

**SMALL BODIES IMAGE BROWSER - A TOOL ALLOWING SIMPLIFIED ACCESS TO THE DAWN MISSION DATA.** E. E. Palmer<sup>1</sup>, D. R. Davis<sup>1</sup>, C. L. Neese<sup>1</sup>, and M. V. Sykes<sup>1</sup>, <sup>1</sup>Planetary Science Institute (1700 E. Fort Lowell, Suite 106, Tucson, AZ 85716, epalmer@psi.edu).

**Introduction:** Recent missions to various solar system bodies are generating ever increasing quantities of data. The recent Dawn mission to Vesta resulted in approximately 30,000 Framing Camera (FC) and Visual and Infrared (VIR) spectrometer images. In this vast sea of data, it is frequently difficult to locate an image without specific information, such as day-of-year or image number. Finding an image by latitude/longitude is difficult.

While there are other tools that have some ability to graphically search for images, such as JAsteroid (a derivative of JMARS), APL's Small Body Mapping Tool, and DLR's Graphic Information System (GIS), we decided to make a web-based tool that exclusively focuses on locating data and hosting them in the most useful formats possible. To this end, we created the Dawn Data Browser. Originally, this supported the Dawn science team and proved to be very useful. It is now modified for use by the Planetary Data System (PDS).

**What it is:** The Small Bodies Image Browser (SBIB) is a HTML5 webpage that runs inside a web browser using javascript and needs nothing to be installed (<http://sbn.psi.edu/sbib/>). It displays an overview map of Vesta, thumbnails of the selected images and search options (Fig. 1). Initially, it downloads a database of the key information about the images available. Different maps can be displayed, such as topographic [1], visible mosaic [2], color mosaic [3], and even the geologic maps [4].

*Locating Data.* The first step is to find the data of interest. This can be done in several ways.

*Coordinate search:* This searches for images that contain a set of coordinates. This is done by clicking on the map or entering in the latitude and longitude. It will return a list of images in a table, providing basic metadata. Clicking on the record will show the image's footprint on the overview map and a preview image, which can also be map projected.

Most search engines for image data either return too much data or too little. We created a limited set of filters (search options) to avoid getting too much, but also to avoid mutually exclusive options. The user can select to search images based on: major mission phases (e.g. Survey, HAMO, LAMO, HAMO2) or by the cycles within a phase (e.g. LAMO Cycle 3). The user

can also limit the data by instrument and pixel resolution.

When a record is clicked, the program displays a medium resolution thumbnail and the image's footprint on the overview map. Multiple records can be selected showing the coverage of the entire set of selected data.

Additionally, the user can choose "Show Sequence" which will return every image within that mission phase, usually a few thousand images.

*Downloading Data.* Once the user selects an image, there will be several weblinks that become active. It provides "one-click" downloads for a variety of data products and formats. While the original IMG and FITS formats are available, we also support ISIS cubes in normal and map projected format (which can be imported into ArcMAP 10), PNG, JPEG, ENVI cubes and headers (for VIR data) and a text file of metadata about the image.

**Data sets:** The SBIB is designed around image-based data sets that can be mapped to a surface. Not only can images be searched and hosted by the SBIB, but derived data products can be hosted provided they can be mapped geographically. Preview images for those products are usually plotted using custom views defined by the creator of the product. Examples are:

- Temperature images derived from VIR data
- Topography maps derived from shape models
- Incidence, emission and phase angles derived from the shape model
- Gravity maps derived from the gravity field

*Current Holdings.* The Dawn data that have been accepted and integrated into the SBIB are Survey, Transfer to HAMO and HAMO data of the Framing Camera. As the other data sets are released, they will be integrated into the SBIB.

*Future.* It is our plan to include other small bodies imaged by missions that have archived their data at SBN, including Eros (NEAR), Itokawa (Hayabusa), and Lutetia (Rosetta). Additionally, future small bodies data such as Ceres (Dawn) will be added as the data are archived in the PDS.

**References:** [1] Gaskell R. W. et al. (2011) *AGU Fall Meeting, Abstract P41A-1576*. [2] Roatsch T. et al. (2012) *Planetary and Space Sci.*, 73, 283-286. [3] Reddy V. et al. (2012) *Icarus*, 221, 544-559. [4] Jaumann R. et al. (2002) *Science*, 336, 687.

**Figure 1.** A screen shot of the Small Bodies Image Browser (SBIB). It shows an overview map, which includes the image footprints and image thumbnails. It

also includes search options and a list of images that matched the search. Finally, there are links to download the data in a variety of formats.

