Review Comments on Rosetta OSIRIS Shape Models of 67P

Randy Kirk

Third Review (multi…v2.0)

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What I did

- Read all new and updated documentation specific to this archive carefully
- Skimmed new documentation files generic to the mission and instruments
- Visualized all new VRML files with *Instant Player* 2.4.0 under OS X 10.9.5
- Ran the NAIF Alpha DSK Toolkit utility *dskbrief* on all new DSK files
- Compared old and new text files
- Compared current reference images

What I Didn't Do

- Visualize the DSK files
  - There is an application *dsk2isis* in ISIS 3.4.9 that will read a DSK and create a raster DTM in map projection. Because I am doing this review as a private citizen I do not have easy access to this software, but I want to point it out to the team and the SBN.
- Check the checksums
- Run any PDS verification tools (apart from *dskbrief*)
- Read every word of the Rosetta and OSIRIS catalog files

Conclusions

- This is a very interesting and useful archive
- Cartographic conventions are followed well
- The archive is well designed and complete
- Most suggestions for providing more information have now been addressed
- Models still appear to have inconsistent orientation and the documentation on reference frames is inconsistent and confusing

root

- aareadme.txt
  - Past comments largely addressed
  - DATA/SPICE/DSK/TRIPLATE/PRODUCER is described as “Subdirectory containing model versions.” should probably be described as for DSK “Subdirectory for each model producer.”

[CATALOG]

- Looks good
- dataset.cat is lien resolved and updated
- References specific to the shape models have been added to reference.cat
- navcam_inst.cat has a lien for pending calibration section when pipeline is completed. Not clear if this means radiometric or geometric (latter is critical to shape model production, former is not)

[DATA]

- All VRML files open and look good in *Instant Player*
- All DSK files produce reasonable output in *dskbrief*
- NAVCAM model now provided at two resolutions (good)

[DOCUMENT]

- New document eaicd.pdf is useful. Probably out of PDS review scope, but I will comment. Both comments also apply to user_guide.asc discussed below.
  - Could use a clear intro to the flow instruments —> observation periods—> groups —> techniques —> version names (maybe a diagram?)
  - Guide to usage needs to say something about reliability of SPG models. SPG methodology is *much* better understood and validated than SPC.
- Now have multiple *_model_info.asc files by method, which is good. Most past comments are addressed.
  - shap4s_model_info.asc says producers are Frank Scholten (LAM) and Frank Preusker (DLR). In reality both are DLR and Preusker is the lead author.

[DOCUMENT]

  - shap4s_model_info.asc also says “The SHAP4S model represents the final version of the model derived from the images obtained for the SPG models.” The SPC models are SHAP2 and SHAP5 so this is not strictly correct if I am right in understanding that SHAPn refers to image campaigns.
- user_guide.asc is not clear about version naming either (see comments about eicd.pdf). If SHAPn refers to image campaigns used as source data then the naming convention does not allow distinguishing versions of models from the same data (e.g., reprocessing to use an updated reference frame, which is rather likely)
- user_guide.asc usage section should discuss SPG (see comments on eicd.pdf)

[DOCUMENT]

- version_history.tab (new) is useful but I find it strange to have one “column” formatted to contain two values. Better to have a column for each version of the archive.
- PREVIEW_IMAGES are well organized in subdirectories
  - ESA models are consistent in orientation with SPG (and also same size and framing in files)
  - MTP019 looks less detailed than MTP009 which is surprising. Could they be mislabled? No, MTP019 has S Pole detail.
  - SPC and MSPCD model images differ in size and framing from SPG and ESA, which is inconvenient for comparison
  - SPC and MSPCD model images still appear rotated relative to SPG (which defines the Cheops frame)

[DOCUMENT]

- Discussion of reference frames and orientation of the various models is confusing and inconsistent
  - user_guide.asc says SHAP2 and MTP009 were developed in the Cheops frame (so they ought to be consistent with SPG but are not; MTP019 is not mentioned) and that SHAP5 was developed in a different frame whose relative alignment was determined by using pc_align. Does this mean it was transformed to the Cheops frame using pc_align? It appears not. These 3 are aligned with each other and not with the SHAP4s SPG model.
  - The shap*_model_info.asc files mention the Cheops frame but do not discuss any alternate frames or attempts to measure the alignment of models or place them in a consistent reference frame. Should be consistent with the user guide.

[INDEX]

- Checksums not checked!
- science_index.tab is new and useful, addresses my past comments about the index. It is slightly odd that FILE_SPECIFICATION_NAME and PRODUCT_ID are in opposite order to the main index but this is harmless.
- The whole 67P archive has been redelivered so a cumindex is not needed on this volume. Have there been any Steins or Lutetia models released so far? If so, you may need a cumindex.