Small Bodies Node Report

Mike A’Hearn
SBAG 8
PDS Small Bodies Node

- Two locations: Asteroid and dust archiving is carried out at Planetary Science Institute in Tucson, AZ. Comet archiving and management of the node is at the University of Maryland in College Park, MD. External Advisory Council of senior scientists.

- Activities:
  - Archive data from NASA and non-US small bodies missions
  - Facilitate submission of ground-based small bodies data for archiving
  - Include data on comets, asteroids, dust, small planetary satellites, and dwarf planets
  - Carry out external peer review of all data before archiving
  - Develop tools to enhance the accessibility and usefulness of the archive for the planetary science community

http://pdssbn.astro.umd.edu/

We are open to suggestions!
SBN Personnel

- **Comet Science**
  - M.F. A’Hearn, SBN PI
  - L. Kolokolova
  - T. Farnham
  - L. Feaga
  - M. S. Kelley *

- **Asteroid Science**
  - D.R. Davis
  - M.V. Sykes

- **Archiving**
  - T. Barnes *
  - S. McLaughlin
  - C. Neese

- **Tech Support**
  - R. Early
  - E. Palmer *
  - A. Raugh
  - J. Ritchie *
  - E. Shaya *
  - J. Stone
  - D. Wellnitz
  - M. Wendell

* New since last year

SBAG 8
Advisory Council

- Mike Belton, BSEI LLC
- Dan Britt, Univ. Central Florida
- Bobby Bus, IRTF, Univ. Hawaii
- Anita Cochran, McDonald Observatory, Univ. Texas
- Yan Fernández, Univ. Central Florida
- Mihaly Horanyi, Univ. Colorado
- Bill Reach, SOFIA Science Center (USRA)

Volunteers welcomed!
Student Investigator Program

• Funded by special PDS funds, apart from node budget
• Students do research project on PDS data
• SBN has significant fraction of student participants
  – 2007 2 out of 5 (first year of program)
  – 2010 2 out of 4
  – 2012 1 out of 2 (late availability)
• 1 has led to a campus research prize and will be a paper, 1 or 2 others should lead to papers
Recent Highlights

- Dawn data browser – mentioned last year
  - To be SBN Data Browser
- IDL procedures for PDS4
- EPOXI recalibrated data and higher level products
- Stardust NExT data
- Rosetta shape models
- LADEE-LDEX – pipeline review, first PDS4 review
- Began archiving NEO survey images (NEAT)
- NASA Challenge coordination with all of PDS
- Coordinate Systems – review process negotiated with IAU WG
**Rosetta**

- Data MUST be archived at SBN
  - But ESA’s PSA takes lead
  - PSA badly understaffed and mostly not with working scientists
  - Simultaneous release by both PSA and SBN
  - PSA under management pressure to release data ASAP & has no more budget for peer reviews
- SBN actively seeking higher level products bypassing PSA
  - Shape models for Lutetia and Šteins acquired from developer; peer review joint with EPOXI & NExT shape models; PSA will provide a reviewer by telecon
Download Statistics

UM

Requests

Bytes

PSI

Requests

Bytes

SBAG 8
# SBN & DAPs

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SBN External Peer Reviews Jan-Jan

- 2012 JAN (PSI - TCN) Dawn GRaND L1a Approach/Survey review
- 2012 JAN (PSI - F2F) Hayabusa data review
- 2012 FEB (PSI - F2F) Minor Planet Center data review
- 2012 APR (UMD - F2F; ESTEC – TCN) Rosetta (Lutetia flyby), Non-mission comet data
- 2012 APR (PSI - TCN) Dawn Coordinate System review
- 2012 APR (PSI - TCN) Dawn VIR L1a Approach/Survey/HAMO review
- 2012 MAY (PSI - TCN) Dawn FC L1a Approach/Survey/HAMO review
- 2012 MAY (PSI - TCN) Dawn GRaND L1a HAMO review
- 2012 MAY (PSI - F2F) Annual Asteroid Review (Galileo restoration, Non-mission asteroid data)
- 2012 SEPT (PSI – TCN) Dawn FC, VIR L1a Approach/Survey/HAMO, GRAND L1a LAMO, and SPICE follow up review
- 2013 JANUARY 7 (PSI- TCN) LADEE LDEX pre-flight data review
SBN Value Added

- Peer-reviewing data for reliability & usability
- Making data available and readily searchable
- Tools for submitting data from other than missions (OLAF)
  - More data would be welcome!
- Tools for using data (IDL, cross-ID)
- Enhanced data products (shape models)
Small Body Data Browser
Readpds4.pro Browser (IDL)
**Shape Models**

- SBN receives triangular plate models directly from developers, sometimes via mission SDC but not usually
  - In 2012: Šteins, Lutetia, Hartley 2, Tempel 1
- SBN Value Added
  - Properly cataloging and labeling for PDS
  - VRML version for viewing by anyone
  - SPICE version for geeks (including SB Data Browser)
  - Sometimes a quadrilateral plate model (Gaskell style)
- Demo of VRML shape models using InstantPlayer (free software)
  - Other software packages also available
BACKUP SLIDES
Other topics
Shape Models

• Small-body shape models always in multiple formats organized by SBN (all in PDS approved formats)
  – ASCII table of triangular plate model submitted by data provider
    • Sometimes multiple resolution versions if highest resolution is very large file
  – VRML viewable version produced at SBN
  – SPICE version produced at NAIF or node using NAIF software
    • Used to generate, e.g., products in Dawn Data Browser
  – All versions reviewed together – led by SBN