Notes – Venus Town Hall Meeting at LPSC – March 20, 2019

Some 55 members of the Venus science and engineering community participated in a VEXAG sponsored Venus Town Hall Meeting held at the Lunar and Planetary Science Conference, The Woodlands, Texas on Wednesday, March 20, 2019.

Update on VEXAG activities – Darby Dyar
Welcome to "The Decade of Venus"

Darby noted that a number of VEXAG Steering Committee members would be rolling off at the end of 2019. Young career members of our Venus community are encouraged to apply.

VEXAG has implemented a VEXAG listserver to facilitate communication within the Venus community. Over 500 names are now on the list. If you are not currently on this list, contact Darby or Noam.

There were 100-200 attendees at LPSC special session, "Venus, or how I Stopped Worrying and Learned to love the Second Planet", held just before this Venus Town Hall Meeting.

VEXAG has a new Twitter account. Volunteers would be appreciated.

VEXAG is working with the other AGs to develop a NASA-wide Diversity Statement.

Certificates of Appreciation
Robert (Bob) Grimm, Southwest Research Institute, from the Venus Exploration Analysis Group (VEXAG) in appreciation of his outstanding leadership of the VEXAG International Venus Exploration Working Group, 2016 – 2018.

Martha (Marty) Gilmore, Wesleyan University, from the Venus Exploration Analysis Group (VEXAG) in appreciation of her outstanding leadership of the VEXAG International Venus Exploration Working Group, 2016 – 2018.

Venus Missions

- JAXA's Akatsuki Mission has now been at Venus for 3 years. Recent results have been published in a recent special issue of Earth, Planets and Space.

- India's (ISRO) Venus Mission – Last November, ISRO issued an AO for space-based experiments to study Venus for their mission scheduled for launch in mid-2023. Proposals were due at the end of January 2019. 12 investigations were pre-selected. Selection announcement is expected this spring. There is no guarantee of NASA/U.S. support. About 1,000 proposal are expected. NASA will not be participating in the selections. Selections are expected to be

announced in April or May. If U.S. instruments are selected, they will be discussed in an ensuing ISRO-NASA Bilateral.

- Russia's Venera-D Mission continues with joint Russian-U.S. studies. This proposed Russian mission to Venus would include an orbiter and a lander to be launched in 2026 or 2031. The orbiter's prime objective is to perform radar remote-sensing observations with the use of a powerful radar. A lander based on the Venera design capable of operating for 24 hours on the planet's surface is also planned. A Phase 2 Study Report was just released (https://www.lpi.usra.edu/vexag/).

- ESA's Envision Mission is a proposed orbiter that would perform high-resolution radar mapping and atmospheric studies. Envision was selected by ESA in May 2018 as one of three finalists to become the 5th Medium-class mission (M5) of the Cosmic Vision Programme. The winner will be selected in 2021 for a launch in 2032. If you have a region of Venus that is of particular interest, pass that onto Richard Ghail.

<u>Venus Technology Developments</u>
Darby noted that NASA is pursuing a number of technology developments including:
- VEXAG's Venus Bridge Study (completed in mid-2018),
- HOTTech (NASA program to develop instrumentation for extreme temperatures),
- LLISSE (a long-lived Venus lander),
- HEEET (using woven material for heat shields),
- PICASSO and MatISSE, as well as
- EPSCoR (a joint NASA under-represented state studies for aerial platforms and long-duration surface operations).

<u>Venus Environmental Test Facilities</u>
These include the NASA Glenn Extreme Environments Rig (GEER), a new Venus Elemental and Mineralogical Test Facility at Los Alamos, as well as smaller facilities at APL, Goddard, and JPL.

<u>Recent VEXAG/Venus Reports</u>:
- A Venus Aerial Platform Study Report (October 2018),
- A report from NASA's Autonomy Workshop (expected this spring) and
- A Venus Lander Study report (expected in mid-2019)

<u>Findings from November's VEXAG Annual Meeting were reviewed</u>. These were:
1. NASA clarify its position on and timeline for a directed program for Venus.
2. NASA take steps to ensure that the mission balance, cadence and schedule as proposed in the original Decadal report are maintained.
3. NASA conduct a pre-decadal study of a Venus Flagship mission
4. NASA support for a workshop on astrobiology and habitability at Venus.

5. NASA provide funding for relevant Venus and comparative planetology studies as part of exoplanet programs.
6. NASA renew HOTTech and provide additional funding to increase the selection rates for MatISSE and PICASSO
7. NASA take steps to ensure that high-energy entry capabilities be fostered and maintained over time
8. NASA initiate a technology program that is accessible to researchers in non-EBSCOR states.
9. NASA continue to engage in international missions as part of an integrated Venus exploration program, maintaining complementarity with US efforts.
10. NASA form a cross-divisional research program for Comparative Climatology of Terrestrial Planets.

Updates to VEXAG Key Documents and Decadal Survey White Papers

Updates to VEXAG Key Documents (Goals, Objectives, and Investigations (GOI), Roadmap, and Technology Plan) are being pursued in anticipation of the impending Decadal Survey. A new revised New Frontiers Goals Statement is being pursued in parallel. Current drafts of these four documents, which are posted on the VEXAG website https://www.lpi.usra.edu/vexag/ , were reviewed by 40 members of the Venus community on Sunday, March 17th. The goal is to have final updates in mid-summer, 2019.

Work on Venus Decadal Survey White Papers is anticipated to get underway in July. There will be an interaction with the Planetary Advisory Committee (PAC) in September. Final White Papers should be in place by the end of 2019. Some 8 to 18 Venus White Papers are expected. Both LEAG and MEPAG Have set up Goggle Documents to facilitate communication between members of their communities.

Upcoming Meetings

16th Interplanetary Probes Workshop (IPPW), Oxford, England, week of 8-12 July 2019, https://ippw2019.uk/

Joint DPS-ESPC Conference, Centre International de Conferences de Geneve (CICG), Geneva, Switzerland, week of September 15-20, 2019, Special Venus Session, https://dps.aas.org/meetings/future. Abstract deadline: May 8, 2019, 13:00 CEST.

International Venus Conference, Hilton Niseko Village, Hokkaido, Japan, Friday, May 31– Monday June 3, 2019, Abstract submission is closed now and a program will be issued soon. https://www.cps-jp.org/~akatsuki/venus2019/

Venera-D landing Site, Cloud Habitability, and Astrobiology Workshop, Wednesday-Friday, October 2-5, 2019 (in the week before the 10th Moscow Solar System Symposium), Russian Space Research Institute (IKI), NASA will issue an AO for travel support of 6 - 8 early- and mid-career scientists to attend. Abstract deadline will be in August 2019.

Annual VEXAG "Back to Venus" Meeting, LASP, University of Colorado, Boulder, Wednesday-Friday, November 6-8, 2019, Hosted by Kevin McGouldrick and Emilie Royer. As before, 1-page abstracts will be solicited.

Fall AGU Meeting, San Francisco, California, Week of 9-13 December 2019, a Special Session on What's New at Venus for both science and technology and a possible Venus Town Hall meeting will be pursued, https://meetings.agu.org/fall-meeting-2019/.

Exoplanets in our Backyard: Solar System and Exoplanet Synergies on Planetary Formation, Evolution, a joint VEXAG, AbSciCon and EXOPAG/Exoplanet Conference, February 2020. Organizing Committee: Stephen Kane, Giada Arney, Noam Izenberg, Lynnae Quick, Kathy Mandt, Abby Rymer, Darby Dyar, and Vikki Meadows.

NASA Headquarters Update and ROSES Call for Mission Studies – Lori Glaze
Discussion here was devoted to the recent ROSES Call for Mission Studies. This is being pursued by NASA Headquarters as new way to solicit larger mission (New Frontiers and Flagships) concepts. The intent is to provide the best possible, highest fidelity input for the next Decadal Survey. These mission studies will be in parallel with the usual Decadal Survey White Papers. This call is not intended to produce fully formed Mission concepts, but rather to form the equivalent of Science Definition Teams to guide follow-on full-up mission studies. International collaboration is encouraged although foreign responders to this AO are not allowed.

Previously completed mission studies will also be considered by the Decadal Survey panels. There will be about 10 studies at $100K each. It's important to have a high fidelity Traceability Matrix that ensuing engineering and cost studies can use. If selected, Final Reports with a Traceability Matrix and a proposed Mission Concept are due on June 20th.

LPSC Venus Town Hall Meeting (March 20, 2019) Attendees			
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