

## Notes

### Venus Inputs to the next Decadal Study and Future Venus Missions DPS Meeting, Fajardo, Puerto Rico, Sunday – October 2, 2009

#### Welcome – Sanjay

Sanjay welcomed the attendees and noted that the exercise of producing White Papers for the Planetary Science Decadal Survey went well with about a dozen papers being submitted by the Venus community. In addition VEXAG meeting #7 is scheduled for Wednesday afternoon and all-day Thursday, 28-29 October, Irvine, California, following an Inner Planets Panel Meeting on Monday-to-mid-day Wednesday, October 26-28, 2009.

#### NASA Headquarters Report – Jim Green - Jim touched on the following:

- NASA FY10 Budget is in Continuing Resolution through the end of October, with approval on-hold until some “political” difficulties with another agency that us in the same appropriation. The level of R&A programs will be addressed during the NASA Night session.
- Plutonium 238 Production and ASRGs was zeroed out in the DOE budget and with no more US production on the immediate horizon, supplying plutonium to the Outer Planet missions will be problematical. Some \$30M is needed to gey a program underway with a total cost of \$150-200M. At this moment, the Outer Planets Flagshop Misison is 5 Kg short. 2 ASRGs will be available for NASA Missions launching on/before 2014,
- International Collaboration is underway for a restructured Mars Program, the Outer Planet Mission (via ESA’s La Place), and Astrophysics (via the NASA-ESA LISA mission). NASA and ESA are pursuing a joint Mars Program with a NASA-ESA orbiter in 2016 and joint NASA and ESA rovers delivered using MSL Sky Crane technology in 2018. The 2020 Mars Mission may be a network followed by a Mars Sample Return in the 2020’s. The next ESA-NASA Bilateral will be in March 2010.
- VCO – NASA and JAXA signed a Letter of Agreement in the week before the DPS Meeting. This will be implemented via US Participating Scientists, DSN tracking and JPL navigation for Earth-to-Venus Cruise. The first call for US Participating Scientists will be for one or two to be in-residence in Japan for a year or two as was done successfully on the Helio mission.
- Agustin Report – A 12-page Executive Summary has been released. Jim noted here that SMD and ESMD will co-fund LRO and LASER proposals.
- MSL – There are still significant problems and there will be a major (ready to Proceed) Review in November. Jim is optimistic that the technical problems will be resaved and MSL will launch in 2011.

- New Frontier – Many fabulous proposals were received – How many is embargoed. There were one or more proposal for each of the 8 targets.
- Discovery – The Draft AO is imminent – Jim had hoped for release of the Draft AO on Tuesday (in time for NASA Night), but this did not happen. The schedule is AO release in Late December or early January. There will be a Pre-Proposal Briefing (Date and location is TBD).
- Planetary Science Decadal Survey is underway with White Papers (from the community and the not the AGs) submitted. Pursuit of a Venus and the Europa Flagship Missions as well as any NASA Mission not currently in Phase-A (passed their Confirmation Reviews) will depend upon Next Decadal Survey recommendations.
- Comparative Climatology is still in formulation and needs to include Earth (funded via NASA's EART Science Division). It's unlikely for FY10. Jim continues a dialog with Mike Frelich on this.
- Venus Technology – Jim expects that Technology will be addresses in the Planetary Sciences Next Decadal Survey. Mars Technology was zeroed out to provide \$'s for MSL.
- Sample Return – CAPTEM reviewed sample return and have posted a final report on their web-site. It includes lessons learned from Stardust and is linked to the New Frontiers and Discovery Web-sites.

Venus Express – Hakan Svendem – Hakan noted that ESA's Science program Committee (SPC) approved Venus Express operations through 2012 subject to a Mid-Term Review in mid-late 2010. A successful radio occultation campaign was just completed and a second Drag Campaign is just getting underway. Studies for aerobraking in 2012 (a 6-7 month duration) are being pursued. Data archiving on ESA's Planetary Science Archive is coming along although VIRTIS data is on-hold (because of Rosetta) and the German Space Agency still refusing to support archiving of the radio science data.

Venus Climate Orbiter (VCO) – Hakan and Sanjay – The joint VCO-Venus Express Science Working Team meeting at ISAS in early July was a success. The spacecraft in its clean room was available for viewing. VCO remains on track for a launch in mid-may through June 2010. There is no formal JAXA-ESA agreement yet.

Venus Design Reference Mission – Sanjay – It was noted that the Venus SDTD study has been completed, a final study report has been posted, and the Venus STDT was disbanded.

Venera-D – Hakan Svenden and Kevin Baines – Hakan and Kevin were in Moscow during the week before the DPS meeting and interacted with the Rosina on Venera-D. It's in the Russian launch queue for launch in 2018, following (now postponed) Phobos Grunt, a lunar mission, and before Russian's participation in MarsNet in 2020. All of these were delayed by 2 years a result of the Phobos Grunt slip from 2009 to 2011. Venera-D remains to be defined and the Russians will welcome suggestions. Original plans for an orbiter, balloons, and lander are too optimistic and need to be scaled back.

International Cooperation – Sanjay – it was noted that as follow-up to discussion held at September's Low Cost Planetary Mission Conferences in Goa, now is a good time to pursue international cooperation on Venus -Perhaps via an International Venus Exploration Working Group, similar to the International Exploration Working Groups that exist for Mars and the Moon. Jim Green during the Question and Answer session noted that NASA's support for such a group should wait until the Planetary Sciences Next Decadal Survey completes its work.

Venus Data Availability – It was noted that some of the older data sets such as Pioneer still aren't in PDS. Jim Green noted that NASA supports resurrection of old data sets to PDS.

VEXAG Meeting #7 – Sanjay – It was noted that VEXAG meeting #7 will be mid-day Wednesday, October 28<sup>th</sup>, through Thursday, October 29<sup>th</sup>, at the Marriott Irvine, , Irvine, California, following the second Planetary Sciences Decadal Survey Inner Planets Panel meeting, which will be in Irvine on Monday mid-day to Wednesday mid-day (October 26<sup>th</sup>, 27<sup>th</sup> and 28<sup>th</sup>). This VEXAG meeting will emphasize discussions of future missions to Venus as well as providing a survey of the Venus White papers that have been submitted for the 2009-2011 Planetary Sciences Decadal Survey. Student travel grants are available.

Venus Workshop in Madison, August-September 2010 - Sanjay - Sanjay has received lots of encouragement to proceed with a 3-1/2 day Venus Atmosphere Workshop in August-September 2010. The IAA has an interest in co-sponsoring this. The University of Wisconsin Conference Center is available on the dates of August 30-September 2, 2010 – a time when we aren't competing with other science conferences. It would be good if we could have the Conference Proceeding published – Acta Astronomica was mentioned as a possibility. Some 100-150 participants are expected. Sanjay had a preliminary flyer for DPS meeting (and will have a final version at the VEXAG meeting)

Venus Test Chamber at Georgia Tech – Paul Steffes – Paul noted that he has updated test chamber that is currently being used for deep Jovian atmosphere studies for Juno. It has a large 31-liter capacity with a temperature range up to 600-K, not quite Venus surface conditions.

Helen Parish, UCLA, has been working with Jerry Schubert and their studies indicate that Venus atmosphere may have long-term (on the order of years) variabilities.

## Attendees

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