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Titan's clouds from ground-based observations

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Titan's methane clouds were first discovered in spectra and images acquired with ground-based telescopes. Ground-based observations continue to play a critical role in developing our understanding of Titan's complicated methane hydrology. We report results from our ongoing observations of Titan's tropospheric clouds using resolved imaging and spectroscopy from large telescopes (Keck 10-m; Gemini North 8-m) and continuous photometry from a 14" telescope based in Cloudcroft, NM, USA. The former show cloud locations and altitudes, while the latter gives a nightly record of whole disk cloud coverage.

We will discuss several recent developments, including:

A massive storm near the south pole in late 2004 that led to the almost complete disappearance of cloud activity from the south pole for several months. This storm and subsequent decrease in south polar activity may be the first signs of seasonal change as Titan progresses through southern summer.

The discovery of a region on Titan (350$ˆ{\circ}$W, 40$ˆ{\circ}$S) that appears to be controlling the formation of mid-latitude clouds. The mechanism driving cloud formation is thought to be release of methane from a region of geologic activity.

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