THE USGS REGIONAL PLANETARY INFORMATION FACILITY: A SUMMARY OF RESOURES, SERVICES, AND PLANS FOR THE FUTURE. D. S. F. Portree and J. J. Hagerty, USGS, Astrogeology Science Center, Flagstaff, AZ 86001, Email: dportree@usgs.gov

Introduction: The USGS Regional Planetary Information Facility (USGS RPIF) is an integral part of the USGS Astrogeology Science Center (USGS Astro) in Flagstaff, Arizona. The USGS RPIF is unique among the nine U.S. RPIFs [e.g., 1] in that it is hosted by and serves a Federal government science facility and in the sheer volume of materials it contains. Our current best estimate is that the USGS RPIF contains approximately 685,000 individual items collected over the past half century in about 5,000 square feet of space. In accordance with Federal policy [2] and the RPIF Network Charter, we work to preserve and make these materials accessible to researchers at our host institution and in the planetary science community, as well as to members of the public.

Map Preservation, Distribution, and Support for Current and Future Mapping: At the heart of the USGS RPIF is its collection of nearly 110,000 published lunar and planetary shaded-relief, topographic, geologic, and special-purpose maps (**Figure 1**). Some are rare or even unique and thus are not distributed, but many are available upon request to members of the planetary science community at no charge. The USGS RPIF also provides new paper maps to the other RPIF Network nodes for targeted distribution to their users and visitors by request.

In addition to maps, the USGS RPIF cartographic collection preserves a variety of historic mapping materials and equipment including paper drafts, often hand-colored by the mapper and marked with reviewer comments; hand-assembled photographic mosaics and original airbrushed photo-ready maps; documentation pertaining to mapping procedures and mapping software development and training; documentation on control networks; original map work orders and progress reports; and a collection of mapping tools ranging from small scribers to a disassembled room-size Large-Format Camera.

Periodically, the USGS RPIF refers members of a mailing list to an online map request form listing currently available paper maps and carries out a free mail distribution. Individuals may contact the USGS RPIF to be added to the email distribution. The March-April 2015 distribution dispatched more than 4000 individual maps to about 700 individual requesters.

All of the aforementioned efforts make the USGS RPIF a critical component of USGS Astro's world-renowned lunar and planetary mapping program. A five-year plan now in the implementation stages will even more closely align the USGS RPIF with NASA-sponsored efforts to revitalize the planetary cartography field through its continued and future support of the Mapping and Planetary Spatial Infrastructure Team (MAPSIT) [3], the USGS Planetary Geologic Mapping Program, and the reorganized USGS Planetary Cartography Program.

Other Collections: Maps and map-related documentation and products are the USGS RPIF's main focus because its host facility, the Astrogeology Science Center, emphasizes lunar and planetary mapping. The USGS RPIF is also responsible for preserving and making accessible USGS records generated by its scientists and science support staffers in the course of their work since about 1960.

Archival processing of Federal records related to planetary mapping and exploration is ongoing. So far, our preservation efforts have enabled creation of specialized document collections that include Apollo astronaut training; impacts and impact processes; planetary radar mapping; and the life and work of Dr. Eugene M. Shoemaker, founder of USGS Astrogeology. Other collections include films and videos, many of which have been converted to digital formats; artifacts, such as Grover, the 1:1-scale one-gravity Apollo Lunar Rover trainer USGS Astro built for astronaut training in the 1960s; and images, such as complete sets of Mars Mariner images and supporting documentation.

The USGS RPIF strives to provide high-quality storage of, and access to, the materials within its collections. The USGS RPIF earned high marks in a 2014 National Archives and Records Administrative (NARA) site review. We are currently working with NARA and the USGS Facilities Department to further monitor and improve the conditions of materials in our collection. The NARA approval is particularly important to note given the directive for all Federal facilities to increase the preservation of, and access to, all Federal records [e.g., 2].

Highlights of USGS RPIF collections may be found in online exhibits on the Astro RPIF website – http://astrogeology.usgs.gov/rpif. Current online exhibits include the story of USGS Astrogeology's first published lunar/planetary map; a 20-minute video celebrating USGS Astro's 50th anniversary; an interactive timeline celebrating 2015 - The Year of the Dwarf Planets; and digitized video of the 1968 creation of the Cinder Lakes Crater Field, an analog astronaut training and equipment testing site used by NASA as recently as 2007. New online exhibits and other offerings are

posted to the USGS RPIF website as time and personnel resources allow.

Community Interaction: In addition to the map distribution and online functions mentioned above, the USGS RPIF receives frequent research requests from the planetary science community, NASA personnel, the news media, and the public. Visiting researchers have at their disposal the expertise of the USGS RPIF staff (and USGS Astrogeology staff) as well as a dedicated research room with a reference map collection, a reference library, a large wall-mounted 3D monitor, and a Magic Planet spherical projection unit (**Figure 2**). In addition to research, the room supports meetings, small-group training in the use of USGS mapping software products, and outreach.

The USGS RPIF director and manager also participate in the USGS Astro Outreach Team, which fields public information requests and organizes Astro Outreach. The USGS RPIF manager is responsible for maintaining exhibits throughout the USGS Astro building and for organizing and conducting tours for a wide range of groups. When possible, tours include interaction with USGS Astrogeology scientists so that they may share their work. The USGS RPIF is a popular stop for visitors during the USGS Astro Open House, which is held as part of the Flagstaff Festival of Science, an annual 10-day celebration of Flagstaff science institutions. In addition, the USGS RPIF has played an important role in creating and leading the Northern Arizona Planetary Science Alliance (NAPSA) [4], which seeks to foster collaborative relationships across the many science-related institutions in northern Arizona, most of which include data archives.

Future Plans: Building on its many unique resources and its unique position as a Federal facility, the USGS RPIF will continue to expand its three-decade tradition of service to the planetary science community through adoption of new practices, partnerships, and technologies. Future efforts include 1) dedicated scanning of maps, documents, films, and photos; 2) development of robust metadata standards and searchable databases; 3) 3D printing of derived products from decades of planetary cartography research, 4) integration with the USGS MRCTR lab to provide training in the use of planetary data sets and software; 5) integration with the PDS Imaging and Cartography Node to preserve and disseminate derived data products [5]; 6) integration with the USGS Planetary Cartography Program to better educate and inform the planetary science community on the importance of cartographic planning in all stages of mission planning, implementation, and product dissemination.

References: [1] Hagerty, J. J., et al. (2016a), The NASA Regional Planetary Image Facility Network, LPSC 47 abstract. [2] Holdren, J.P. (2014), Improving the Management of and Access to Scientific Collections, *Memorandum for the Heads of Executive Departments and Agencies*, Executive Office of the President, Office of Science Technology and Policy; [3] Lawrence, S. J., et al. (2016) LPSC 47 abstrac; [4] Hagerty, J. J., et al (2016b), Northern Arizona Planetary Science Alliance (NAPSA) LPSC 47 abstract; [5] Gaddis, L. R., et al. (2016) LPSC 47 abstract.

Acknowledgements: The USGS node of the RPIF Network has historically been supported by NASA (through the Planetary Geology and Geophysics Program).

Figure 1. A portion of the USGS RPIF archival space that includes a variety of planetary cartographic products, equipment, and workspaces.

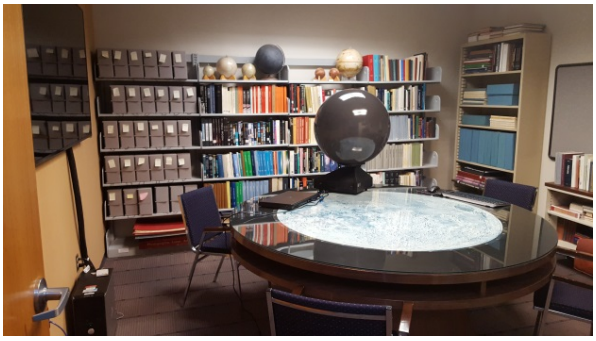

Figure 2. Dedicated researcher room with access to video conferencing equipment, data visualization equipment (i.e., Magic Planet by Global Imagination), and reference materials including planetary maps, mission reports, and gray literature.