

CGD SEMINAR



DATE: Tuesday, 7 March 2017

TIME: 11 a.m.

LOCATION: NCAR, 1850 Table Mesa Drive
Mesa Lab, Main Seminar Room

TITLE: Climate change on Mars

SPEAKER: Brian Toon, University of Colorado,
Boulder

ABSTRACT:

Mars is the most Earth-like solar system planet. Like Earth it shows evidence of climate change. Our group has adapted versions of CESM to Mars, ancient and future Earth, Titan, as well as exoplanets. In this talk I will overview the current climate of Mars and three examples of climate change. Like Earth, Mars has many dust storms. However, on Mars the dust storms become global every few years. We don't understand why this global distribution of dust, reaching altitudes of 50 km and all regions of the planet, happens. The Martian orbit is much more variable than Earth's. At times more than 90% of the atmosphere likely condenses on the poles, and at other times polar water ice likely moves to the subtropics. There are ancient river valleys on Mars, whose column water vapor is currently less than 0.1% of Earth's. Many decades of climate studies have failed to produce temperatures high enough to support a significant hydrological cycle with a believable climate model. Is it possible that water clouds, which cool the Earth, provided a strong greenhouse on early Mars? Or maybe, devastating impacts mobilized all the water in the Martian regolith to produce a steam atmosphere?

Live webcast: <http://www.fin.ucar.edu/it/mms/ml-live.htm>

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