The Small Bodies Imager Browser — finding asteroid and comet images without pain

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To facilitate accessing and downloading spatially resolved imagery of asteroids and comets in the NASA Planetary Data System (PDS), we have created the Small Bodies Image Browser. It is a HTML5 webpage that runs inside a standard web browser needing no installation (http://sbn.psi.edu/sbib/).

The volume of data returned by spacecraft missions has grown substantially over the last decade. While this wealth of data provides scientists with ample support for research, it has greatly increased the difficulty of managing, accessing and processing these data. Further, the complexity necessary for a long-term archive results in an architecture that is efficient for computers, but not user friendly.

The Small Bodies Image Browser (SBIB) is tied into the PDS archive of the Small Bodies Asteroid Subnode hosted at the Planetary Science Institute [1]. Currently, the tool contains the entire repository of the Dawn mission's encounter with Vesta [2], and we will be adding other datasets in the future. For Vesta, this includes both the level 1A and 1B images for the Framing Camera (FC) and the level 1B spectral cubes from the Visual and Infrared (VIR) spectrometer, providing over 30,000 individual images.

A key strength of the tool is providing quick and easy access of these data. The tool allows for searches based on clicking on a map or typing in coordinates. The SBIB can show an entire mission phase (such as cycle 7 of the Low Altitude Mapping Orbit) and the associated footprints, as well as search by image name. It can focus the search by mission phase, resolution or instrument.

Imagery archived in the PDS are generally provided by missions in a single or narrow range of formats. To enhance the value and usability of this data to researchers, SBIB makes these available in these original formats as well as PNG, JPEG and ArcGIS compatible ISIS cubes [3]. Additionally, we provide header files for the VIR cubes so they can be read into ENVI without additional processing. Finally, we also provide both camera-based and map-projected products with geometric data embedded for use within ArcGIS and ISIS. We use the Gaskell shape model for terrain projections [4].

There are several other outstanding data analysis tools that have access to asteroid and comet data: JAsteroid (a derivative of JMARS [5]) and the Applied Physics Laboratory's Small Body Mapping Tool [6]. The SBIB has specifically focused on providing data in the easiest manner possible rather than trying to be an analytical tool.

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References: [1] Palmer, E.E. et al. (2013) LPS XLIV, 2901. [2] Russell C.T. & Raymond C.A. (2011) Space Sci. Rev. 163, 3–23. [3] Becker, K.J. et al (2012) XLIII, 2892. [4] Gaskell R.W. el al. (2011) AGU Fall Meeting, P41A–1576. [5] Christensen, P.R. et al. (2009) AGU Fall Meeting, IN22A-06. [6] Kahn, E.G. et al. (2011) LPS XLII, 1618.