

The status of activity on the Study Group 1.11 on Comparative Climatology (February 2018)

3rd Comparative Climatology of Terrestrial Planets: From Stars to Surfaces (CCTP-3)

NASA's 3rd Comparative Climatology of Terrestrial Planets: From Stars to Surfaces (CCTP-3) conference is planned to be held during August 27-30, 2018 at LPI, Houston, Texas. This conference will promote cross-disciplinary conversation on climate processes at work on terrestrial planets both within our solar system and in extrasolar systems. The conference will synthesize present and past research in terrestrial climate science including solar/stellar influences. Also, it will provide a multidisciplinary forum for the identification of future research needs and missions. CCTP-3 will continue the dialogue and interactions started at the two previous conferences, CCTP-1 and CCTP-2. Scientists from all aspects of climatic processes research - including planetary science, helio-physics, Earth science, and exoplanet astronomy - are encouraged by NASA's Science Mission Directorate (SMD) to participate in and contribute to this conference.

WEBSITE: <https://www.hou.usra.edu/meetings/climatology2018/>

Composition, Structure of Planetary Atmospheres

Effort is on to finalize the write up on composition of planetary atmosphere, energy budget of planets, thermal structure of planetary bodies, atmosphere of planetary boundary layer, geology and composition of the terrestrial planets. Additionally, now focus is to finalize the content of evolutionary theory of terrestrial planets, giant planets and exoplanets, timeline for evolution of terrestrial planets, Solar variability and its effect on climate, magnetism on planets in the solar system. Surface and subsurface properties of terrestrial planets is being studied by estimating the incoherent thermal emission from distinct surfaces. A review on the presence of particulate matter and its effect on the planetary atmosphere has been initiated.

Modelling of the Martian Atmosphere

With a view to exploring the Large Eddy Simulations for the Martian Atmosphere, we have initiated the implementation of an existing Parallelized Large Eddy Simulation Model (PALM, <https://palm.muk.uni-hannover.de/trac>), an open source LES Model specifically designed and developed for turbulence and convective studies by Institute of Meteorology and Climatology (IMUK) of Leibniz Universitat Hannover, Germany. Initially the model is being tested for the Earth's atmosphere and after completion of required tests, the model code will be re-implemented for the Martian Atmosphere. In this regard, we intend to make use of the Martian Climate Database (MCD, <http://www-mars.lmd.jussieu.fr/>). The main objectives of this work is to test and simulate the fine-scale atmospheric features of the Martian atmosphere, which can be crucial in any lander or robotics mission on the Martian surface.

Presently, the PALM model is installed at Local workstations and test cases are being carried for gaining expertise on the model. Furthermore, the MCD database is also being explored for future implementation of the PALM model for the Martian atmosphere.
