

Abstract Submitted
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Jupiter's New Red Spot - An Indication of Climate Change?

PHILIP MARCUS, CHUNG-HSIANG JIANG, XYLAR ASAY-DAVIS, UC Berkeley — Jupiter now has two red spots. The new Red Oval, is similar to the Great Red Spot and is Jupiter's second largest storm. The Oval was originally white, but turned red in 2005. This color change was the first sign of the current jovian "upheaval" at the latitudes north of the Oval. Using a new method, Data Assimilated Correlation Image Velocimetry, we derive the Oval's velocities with unprecedented accuracy from spacecraft images. These data show that the velocities of the Oval did not between 2000 and 2005 and therefore cannot account for its color change. Although the dynamics of upheavals and other jovian climate cycles are not well understood, in 2001 we predicted that a large-scale warming at, and north of, the Oval, was about to begin, with effects becoming visible in 2006. Currently, no instrument can directly confirm whether the average jovian temperatures changed, and therefore we do not know whether a warming was responsible for the current upheaval or for the Oval's red color. However, we show that the Oval's color change is consistent with the location, magnitude, and timescale of the predicted temperature change. We show also that other proposed explanations for the color change are not plausible.

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