JPL SCIENCE HIGHLIGHT: Science Mission Directorate (SMD)

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JPL Science Highlight: Planetary Program Support

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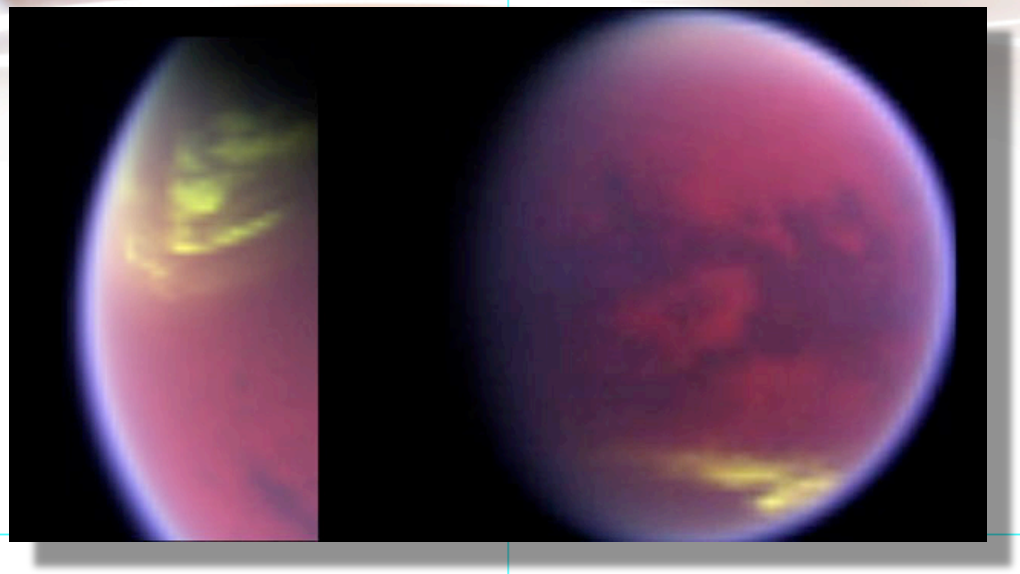
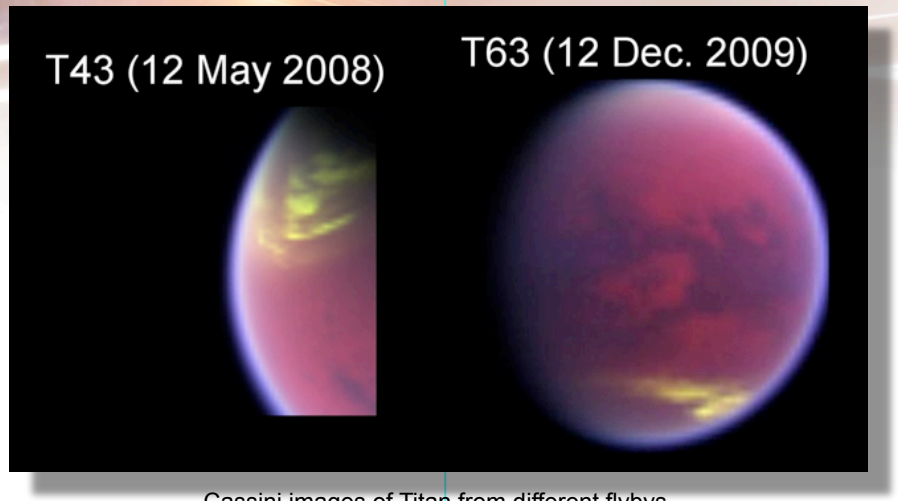
Spring Weather Forecast on Titan: Sunshine with Patchy Clouds



The visual and infrared mapping spectrometer (VIMS) aboard NASA's Cassini spacecraft has been monitoring clouds on Titan regularly since the spacecraft entered orbit around Saturn in 2004. Now, a group led by Sébastien Rodriguez, a Cassini VIMS team collaborator based at Université Paris Diderot, France, has analyzed more than 2,000 VIMS images to create the first long-term study of Titan's weather using observational data that also includes the equinox. Equinox, when the sun shone directly over the equator, occurred in August, 2009.

Spring Weather Forecast on Titan: Sunshine with Patchy Clouds (Cont'd)



Cassini images of Titan from different flybys

Implications:

Though Titan's surface is far colder and lacks liquid water, this moon is comparable to Earth because it has a surface covered with organic material and an atmosphere whose chemical composition that might resemble that of pre-biotic Earth. Titan has a hydrological cycle similar to Earth's, though Titan's cycle depends on methane and ethane rather than water.

Significance to Solar System Exploration:

Over the past six years, Cassini scientists found that clouds clustered in three distinct latitude regions of Titan: large clouds at the north pole, patchy clouds at the south pole and a narrow belt around 40 degrees south. With these findings, for the first time, it is possible to create a long term prediction model of weather patterns on Titan.