



## **The 2009 Impact on Jupiter observed with Gemini, Keck and HST**

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Many telescopes engaged in a world-wide observing campaign to observe an impact site discovered on Jupiter by amateur astronomer Anthony Wesley on 19 July 2009. Here, we compare mid-infrared images from the 8-m Gemini North telescope, near-infrared images from the 10-m Keck Telescope (both with and without adaptive optics), and visible-light observations from the newly-installed WFC3 camera on the Hubble Space Telescope; the images were all obtained between 22 and 25 July 2009. The anomalous feature near Jupiter's south pole (planetographic latitude 58 deg S, System-III longitude 305 deg W) had a morphology and colors similar to jovian sites created in 1994 by medium-sized (500-m) fragments of Shoemaker-Levy 9. Interestingly, the morphology of the impact site at mid-IR wavelengths shows some interesting differences compared to that at visible and near-IR wavelengths. We used radiative-transfer models on the photometrically- and radiometrically-calibrated data to constrain the vertical distribution of particle abundance and size in the impact debris field at different wavelengths. The data also provide constraints for models of the physical and chemical processes involved in the impact, allowing a coherent picture of the event to evolve.