

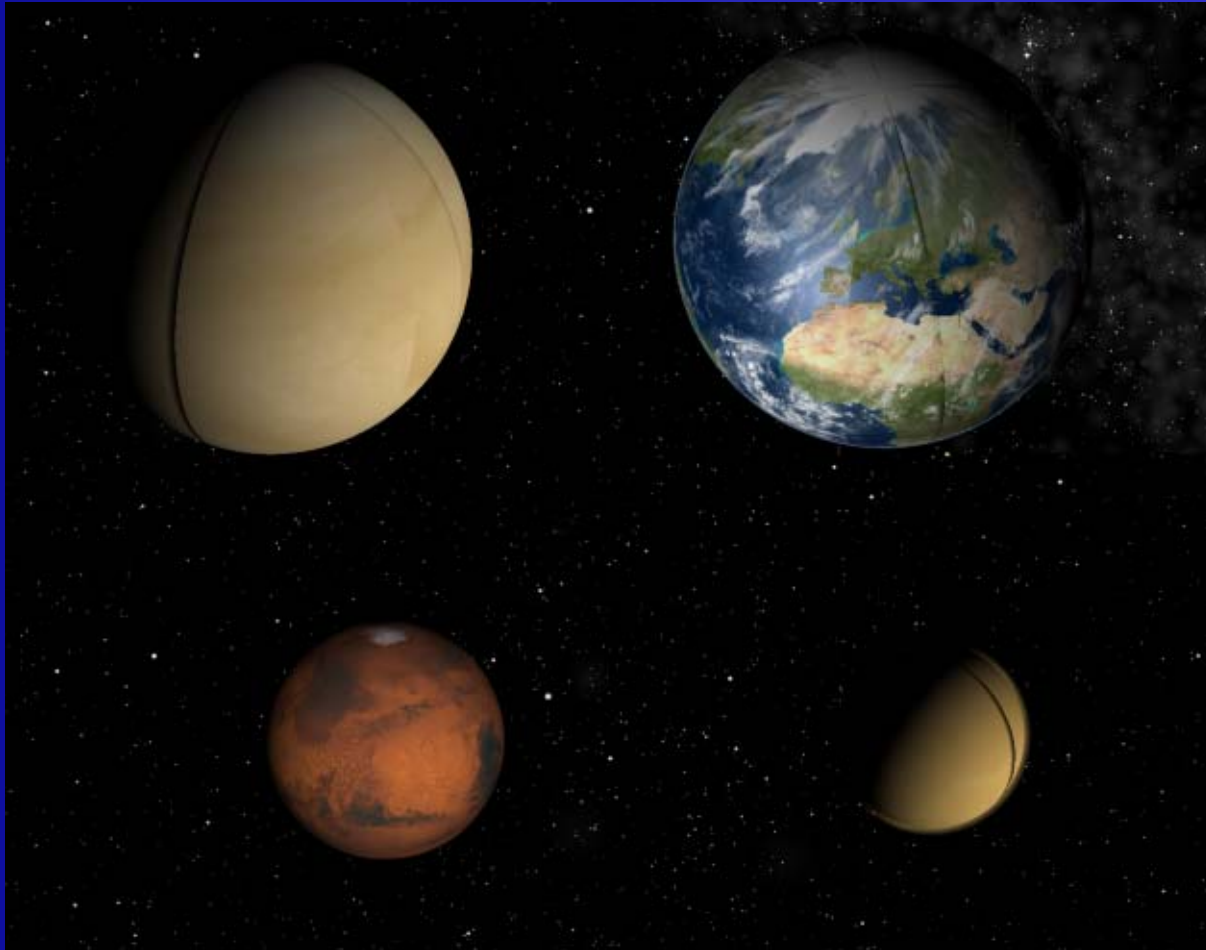
# **Workshop proposal to ISSI**

**Climate and atmospheric  
circulation of terrestrial  
planets**

# WS General Theme

- Addressed are solar system bodies with terrestrial type atmospheres (i.e. Venus, Earth, Mars, and Titan) and Earth like exoplanets.
- Aim is to promote the comprehension of phenomena related to climate and atmospheric circulation, e.g. superrotation.

# Comparison of Terrestrial Planets

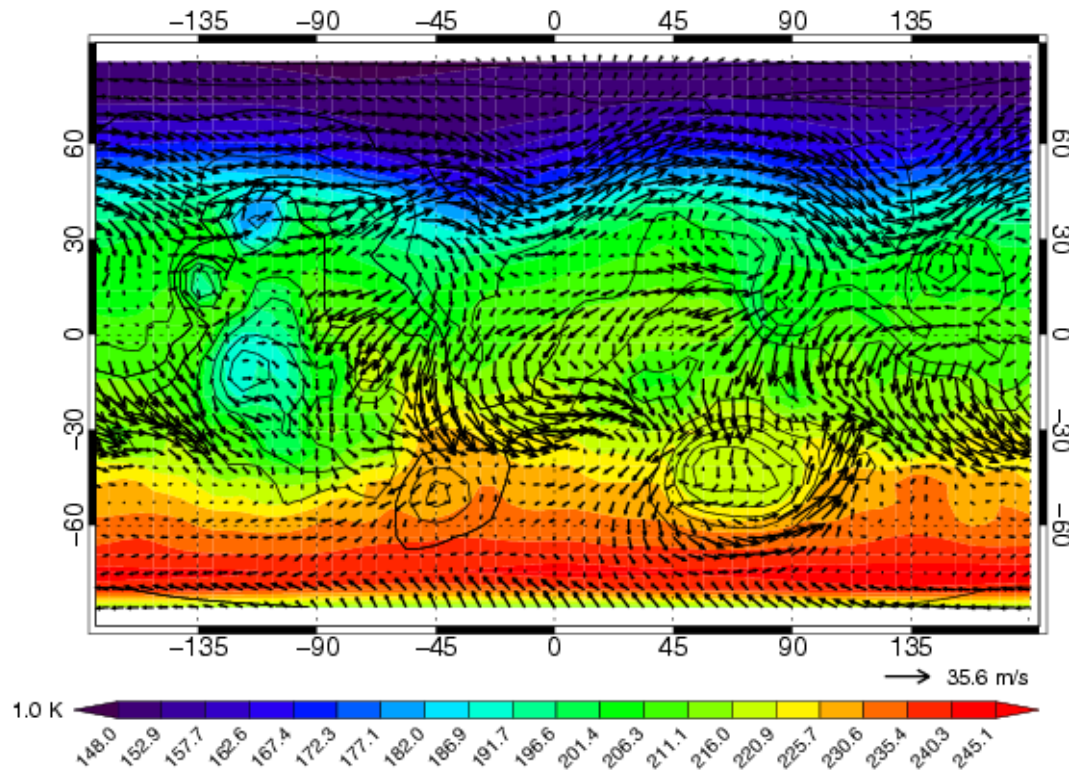


Credit: Celestia

# Topics

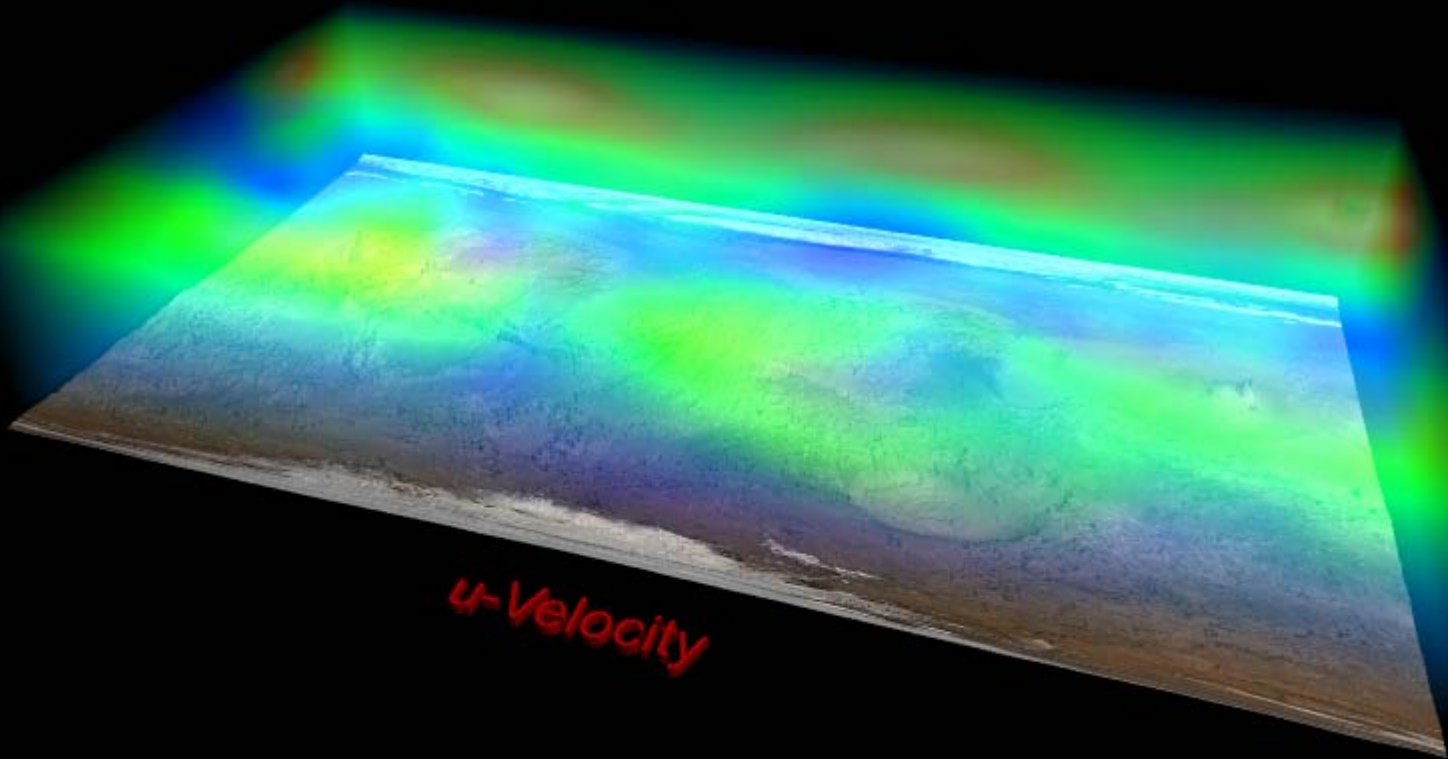
- Radiative transfer in atmospheres
- Fast rotating planets (Earth and Mars)
- Slowly rotating planets (Venus and Titan)
- Tidally locked planets (exoplanets in the habitability zone of M stars)
- Rain and snow: water, metal, and methane

# Example: Temperature and Wind on Mars



Results from the Mars Climate Simulator:  
Atmospheric circulation and temperature near ground level (4 hPa) in winter

# Example: Mars zonal Windspeed, Annual Mean



# Timeliness and relevance to space science

- Titan: In-situ measurements were made by Huygens, Cassini continues to acquire remote sensing data.
- Venus: Venus Express starts scientific operation.
- Mars: Mars Express still in operation
- Exoplanets: Characterization of atmospheres to assess the detectability by forthcoming astronomy missions

# Scientific Relevance

- Comparative studies of different planets will promote the comprehension of atmospheric phenomena in general, e.g. the sensitivity to orbital changes, or superrotation.
- Understanding of stabilizing and destabilizing processes is important to assess the past and future climate of Earth and the habitability of exoplanets.



# WS Date & Structure

- 2007, when Venus Express data is already partially available and the WS can contribute to the planning of further data analysis
- Workshop format: After a plenary session with short presentations by all participants and a poster session with individual discussions on the first day, key questions are identified and respective working groups are formed. The progress of the working groups is discussed in plenary sessions as needed, possibly every other day.

# Proposed Convenors

- Alexander Rodin
- Fred Taylor
- Hannu Savijarvi
- Frederic Hourdin
- Helmut Lammer
- Tetsuya Tokano