CASW Ronald Cohen Tuesday, August 30, 2011

31 - Physical properties and seasonal behavior of H_2O, HDO, CO_2 and trace gases on Mars: Quantitative mapping from Earth-based observatories

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Since 1997, we have used high-resolution (R > 40000) spectrometers on ground based-telescopes to study molecules that have astrobiological significance in Mars' atmosphere. We have used the NASA-IRTF, Keck II, and VLT telescopes in the 1.0-5.0 micron range. The spectrometer is set at a wavelength to detect specific molecules. Spectral/spatial images are produced. Extracts from these images provide column densities centered at latitude/longitude locations (resolution ~400km at sub-Earth point). We have mapped the O_2 singlet-Delta emission (a proxy for ozone), HDO, and H_2O for seasonal dates throughout the Martian year. Previously undiscovered isotopic bands of CO_2 have been identified along with isotopic forms of CO. We are searching for other molecules that have astrobiological importance and have successfully measured methane in Mars' atmosphere.

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~~**Tuesday, August 30, 2011 10:50 AM**~~
~~Chemistry as a Tool for Space Exploration and Discovery at Mars (08:30 AM - 11:50 AM)~~
~~**Location: Colorado Convention Center**~~
~~**Room: 102**~~

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