

Two warmest winter months in Midwest history may have connection

June 14 2012

This past March was the second warmest winter month ever recorded in the Midwest, with temperatures 15 degrees above average. The only other winter month that was warmer was December of 1889, during which temperatures were 18 degrees above average. Now, MU researchers may have discovered why the weather patterns during these two winter months, separated by 123 years, were so similar. The answer could help scientists develop more accurate weather prediction models.

Tony Lupo, chair of the Department of Soil, Environment and Atmospheric Sciences in the College of Agriculture, Food and Natural Resources at MU, created computer models with global [weather records](#) and ship captains' logs to determine why these two months were unusually warm. He discovered that the preceding months were also dry and warm, as well as the previous summers, which led him to determine that both 2012 and 1889 were La Niña years.

"During a period of La Niña the sea surface temperatures across the equatorial Eastern Central Pacific Ocean are lower than normal by 3 to 6 degrees," Lupo said. "This typically directs the jet stream from the Pacific on a northeastern path over Canada. Rain storms follow the jet stream, leaving the central and south-central states dry, while blocking air from moving south into the Midwest, resulting in higher temperatures."

The discovery of the similarity between these two months, even though they are separated by 123 years, could help scientists understand the

variability within climate patterns and assist them with future weather predictions. Thus, scientists could further understand how climate is changing and how variable it is becoming.

As well as being La Niña years, 2012 and 1889 also featured strong Arctic Oscillations, a pattern of air pressure that wraps itself around the North Pole. During these times the air pressure is low and the oscillation traps and keeps cold air in the arctic. With oscillation keeping cold air to the north, records showed a strong "ridge" over central North America. Ridges often bring record heat into an area, explaining the unusually warm winter temperatures, Lupu explained.

"The La Niña pattern has continued into the summer and will continue to affect the weather," Lupu said. "This will cause droughts and above average heat throughout the Midwest from Texas to Iowa. A new El Niño pattern could develop this fall and bring favorable weather conditions to the Midwest; however, I don't see this happening."

Lupu shared his results with fellow scientists at the Seventh International Climate Change Conference in Chicago this May. He is a fellow of the Royal Meteorological Society in London and is a member of the International Panel for Climate Change that shared the Nobel Peace Prize with Al Gore in 2007.

Provided by University of Missouri-Columbia

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