Research with modeling of planetary atmosphere at MPS since 2004

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The Max Planck Institute for Solar System Research (MPS) has been identified as the current name since July 2004, whose name used to be the Max Planck Institute for Aeronomy (MPAE) before. The institute used to be located in Katlenburg-Lindau, Germany, and has moved to Göttingen since Feburary 2014.

The MAOAM (Mars Atmosphere Modeling And Observation) project started at the institute in 2002, which included the development of a general circulation model (GCM) and sub-millimeter observations of Martian atmosphere. Especially the development of a GCM which covers from surface to lower thermosphere of Mars went into full-scale operation in 2004, when Kuroda and Medvedev arrived at the institute. The first paper with the MAOAM-GCM has published in 2005, and since that the GCM has contributed to the leading-edge publications especially about the investigations for the mesosphere and lower thermosphere of Martian atmosphere.

Also with the sub-millimeter observations we have published several papers, connecting to the observations by the Herschel Space Observatory and the scientific review of a sub-mullimeter sounder FIRE (Far Infra-Red Experiment) which was considered to be onboard the Japanese Mars meteorological orbiter. Moreover, studies with Kuroda's Mars GCM from Japan (DRAMATIC, Dynamics, RAdiation, MAterial Transport and their mutual InreraCtions) have contributed to a lot of significant investigations for the atmospheric dynamics in lower atmosphere, which resulted in the invitation to publish a review paper on Aeolian Research. In 2013 MPS issued a press release about our GCM study of CO_2 snowfall in winter north polar region.

Now we are also starting the development of a GCM for Jupiter's stratosphere, targeting the contribution to the JUICE (JUpiter ICy moons Explorer) mission which includes the observations with a sub-millimeter instrument JUICE-SWI. Based on the Jupiter GCM, we are also preparing for the investigations of other gas giants including extrasolar planets.