara Pryor, an atmospheric scientist at Indiana University.

Wind measurements plotted out on U.S. maps by Pryor show wind speeds falling mostly along and east of the Mississippi River. Some areas that are banking on wind power, such as west Texas and parts of the Northern Plains, do not show winds slowing nearly as much. Yet, states such as Ohio, Indiana, Michigan, Illinois, Kansas, Virginia, Louisiana, Georgia, northern Maine and western Montana show some of the biggest drop in wind speeds.

"The stations bordering the Great Lakes do seem to have experienced the greatest changes," Pryor said Tuesday. That's probably because there's less ice on the lakes and wind speeds faster across ice than it does over water, she said.

Still, the study, which will be published in August in the peer-reviewed Journal of Geophysical Research, is preliminary. There are enough questions that even the authors say it's too early to know if this is a real trend or not. But it raises a new side effect of global warming that hasn't been looked into before.

The ambiguity of the results is due to changes in wind-measuring instruments over the years, according to Pryor. And while actual measurements found diminished winds, some climate computer models - which are not direct observations - did not, she said.

Yet, a couple of earlier studies also found wind reductions in Australia and Europe, offering more comfort that the U.S. findings are real, Pryor and Takle said.

It also makes sense based on how weather and climate work, Takle said. In global warming, the poles warm more and faster than the rest of the globe, and temperature records, especially in the Arctic, show this. That means the temperature difference between the poles and the equator shrinks and with it the difference in air pressure in the two regions. Differences in barometric pressure are a main driver in strong winds. Lower pressure difference means less wind.

Even so, that information doesn't provide the definitive proof that science requires to connect reduced wind speeds to global warming, the authors said. In climate change science, there is a rigorous and specific method - which looks at all possible causes and charts their specific effects - to attribute an effect to global warming. That should be done eventually with wind, scientists say.

Jeff Freedman, an atmospheric scientist with AWS Truewind, an Albany, N.Y., renewable energy consulting firm, has studied the same topic, but hasn't published in a scientific journal yet. He said his research has found no definitive trend of reduced surface wind speed.

One of the problems Pryor acknowledges with her study is that over many years, changing conditions near wind-measuring devices can skew data. If trees grow or buildings are erected near wind gauges, that could reduce speed measurements.

Several outside experts mostly agree that there are signs that wind speed is decreasing and that global warming is the likely culprit.

The new study "demonstrates, rather conclusively in my mind, that

average and peak wind speeds have decreased over the U.S. in recent decades," said Michael Mann, director of the Earth System Science Center at Penn State University.

A naysayer is Gavin Schmidt, a NASA climate scientist in New York who said the results conflict with climate models that show no effect from global warming. He also doubts that any decline in the winds that might be occurring has much of an effect on wind power.

But another expert, Jonathan Miles, of James Madison University, said a 10 percent reduction in wind speeds over a decade "would have an enormous effect on power production."

Pryor said a 10 percent change in peak winds would translate into a 30 percent change in how much energy is reaped. But because the research is in such early stages, she said, "at this point it would be premature to modify wind energy development plans."

Robert Gramlich, policy director at the American Wind Energy Association, said the idea of reduced winds was new to him. He wants to see verification from other studies before he worries too much about it.

Journal of Geophysical Research: http://www.agu.org/journals/jd/

AWS Truewind LLC: http://www.awstruewind.com/

Penn State Earth System Science Center: http://www.essc.psu.edu/

American Wind Energy Association: http://www.awea.org/

published, broadcast, rewritten or redistributed.