

EXPANDED ACCESS TO HISTORICAL CARTOGRAPHIC PRODUCTS AT THE USGS ASTROGEOLOGY SCIENCE CENTER. M. S. Bailen, T. M. Hare, E. S. Bartman, and D. S. F. Portree. U. S. Geological Survey, Astrogeology Science Center, 2255 N. Gemini Dr., Flagstaff, AZ, 86001 (mbailen@usgs.gov).

Introduction: The USGS Astrogeology Science Center (ASC) has made a recent push to index historical cartographic products on its main website, accessible through the long-term data storage portal Astropedia [1]. The majority of these products are official publications in the USGS lunar and planetary I-Map and SIM-map series. These products include global maps, regional maps, geologic maps, topographic maps, and other products for bodies such as Mercury, Venus, the Moon, Mars, and the moons of Jupiter and Saturn.

Background: The ASC has published over nine-hundred lunar and planetary maps, dating back to 1961. These products provide an important chronological record of planetary cartography and are of interest to both historians and scientists. Previously it has been difficult to perform searches and locate products from this unique collection. Incomplete information exists at the USGS Publication Warehouse [2], the NASA/USGS Regional Planetary Image Facility (RPIF) [3], and within the USGS Astrogeology Planetary Map Index [4]. By combining these sources and indexing the information in Astropedia [1], the products and metadata for these products are now accessible from a single reliable online search interface.

Completeness: By unifying the lists of products provided by both by the USGS Publication Warehouse and the NASA/USGS RPIF, the ASC aims to provide a more complete listing of officially published USGS lunar and planetary maps. With the help of the NASA/USGS RPIF we are now able to provide a significant amount of metadata that was previously unavailable on the website. This information includes proper title, authors, publication date, scale, quad, and description of the mapped region. In addition, with the help of the USGS Mapping, Remote-sensing, Cartography, Technology, and Research (MRCTR) GIS Lab, we are able to provide the extents of the mapped area in latitude and longitude coordinates for many of the products in this collection.

Planetary Map Index: A common method of exploring the USGS's historical planetary map collection has been to visit the Planetary Map Index [4] on the main ASC website. Although useful, this index fails to provide explanatory text, imagery, adequate download information, and metadata. This index was also created in a legacy database format which was difficult to maintain. By re-indexing the entire map collection and redesigning the main index page, the

Planetary Map Index has significantly improved. The index now contains links to product detail pages which provide download links, information on related products, and product metadata. Updating the index is also now part of an automated process which allows newly published maps to be quickly added to the index and made accessible on the main ASC website.

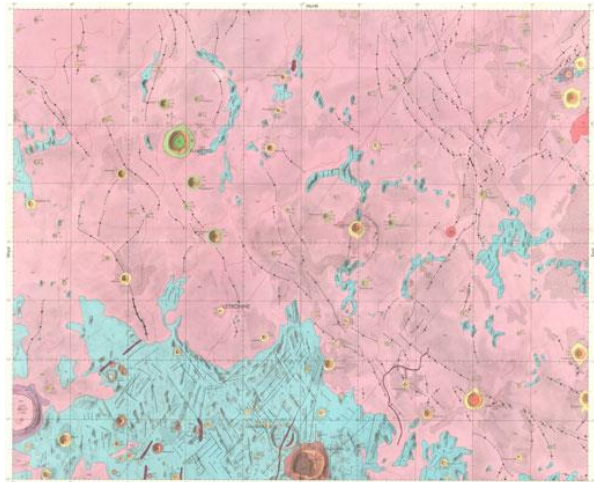


Figure 1. Example of historical map, plate of USGS IMAP 385: *Geologic Map and Sections of the Letronne Region of the Moon*

Interactive Mapping Tool: To further improve the ease of searching for both historic and current planetary maps, a new online map tool will be added to online search pages, search results pages and product detail pages. This interactive map will allow a user to zoom, scroll, and navigate through specific cartographic products. The interactive maps will work for products based on Mercury, Venus, the Moon, Mars, and many of the moons of Jupiter and Saturn. The interface can be used to explore both global and regional products. The maps will rely on the Openlayers [5] mapping library and a collection of in-house Javascript libraries to alleviate special challenges associated with planetary mapping (e.g. different coordinate systems, radii, etc.).

Future: The Planetary Map Index and the Interactive Mapping Tool are intended to be evolving resources available to future USGS publications of lunar and planetary cartographic products. In addition, outside (non-USGS) publications may be submitted to the NASA/USGS PDS Imaging Node Annex [7] for indexing and inclusion in the historical record.

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References: [1] Bailen, M.S. et al, 2012 Astropedia, a Data Portal for Planetary Science. LPSC 43, Abs #2478. URL: <http://astrogeology.usgs.gov/search> [2] U. S. Geological Survey Publications Warehouse URL:

<http://pubs.er.usgs.gov> [3] Hagerty, J. J. et al, 2012, LPSC 43, Abs. #1548 URL: See <http://astrogeology.usgs.gov/rpif> [4] URL: <http://astrogeology.usgs.gov/site/planetary-index> [5] URL: <http://openlayers.org/> [6] Hare, T.M. et al., 2015, LPSC 45, Abs. #7060, URL: <http://astrogeology.usgs.gov/pds/annex>