

# VEXAG Update

Venus Express SWT # 26  
LATMOS, 25 March 2011

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# VEXAG Status

- Advances in Venus Science *Icarus* Special Issue
- 9<sup>th</sup> VEXAG Meeting and 2011 Venus International Conference, Chantilly, VA
- Comparative Climatology Conference, February 2012, Boulder, Colorado
- Planetary Science Decadal Survey Recommendations: Implications for Venus Exploration (2013-2022)
- New Frontiers and Discovery Program Status



# *Icarus: Advances in Venus Science*

## *Special Issue*

- 41 papers submitted
- Review process underway
- First papers should start appearing on-line in early summer 2011
- Print Volume – Fall 2011

# 2011 Venus International Meeting

Udvar F. Hazy Center, Smithsonian National Air and Space Museum  
Chantilly, VA

30 August – 1 September 2011

- Themes:
  - New Results from Venus Express Mission
  - Ground Based Observations of Venus
  - Exploration of Venus in the Coming Decade - Planetary Science Decadal Survey Recommendations
- Indication of interest and abstracts:
  - Look for information at [www.lpi.usra.edu/vexag](http://www.lpi.usra.edu/vexag) in early April
  - May use the same format as for the previous meeting in Madison
- Format:
  - Oral and Poster Presentations
  - VEXAG meeting on 1<sup>st</sup> September (may add another half day if needed)
  - Publications?

# 9<sup>th</sup> VEXAG Meeting

Chantilly, VA, 1-2 September 2011

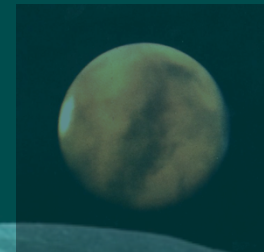
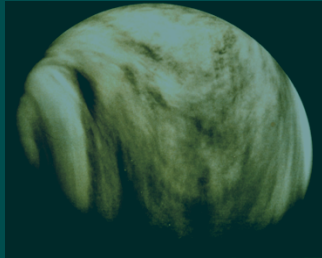
## *Tentative Agenda:*

- Revision of Pathways to Venus Exploration Document
- Focus Group on International Collaborations for Venus Exploration
- Student Focus Group on opportunities in Venus Exploration and Research
- Earth Based Long Lived Balloon Borne Telescope Observations of Venus

# Comparative Terrestrial Climatology/ Planetology Conference

- Sponsored by VEXAG, MEPAG and OPAG
- Interest within NASA/SMD-PSD for a ROSES Program Element on Comparative Planetology
- Meet at NCAR, Boulder Colorado during mid-late February 2012
- Conference Proceedings will be published, publisher TBD
- Details to be posted on the VEXAG URL in April 2011

# COMPARATIVE PLANETARY CLIMATOLOGY CONFERENCE, Boulder, Colorado, February 2012



- *Material from David Grinspoon*

VEX, March 25, 2011



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# COMPARATIVE PLANETARY CLIMATOLOGY

## Science Connections:

- Venus and Mars provide our closest (and only) planetary analogs for many important climate processes.
- Understanding of these planets would benefit greatly from use of the best Earth models and the expertise of the larger community of Earth scientists.
- Simulating extreme climates can help to validate terrestrial models, increase facility with nonlinear climate feedbacks, and expose potential limitations of current climate models.
- Multiple Mars missions have now produced an extensive atmospheric database. Circulation models are more mature. Venus Express - the first Venus climate orbiter, has now returned 2 years of data.

# COMPARATIVE PLANETARY CLIMATOLOGY

## Comparative Climatology:

- Venus as an extreme case of global warming.
- Obliquity cycles and climate histories of Mars and Earth.
- Clouds and radiative balance:
  - microphysics, cloud morphology, dynamics and cloud coverage .
- Photochemistry of Cl, O, and S .
- Responses to solar cycle.
- Responses to long-term solar evolution, constraints on solar climate forcing.
- Volcanism-climate interactions.

# COMPARATIVE PLANETARY CLIMATOLOGY

## Climate Evolution:

- Nonlinear global systems theory.
- The role of water in the terrestrial planets.
- Noble gases as indicators of terrestrial planet origin and evolution.
- Stable isotopes of C, H, O, S and N as tracers of atmospheric sources and sinks and markers of potential ancient biospheres.
- Implications of Venusian and Martian climatic and tectonic evolution for the future of Earth.

# Comparative Planetary Climatology

- Comparative Planetary Climatology has huge potential for public excitement and education about planetary science, climate change, and Sun-Earth connections!
- Connects several aspects of current NASA science to areas of great public concern and relevance
- Useful for studies of Extra-solar terrestrial planets

# Planetary Science Decadal Survey (2013-2022)

- Four Flagship Missions Recommended
- Continue NF (1B\$ Cap before LV) every 5 years with NF-4 and NF-5 in the decade
- Continue Discovery Program (AOs < 24 months apart)
- Support Research and Technology Development Programs
- Support International Partnerships for missions

☞ *NASA Response due by June 2011*

# Implications for Exploration of Venus

- Venus Climate Mission is ranked # 4 in the priorities (after MAX-C, JEO, UO)
- However, tight NASA budget submitted by POTUS in February 2011 to Congress implies only ~ 1 B\$ for a Flagship Mission
- A Venus Flagship mission from the US is possible ONLY with international partners !!

Need to start dialog now for a possible start ~ 2015/2016.

# NF-3 and Discovery Program Status

- NF-3 Site visits for SAGE, Moonrise and OSIRIS-Rex in April 2011
- Discovery-12 Proposals undergoing evaluation
- Selection Process on schedule