MAPSIT AND THE IMPORTANCE OF PLANETARY DATA SPATIAL INFRASTRUCTURE FOR VENUS. J. Radebaugh[1], B. Archinal[2], B. J. Thomson[3], R. Beyer[4], D. DellaGiustina[5], C. Fassett[6], L. Gaddis[2], J. Hagerty[2], T. Hare[2], J. Laura[2], S. Lawrence[7], E. Mazarico[8], A. Naß[9], A. Patthoff[10], J. Skinner[2], S. Sutton[5], D. Williams[11]; [1]Brigham Young Univ., Provo, UT, USA (janirad@byu.edu), [2]USGS, Flagstaff, AZ, USA, [3]Univ. of Tennessee, Knoxville, TN, USA, [4]SETI/NASA/Ames, Mountain View, CA, USA, [5]Univ. of Arizona, Tucson, AZ, USA, [6]NASA/MSFC, Huntsville, AL, USA, [7]NASA/JSC, Houston, TX, USA, [8]NASA/GSFC, Greenbelt, MD, USA, [9]DLR, Berlin, Germany, [10]PSI, Tucson, AZ, USA, [11]Arizona State Univ., Tempe, AZ, USA.

Introduction: Planetary spatial data continue to rapidly increase in volume and complexity. Maintaining these data using accessible formats and standards for all scientists is essential for the success of past, present, and future planetary missions. We describe here the efforts in these areas by the Mapping and Planetary Spatial Infrastructure Team (MAPSIT). MAPSIT is a planetary community group tasked by the Planetary Science Subcommittee and NASA Headquarters to identify and prioritize the infrastructural spatial data needs for research and analysis for NASA's past, current, and future planetary science and exploration missions.

Planetary Spatial Data and MAPSIT: Data from planetary missions are the currency of these projects and should be accessible and easily useable by the whole community. The extraction of scientific knowledge from planetary mission data relies on several steps of refinement of the raw data from instruments. Creating scientifically useful information is often a major research and development effort in itself. To complete this process, goals need to be identified, missions need to be properly designed, and instruments need to be appropriately developed and calibrated. The models, software tools and content distribution platforms required for scientists to obtain, process, and analyze planetary mission data need continuing development and maintenance. For these reasons, community coordination and strategic planning for the use of planetary spatial data are essential for the success of planetary research and exploration.

MAPSIT has been established with a mission to ensure that planetary spatial data are readily available for any scientific investigations, now or in the future. Some its functions include: Provide community findings, in the form of a Planetary Geospatial Infrastructure Roadmap, which will address the scientific rationale, objectives, technology, and long-range strategic priorities for accessing and using planetary spatial data, and engaging in software development (e.g., [2]) and mapping [1]. MAPSIT also encourages the development of standards for present and future planetary missions and research activities. We help define community needs for critical research and planetary mission infrastructure [e.g., 3]. We provide findings on the accuracy and precision required for spatial technologies and products, and finally MAPSIT coordinates and promotes the registration of data sets from international missions and US missions to optimize their combined utility.

MAPSIT exists to help enable the broad spectrum of planetary spatial data and programmatic capabilities required to effectively achieve robotic exploration of the Solar System. These include (but are not limited to) the analysis of planetary surfaces and atmospheres, the identification of ideal landing sites, the down-selection of sample acquisition and analysis locations, and hazard assessment [4, 5, 6]. It will help meet VEXAG goals for exploration and technology development.

Planetary Geospatial Strategic Plan: To build a Planetary Spatial Data Infrastructure (PSDI) Roadmap, MAPSIT will solicit broad stakeholder input, with a goal to recommend and prioritize the needed data products and infrastructural developments. The roadmap seeks for progress towards a Planetary Spatial Data Infrastructure (PSDI) [7], or several PSDIs, which will outline and define aspects of planetary spatial data and lay out the needs, capabilities and tasks of the community. This builds on a similar document for US Earth Sciences, the National SDI [8]. It is envisioned that the roadmap will be a living document that evolves as milestones are met and the state of the art advances.

For Venus in particular, the roadmap will consider Venus Mission Planning Documents and other resources, to see where key recommendations regarding PSDI can best advance Venus science. This will include recommendations for mission planning, standards, identifying current foundational data products, and what data and products are needed in the future.

References: [1] Skinner et al. (2017) *Plant. Sci. Vis. 2050*, #8243. [2] Becker et al. (2017) *Plant. Sci. Vis. 2050*, #8218. [3] Hare et al., 2017. *PSS*, DOI:10.1016/j.pss.2017.04.004. [4] Archinal et al. (2016) *LPS XLVII*, #2377. [5] Kirk (2016) *LPS XLVII*, #2151. [6] Milazzo et al. (2017) *Plant. Sci. Vis. 2050*, #8070 & #8132. [7] Laura et al. (2017) *ISPRS Int. Journal Geo-Inf. n, 6,* #181, doi:10.3390/ijgi6060181. [8] OMB (2002) NSDI, *Circular No. A-16 Revised*.