2017-07-03/04 Meeting#02

03 Jul 2017 04 Jul 2017

@ DLR, Germany

Attendees

- Sebastien Besse
- Claire Vallat
- Guido De Marchi
- Ernst Hauber
- Sonia Fornasier
- Paolo Tortora
- Jan Soucek
- Elliot Sefton-Nash
- Francesca Altieri
- Antonio Garcia Munoz
- Baptiste Cecconi (partially)
- Thomas Roatsch (partially)
- Francisco Galindo (partially)

Discussion items

Item	Time	Notes
Monday		
Welcome and Logistics	10:00	
		Ernst Hauber
#1 Discussion of final report from previous User-Group	10:05	

Browse products • The PSA-UG emphasised the importance of browse products in a science archive and support the PSA team in its effort to promote those products. • As much as possible, the mission archiving plan/guide should enforce the delivery of browse products by the instrument science teams. • E.H will discuss the possibilities with the CASSIS team. • Browse products can be produced from raster data relatively easily, but for all instruments it should remain up to PI teams what is the most appropriate browse product for scientific users. • It is noted that cadence/embargoes of released browse products should be managed carefully. For Rosetta there was an MoU to delay release of images between instruments. For example on ExoMars RSP: the PanCam release schedule could affect science results for other instruments. • For RSP, could we push the ROCC [to provide browse products they may produce]? A high public demand is to be anticipated. The UG agree RSP images should be released as soon as they are available. They do not have to be the final version, since subsequent revisions can be submitted to the PSA with improved calibration and processing. A complex data flow is noted for the RSP: ESOC > ROCC > PI teams > ROCC > PSA. • Could we make browse products mandatory for the upcoming missions using the archiving plan/guide of missions? • It was noted that on JUICE, teams are required also to deliver the processing pipeline in addition to raw data, in case PI teams do not have humanpower to produce high level/browse products. However for PSA to produce high-level products would require substantial additional FTE. • Quick-looks for particle instruments: e.g. omnidirectional integrated flux. This is the basic quick look product used in plasma missions. Allows user to identify if events of interest in products. **Future Workshop > Atmospheric data on PSA –** GIS workshop as an example. • The atmospheric community in Europe should be consulted to find out their needs. e.g. Pre-workshop survey. • Meeting must attract scientists. • The meeting should not duplicate science meetings, but needs to be closely linked to PSA activities. • Must be: What science is not done now that would be helped by improving the PSA in a particular way. • Action: Francesca Altieri and Antonio Garcia Munoz, as community representatives, will consider what is useful and come back in a few months to determine if there is interest or need for a workshop.		All
#2 Status of use cases	11:00	

Claire Vallat presented the progress on the geometry computation at ESAC.  The following list provides a preliminary list of parameters that the PSA wants to be able to compute for PSA products.  The UG members have been requested to review this list in the view of their discipline, that is: • Identify which parameters are relevant/not relevant for their discipline • Eventually correct/complete the parameters' description. • Identify which ones should be 'queryable' in priority, using the PSA interface. • Comment on the suggested unit Deadline : Oct 2017		Claire Vallat
Lunch outside DLR		
#3 Archiving at the PSA: The perspective of the data provider	13:30	

HRSC data are in parallel delivered to PDS (in both PDS and VICAR format), agreement at the project level. PSA behind in releasing L4 data. This has been confirmed by the MEX archive Scientist. Lev2 & 3 delivered twice, once after radiometric re-calibration. Map-projected data also available in JPEG2000 in /data/. Not for lev4. More support for MEX is needed by the instrument team. Action: Sebastien and Claire had a discussion with the Project Manager to request more support for MEX. Geotiff (compatible with e.g. AcrGIS) are not allowed in PDS3 format, but they can be put in the EXTRA directory. PVV: PSA validation tool - validates dataset structure. Was developed in 2003. ESAC do not maintain PVV, or at least the very minimum. After 13 years of successful validation there is not much need for HRSC to use PVV. Data structures correct. Rosetta team adapted PVV so much for their purposes that it is now incompatible. PVV had some technical issues. This needs to be investigated by ESDC. More testing of PVV is needed after upgrades. PVV error messages are very cryptic and not useful. There is a need to improve this. Action: Sebastien to organise a discussion at ESAC with relevant parties for PVV improvements. Future plans: delivery of mosaics, cartographic maps, 30 tiles MC schema for Mars. HRSC will not deliver whole tiles, since they would be too large. In General, T. Roatsch is happy with the process with PSA. He is proactive in sharing data/products. <u>Was also discussed some statistics of the PSA</u> 2 or 3 messages/week to archive scientists, who respond to the ‘contact us’ form. ~30 users/day (unique IPs). - 90% of data volume is HRSC. VeRA on VEx has large usage (4th in number of products).		T. Roatsch
#4 How to safe old data, Tools to be provided by the PSA	14:00	

Safe data

How useful is HK data? In general, very useful, but more so for some instruments than others. It is also unclear how useful data will become over time. HK data alone can enable new science independently of instruments (e.g., aerobraking).

[In summary] it is important, we need to do this (but needs to be prioritized, e.g., with respect to GIS support).

Navigation and engineering data are key! We need to save data. Cassini is a great example.

Important issue noted regarding Chandrayaan-1: ISRO don't plan to archive the data. Only 1 instrument has data on ISRO website. ESA trying to get funding to archive Chandrayaan-1 data.

- Should the team provide access to the HK relevant to their instrument in their data sets deliveries? Not all HK will then be saved, some need to be saved outside the instruments themselves.

It is important to identify the needed parameters, not all the ESOCs database (MUST) database could be saved.

ESOCs database, accessible via interface (MUST), could provide a way to access HK data. However, should the PSA provide HK data via this method, the HK data feed is highly dependent on ESOCs timeline (e.g., Rosetta HK server strongly requested by ESOC to be shutdown almost immediately following end of mission).

It would be a huge effort by the PSA to repackage HK data into an archive-compliant format (e.g., to make them fit for querying).

- Is there a "standard package" of parameters?

No. However, if one were available it would be a simple binary choice of whether or not to provide a chunk of it that is temporally coincident with the requested data, AND if there are just a few pertinent parameters they could be more easily archived than a larger number.

If it saves time and effort, we could decide not to archive them in PDS4 format.

TGO is needed now!!!! The advantage of current missions (e.g., TGO) is that there is currently FTE available to assess the feasibility of this approach.

Science cases should be presented at next meeting (Long Term Data Preservation), in collaboration with ESOC.

Tools

- At the moment PSA just points to individual existing tools w/o making the link between which data can be read by which SW.
- Having generic tools to read PDS3/PDS4 data could be useful (e.g., SW to convert PDS into FITS).

However, there is a high variability of data and users.

1. If provided by data provider: EXTRAS/ folders should be the place to host software.
2. If provided by the PSA point of view:
    - What could be done is to inform the users about the tools that would be useful for this instrument in particular. One possibility would be a README file with info on what to use to read the data ('for Rosetta data you can use SW X/Y/Z'). Provide at least one tool that can support reading of the data. (after we have a connection with VESPA, we could plug tools (tomcat, Aladin…) that, while hidden, would allow to visualise products).
    - Having step-by-step tutorials for the instruments will be useful. The PDS Small Bodies Node maintain python/IDL code to read PDS4 data, but it is unclear if it works just for their data or for all PDS4. If useable it should be investigated to see if we should/could promote it.

[We should] come with a proposal how to handle this point.

- This is a significant effort that would need to be justified by interacting with the users (e.g., asking for priorities; would need a survey of which tools are most used per discipline)

Plots in jpeg are useful (better than nothing) but we need interactivity as much as possible. This is possible based on VO experiences.

Having pre-generated plots and browse products will help the user.

[Data processing] pipeline should be considered a tool.

Tools could be difficult to develop for specific instruments (and there may be tools independent of specific instruments).

#5 Update on RADIO Science	14:30	
Clarification from Paolo Tortora on several issues that came up in the Radio Science recommendation: CLOSED vs OPEN loop science benefits/drawbacks Closed Loop (1Hz) Open Loop in addition gives up to 16kHz — this is so much better for atmospheric science. Allows reconstruction of sky frequency/multipath. e.g. for Voyager, Closed Loop analysis may have been done, but only because Open Loop was not yet invented. There is no added value in looking at something that is very low time resolution. e.g. Cassini, never used closed loop data for atmospheric science. So, Closed Loop could be analysed in theory, but if you have Open Loop there is an order of magnitude improvement. Open Loop data definitely available from ESOC, though data format and longevity are unclear. ASCII format vs binary format, was this imposed in the archive plan? How should radio science data be correctly formatted in ASCII? ASCII - needs to be fully standardised. CCSDS: TDM, very appropriate for Closed-Loop data . Binary files (appropriate for high-frequency Open Loop data) at JPL and ESA are completely different. In this case, unpackers or readers are needed. Bi-static radar observations, what data are required to do meaningful science? As for atmospheric science. Two main quantities: 1. Bi-static obs. allow surface roughness (cannot use closed loop). For roughness, requires spectral broadening observations — frequencies are spread. Spectral broadening indicates roughness 2. Dielectric constant: May still use Closed Loop data, use ratio between LPL and RPL. However, rarely used, e.g., Cassini do everything using open loop. Ka, S and X-band: what can be done with each, or all? If there are multiple bands, process all. Ka always used if available. S and X otherwise used. Cassini has S + X + Ka, so very nice calibration using 3 bands. N. B. Best example of radio science archive is Messenger - all formats CCSDS compatible. - abundant READMEs. - etc.. Action: Elliot Sefton-Nash will revise the radio science recommendation with information from the above discussion and circulate it to Paolo Tortora and to the UG before it is released. Could we have an ESA internal proposal to do something if needed? Sebastien Besse will work with Elliot Sefton-Nash on an ESA proposal once things are more clear. Paolo Tortora is investigating the radio-science.eu website to see what the team is doing outside the PSA. He is also checking the availability of the open loop at ESOC.		Paolo Tortora, Elliot Sefton-Nash
Coffee break	15:00 - 15:30	
#6 PSA relationship with VESPA and Europlanet, PSA Statistics	15h30 - 15h50	

Relationships have been discussed. 2 or 3 messages/week to archive scientists, who respond to the ‘contact us’ form. ~30 users/day (unique IPs). - 90% of data volume is HRSC. VeRA on VEx has large usage (4th in number of products).		All
#7 Feedback on Instrument list		
Sebastien Besse presented the update on the instrument list discussion at IPDA. Voluminous feedback received regarding list of instrument types, mostly conveying that some types are a bit too detailed, and that the list should be made shorter.		Sebastien Besse
#8 Archiving S/C HK parameters		
This has been discussed in the #4		All
#9 PSA Questionnaire		
It has been decided to postpone this topic to the next PSA-UG meeting		Claire Vallat, Sebastien Besse
Adjourn		
Tuesday		
#10 High Level data products in the PSA	9:00 - 9:30	
		All
#11 Archiving of Maps	9:30 - 10:00	

Most maps are in papers, but papers don't always indicate they contain a map. Maps not easily accessible. USGS submission of map for archiving : process exists (try to impose common standard but interest from community is limited) but very slow process. Should the PSA host Maps to help people compare the maps? At least, the PSA could help (PSA can provide guidelines on what information is needed). Requirements for hosting maps: 1) Comparability 2) Interoperability between users/GISs 3) Archive derived data and mapping results as database for new investigations or mapping projects. European planetary mapping may need a (formal) framework/context. Matteo Massironi is leading a proposal on this topic. How to incorporate existing maps? Geocoding/geotagging of figures in publications via scripting. Digitisation etc.. PSA can not impose standards. As much as possible we should enforce the PSA standard, and PDS4 might be more useful. Emphasis on the PDS4 standard will have to be discussed. What are the benefices for publisher? Acknowledgement via a formal publication? Should we enforce a PSA policy to publish on ADS? Note that ADS will only cite papers, not just any DOI. Action: Sebastien Besse to understand how to prepare short publication for data provider in ADS. Recommendation from previous UG was NOT to enforce use of PDS standard for high level products at submission (ask the teams an extra burden to generate products in a format that nobody will use). Less strict rules should be applied.		Ernst Hauber
#12 The Mars Legacy Archive	10:00	
Francisco Gonzalez-Galindo presented the project of the IDS on Mars Espress.  Motivation: US datasets more used and cited than European ones. Project Approved at last MEx SWT: Anni Maattanen — climatology, leader of Legacy Archive Project Objective: create a complete database of high-level atmosphere and surface data within the PSA, gathering datasets in literature and links to other MEx databases. Most work to be done by atmospheric IDSs in strong collaboration with PSA team. Collaboration with dataset authors welcome, but not essential.		Francisco Gonzalez-Galindo

How to proceed: • Inventory • Subset of data to start with • Contact PIs: are data reliable, can we archive them? • Intermediate step: PSA team to provide instructions, mandatory inputs and acceptable formats. • Contact authors to collect data. • Convert data to PDS • Review, validate and documentation for data. We need more support on MEX!!! AS time is needed on this project. Need to provide instructions, mandatory inputs and acceptable formats for archiving those high level products (MEX Archive Scientist needs to work on this) There are issues with some PIs and instruments about understanding what is a public product. PI want to be informed and even sometimes provide agreement on who access the data. SB and CV to discuss with PM/PS about the request from the PIs to be informed whenever somebody accesses their data (maybe SB or CV needs to go to next SWT and stress that this is not acceptable). Note that OMEGA data is available via the Planetary Surface Portal, though this is not an archive. Side discussion on calibrated data delivery • SPICAM did not deliver calibrated data. Could we push calibration for SPICAM? This is an important point. • Suggestion: If calibrated data are not delivered them impose restrictions on PI reselection on future missions. • Mission extensions are opportunities to negotiate with PIs on data delivery.		
Lunch outside DLR		
#13Creation of PDS Labels for radio tracking data	14:00 - 14:30	
Paolo Tortora pointed that MESSENGER did it automatically when reading the data on the ground. Apparently, for every radio tracking data file, DSN produces a header, which becomes a PDS label. BepiColombo SGS to get in touch with NASA to understand if we can create label in automatic way. EM16, JUICE, and BepiC will need to coordinate.		Paolo Tortora
#14 Status of Cassis/TGO	14:30 - 15:00	
CASSIS will provide framelets to the archive. Difficult, if not impossible, for a general science user to use. Can ESAC help in producing the image? Sebastien Besse will see what can be done at ESAC for the raw images. [Also see at start, E.H will discuss the possibilities with the CASSIS team].		Ernst Hauber
#15 AOB	15:00	
• Add PSA-UG to the contact form. • Refresh UG poster for Riga EPSC meeting. Claire Vallat can then point to the poster during the PSA presentation. • Next meetings at ESAC (11-12 Jan 2018) and then in Bologna.		All

Adjourn		