Geophysical Research Abstracts
Vol. 16, EGU2014-2102, 2014
EGU General Assembly 2014

The Latest Mars Climate Database (MCD v5.1)

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For many years, several teams around the world have developed GCMs (General Circulation Model or Global Climate Model) to simulate the environment on Mars.
The GCM developed at the Laboratoire de Météorologie Dynamique in collaboration with several teams in Europe (LATMOS, France, University of Oxford, The Open University, the Instituto de Astrofisica de Andalucia), and with the support of ESA and CNES is currently used for many applications.
Its outputs have also regularly been compiled to build a Mars Climate Database, a freely available tool useful for the scientific and engineering communities. The Mars Climate Database (MCD) has over the years been distributed to more than 150 teams around the world.
Following the recent improvements inthe GCM, a new series of reference simulations have been run and compiled into a new version (version5.1) of the Mars Climate Database, released in the first half of 2014.

To summarize, MCD v5.1 provides:
- Climatologies over a series of dust scenarios: standard year, cold (ie: low dust), warm (ie: dusty atmosphere) and dust storm, all topped by various cases of Extreme UV solar inputs (low, mean or maximum). These scenarios differ from those of previous versions of the MCD (version 4.x) as they have been derived from home-made, instrument-derived (TES, THEMIS, MCS, MERs), dust climatology of the last 8 Martian years.
- Mean values and statistics of main meteorological variables (atmospheric temperature, density, pressure and winds), as well as surface pressure and temperature, CO_2 ice cover, thermal and solar radiative fluxes, dust column opacity and mixing ratio, [H20] vapor and ice columns, concentrations of many species: [CO], [O_2], [O], [N2], [H2], [O_3], ...
- A high resolution mode which combines high resolution (32 pixel/degree) MOLA topography records and Viking Lander 1 pressure records with raw lower resolution GCM results to yield, within the restriction of the procedure, high resolution values of atmospheric variables.
- The possibility to reconstruct realistic conditions by combining the provided climatology with additional large scale and small scale perturbations schemes.

At EGU, we will report on the latest improvements in the Mars Climate Database, with comparisons with available measurements from orbit (e.g.: TES, MCS) or landers (Viking, Phoenix, MSL).