CSPP/IMAPP 2013 Meeting Items of Interest

Kathy Strabala 14 Junes 2013

How long can Terra and Aqua continue to operate?

Terra has enough fuel to maintain orbit before drifting until 2018, and then can probably still survive until 2020.
Aqua has enough fuel to continue until at least 2020.

CSPP Survey results summary:

General Comments

Almost everyone is running the VIIRS SDR software
Everyone seems generally pleased with the package.
UW Agreed to make use of the CSPP and IMAPP Forums for communicating with the user community
CSPP Forum: https://forums.ssec.wisc.edu/viewforum.php?f=37
IMAPP Forum: https://forums.ssec.wisc.edu/viewforum.php?f=3

Issues brought up in the survey:

- Many comments about speed and consumption of resources required by VIIRS SDR. **Beta SDR Package has been released allowing for multi-processing.**
  - UW to encourage the ADL team (Raytheon) to improve the performance in the software itself
  - UW to investigate the reason for large processing speed differences between machines with slightly different architectures
- Package is "opaque" and difficult to understand
  - **There are a limited number of options to improve this; dependent upon ADL.**
- Make current issues with software available for users to see?
  - **After some discussion, it was decided that UW will keep users updated on what we are working on including a 6 month plan through the CSPP Forum (see: https://forums.ssec.wisc.edu/viewtopic.php?f=45&t=329&sid=7a04d026bcea53ae94a2811dabd62dba)**
- Better access to documentation
  - **UW will provide better pointers to useful NOAA documents for each specific product.**
- Sharing data with NOAA
  - **UW will test out concept of "phone home" process, starting out with CrIS and ATMS data.**
- Cross granule dependencies and partial granule handling mean that not all acquired DB data is processed. This significantly impacts both the CrIS SDR and the VIIRS EDR products.

    - **Need to convey to JPSS the importance of this to the direct broadcast community. Two discrepancy reports have been submitted to the JPSS Project starting with Bonnie Reed.**
- Ancillary data scripts – LUT found by SeaSpace
    - **Kathy is investigating this problem. Scott Mindock has provided a possible solution.**
- Ancillary data documentation
    - **UW to make the dependencies and utility of the ancillary data more clear to users which means better documentation. For example, what are the consequences of updating LUTs once per week as opposed to once a month.**
- Keep a standard directory structure and deployment scheme for future releases.

Requests for Improvements - Additions

- Request to have a unified modular framework with plugin support for many missions
    - **There is infrastructure that is shared between SDR and EDR software right now. Will keep this in mind for future versions, but not sure the ADL software lends itself to this.**
- Additional documentation beyond standard installation instructions
    - **UW will provide more information about how to read output data, reproject, etc. with each package release.**

Request for the capability to use a different NWP grib data as opposed to GFS model grib files

- **Geoff to investigate how difficult this would be and inform Pascal.**

Request to include orbit number in output file of SDRs.

- **UW is working on this, and we will try to make it available in future versions.**

General Meeting Items

CSPP: email Nigel Atkinson if you are interested in acquiring his VIIRS Day/Night band stray light correction enhancement F90 software.

Nigel staged his DNB stray light correction software at the CSPP Forum: https://forums.ssec.wisc.edu/viewtopic.php?f=39&t=328&sid=ed7c3d5e7ddd7bed87fe95b34de2e6bc

CSPP: Raw Count extraction from RDRs is difficult and should be made easier. Highlights a problem the user community has with finding out more detailed information about the instruments, like Nigel having to go through a detailed study of ATMS striping, only to find out that this had already been known. Contact?

- Get contact at JPSS – Start with Heather Kilcoyne.
- **Sent email request on 28 May. Heather replied that there is no one person for this, but that we should start with Bonnie Reed.**

CSPP: A quick poll was taken to find out interest in processing real time S-NPP OMPS Direct Broadcast data. The key parameters that it produces are aerosol and SO_2 index.

- **Still not sure this is something that the community is interested in. Need a request from at least one user.**

UW offers our services in helping to package and release interesting and unique satellite products that have been discussed here – are developers interested in sharing software? For example, there were local products that were presented, including

Météo-France: Heat Island Effect, Winter Road Temperatures
Landgate - Jackie Marsden – Pasture Growth Rate, Flood Mapping

CSPP: Juan - Active Fire Product sometimes identifies missing scan lines as active fires. Solution to try:

Look at Quality Flags Arrays

- /All_Data/VIIRS-AF-EDR_All/QF1_VIIRSAFARP/QF1_VIIRSAFARP_0
- /All_Data/VIIRS-AF-EDR_All/QF2_VIIRSAFARP/QF2_VIIRSAFARP_0
- /All_Data/VIIRS-AF-EDR_All/QF3_VIIRSAFARP/QF3_VIIRSAFARP_0
- /All_Data/VIIRS-AF-EDR_All/QF4_VIIRSAFARP/QF4_VIIRSAFARP_0

First Check the fire confidence and use it only if the confidence is 100%. That is QF4 above.

Next, check QF3, Input Data Quality, bit 6 (zero based). 1 means poor quality (don't use it) and 0 means good quality.

http://npp.gsfc.nasa.gov/science/documents.html

VIIRS Active Fires Application Related Product (ARP) - OAD (Rev A)

The 4 QF Arrays are labeled as bytes 16-19

2.1.1.2 Outputs

2.1.1.2.1 VIIRS Active Fires ARP

The VIIRS Active Fires ARP produces output fields described in Table 5. The output is in the form of a vector for each pixel that Fire is detected.

Table 5. VIIRS Active Fires ARP Output File Content

Output	Description
List of pixels	List of values for each pixel with fire detected. The value is defined in Table 6

Table 6 details the VIIRS Active Fires ARP fields and descriptions.

Table 6. VIIRS Active Fires ARP Fields and Descriptions

Byte	Bit	Flag Description Key	Result
0-3	0-31	Latitude in degrees of Fire Pixel	Latitude(32-bit floating point)
4-7	32-63	Longitude in degrees of Fire Pixel	Longitude(32-bit floating point)
8-11	64-95	Index number of the row this fire pixel originated from	Row(32-bit signed integer)
12-15	96-127	Index number of the column this fire pixel originated from	Column(32-bit signed integer)
16	0	Adjacent Cloud Flag	0 = No 1 = Yes
	1	Adjacent Water Flag	0 = No 1 = Yes
	2-5	Search Window Size	Binary value between 1-10
	6	Sun Glint	0 = No 1 = Yes
	7	Sun Glint Override	0 = No 1 = Yes
17	0	Fire Test 1 Valid	0 = No 1 = Yes
	1	Fire Test 2 Valid	0 = No 1 = Yes
	2	Fire Test 3 Valid	0 = No 1 = Yes
	3	Fire Test 4 Valid	0 = No 1 = Yes
	4	Fire Test 5 Valid	0 = No 1 = Yes
	5	Fire Test 6 Valid	0 = No 1 = Yes
	6	Input Data Quality	0 = Good 1 = Poor
	7	Day/Night	0 = Night 1 = Day
18	0	False Alarm Override	0 = No 1 = Yes
	1	Water Contamination Override	0 = No 1 = Yes
	2-7	Spare Bits	Initialized to 0
19	0-7	Fire Detection Confidence	0 – 100%

CSPP: Can we investigate making a MODIS like fire product for VIIRS (such as including fire propagation rate).

- **DRL has released a MODIS-like VIIRS algorithm, see: http://directreadout.sci.gsfc.nasa.gov/**

CSPP: Juan would like the ability to aggregate the VIIRS Cloud Mask Granules. Currently capable, but not documented.

- **How you do this is highly dependent on what you want the output product to look like. You can use the HDF5 nagg tool to do this, and can include geolocation data in the output file too if you would like. There is a good documentation on the tool (including examples) that is available. http://www.hdfgroup.org/projects/npoess/documentation/nagg/nagg-User-Guide.pdf. One important note: If you want to compress and aggregate the data, then perform the compression first.**

CSPP: Juan would like to reproject the VIIRS cloud mask in Polar2grid.

- **Perhaps in a future release? Poll users to see if additions of EDR reprojections would be useful.**

CSPP/IMAPP: Katja requests a tool to convert the CrIS Dual Regression Retrievals to BUFR format.

- **Polled users, and no one else expressed a similar interest.**

IMAPP: Clean up the IMAPP MODIS IR destriping software script execution. Make sure that it works on both IMAPP MODIS and NASA file naming conventions.

- **Kathy is working on this.**

CSPP/IMAPP: Multi-antenna processing logic. Many of us are trying to do very similar things, especially when it comes to logic for efficiently and effectively combining passes acquired from more that one antenna. We should share this information.

- **UW to start a CSPP Forum entry about this?**

IMAPP: Jackie Marsden would like to take a look at what DBCRAS Fire Danger Index looks like over Australia. Could it be useful to them?

- **UW to set them up with examples.**

CSPP: Does anyone want us to continue to support RH5?

- **Decision was made that V1.4 will support RedHat 5. The next release may move to RH6.**

CSPP: Graeme asked if the quick look software was valuable to users?

- **A quick poll of attendees says yes.**

CSPP: Request from Météo-France for a tool that will collocate CrIS/VIIRS, and eventually carry along cloud information from VIIRS to CrIS.

- **UW is working on providing the CrIS/VIIRS collocation tool. Will contact Pascal and Nigel to see exactly what they want, and what we can provide in the short term.**

CSPP: Request for Day/Night Band reflectance software.

- **There is a subroutine that is currently in development by Steve Miller. It will eventually be released. We will let user know when there is a beta package available. Probably in the next 3-6 months.**

IMAPP: There was a question about new modisl1db calibration look up table format change for version 1.8 that makes them incompatible with version 1.7 software.

- **To resolve this you have two options. Turn off LUT updates in v1.7 or use v1.8.**

Use of CSPP and IMAPP Forums: Request to stage information about timing, instrument issues or notices, including maneuvers.

- **UW agreed to start posting this information in the Announcements section of the Forums.**

Upcoming DB related meetings:

- **ITSC-19 which has a DB working group will meet in March 2014 in Korea (http://cimss.ssec.wisc.edu/itwg/itsc/)**

Prioritizing CSPP support for satellites, instruments and products

- **UW and JPSS are working on determining the best way to do this.**