



The new Mars climate database (version 4.2)

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The Mars Climate Database (MCD) is a database of atmospheric statistics compiled from General Circulation Model (GCM) numerical simulations of the Martian atmosphere and validated using available observational data. The database extends up to 250 km in altitude (up to and including the thermosphere) and provides statistics on temperature, density, winds, pressure and radiative fluxes as well as atmospheric composition (including dust and water vapor and ice content). 8 different "Dust and Extreme UV" (EUV) scenarios are used in order to represent the full range of atmospheric dust and solar EUV conditions that occur on Mars.

The MCD is freely distributed and includes documentation along with access software to extract and post-process supplied meteorological variables. Informations on the variabilities of the fields are stored in the database and the provided software thus includes the possibility of reconstructing and synthesizing these. The major improvement in version 4.2 of the MCD is that access software now includes a "high resolution mode". The latter is achieved via postprocessing of MCD data which includes high resolution (32 pixels/degree) MOLA topography and atmospheric mass correction from Viking Lander 1 pressure records.

The MCD is useful in the framework of engineering applications such as atmospheric trajectory computations as well as in the context of scientific studies. Previous versions have been used by as much as a hundred teams around the world.