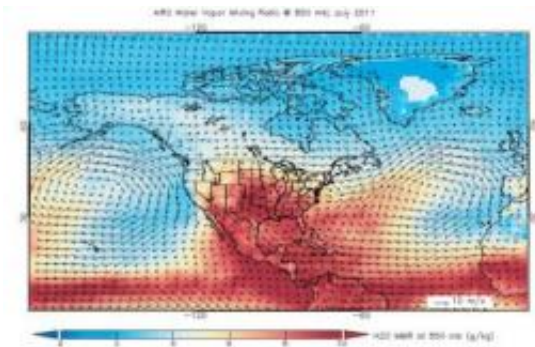


NASA satellite observes unusually hot July in the Great Plains

August 31 2011



Note the hot tropical air being pumped towards Texas and Oklahoma (dark red).
 Credit: NASA/Goddard Earth Science Data and Information Center

Much of the United States sweated through an unusually humid heat wave during July, a month that brought record-breaking temperatures to many areas across the Great Plains. As temperatures soared, NASA satellites observed the unusual weather from above.

The Atmospheric Infrared Sounder (AIRS), an instrument launched on the Aqua satellite in 2002, is unique in its ability to yield highly accurate data about the [troposphere](#), the lowest layer of the atmosphere and the part that most directly affects life on Earth.

Hot temperatures struck Texas and Oklahoma particularly hard, AIRS observed. Large swaths of both of these states persistently experienced

highs above 100° F (311 K) during the day for the month of July. Nights offered only minimal relief with low temperatures averaging close to 90° F (305 K) for the month. That's about 20° F warmer, both day and night, than the average July temperatures for the past eight years of AIRS observations.

AIRS also offered clues about what may have caused the persistent heat spell. Domes of high atmospheric surface pressure normally intensify in the summer over both the Atlantic and Pacific oceans. However, AIRS data shows they were abnormally strong in July.

Meanwhile, AIRS data for the month of July reveals a clock-wise vortex of winds driven by the high pressure in the North Atlantic. The vortex continuously pumped hot and humid air from the tropics through the heart of the Gulf of Mexico and into much of the continental United States throughout July.

The jet stream, which typically produces loops around low-pressure areas that break off and brings cooler air and precipitation, offered little relief. The flow of the jet stream instead consistently bulged over the high-pressure aloft over the United States.

Provided by NASA's Goddard Space Flight Center

Citation: NASA satellite observes unusually hot July in the Great Plains (2011, August 31)
retrieved 25 April 2024 from

<https://phys.org/news/2011-08-nasa-satellite-unusually-hot-july.html>

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