**Notes on LPV Plenary ESA/ESRIN, Frascati March 2, 2018**

**WGCV Chair – Kurt Thome**

CEOS work plan – plan of activities over the next three years, what they are planning to achieve. Includes a chart of actions, actions for each of the working groups, and cross cutting actions, across working groups and constellations. OLIVE was one of the ways that we addressed work plan items.

Another was ACIX.

These type of exercises help us find inconsistencies and gaps in our understanding.

Will take these into cloud masks, biomass, everything going forward.

Not done yet, can’t mark it as completed until we have a report/journal article to show for it

This has also helped us to integrate the subgroups, IVOS, AC, and LPV.

RADCalNet – vicarious calibration at automated network sites. Networks using their own equipment, and it all goes into a single processing system. Users get TOA refl for a nadir look at hyperspectral wavelengths every 30m at each of 4 test sites (50mx50m). Still waiting to open site to public. Beta users are testing, needs more automation. High quality science data that is easy to use.

Cross cutting

MRI (multi-resolution interoperability)

CARD4L (CEOS analysis ready data for Land)

Several actions w/in the CEOS Work Plan that relate to these.

MRI (from prev CEOS plenary chair), may begin to wane. Unknown.

Should we have one VI for all sensors?

What we do is provide guidance to users.

LPV Super Sites – ties to CEOS Plenary, we have closed the action, can reformulate something else if more work is needed. Nomenclature needs addressing. May need to address by focus area. RT modeling drove the super site idea. Rami sites? Need to move beyond semantics.

Super sites can be used for multiple products, but not all, no site will meet all needs.

MODIS core site pages, were early generation ARD data, satellite subsets, along with related data that could be used to validation those, available from one place, circa 2000. How do we go from core sites to LPV sites, and what do we call them? New core sites Fernando proposed are where we start, and it will inform decision making and field work going forward, for at least the US, EU, and Australia. Need to move on this from the CEOS perspective, fulfilling actions and closing them.

Are the FAs satisfied with the set of sites? Do they meet your requirements? Need to make sure there are no gaps in sites that would prevent you from reaching Stage 3. If there is a gap, we need to address. Supersites, will help us bring everyone to at least stage 2. Need to get it right, because going forward, this puts agency efforts into action, to assure site collection is secured.

Side discussion of re focus areas still at stage 1, what do they need?

Review of the web site home page, update of the validation stage table with the products listed at various stages. Gathered input from each Focus Area to see where they are and if they current stage is appropriate.

**Action : update table on home page to reflect the feedback from FA leads.**

FRP – may need some help, perhaps an FRM exercise, is there an interest in the longwave infrared component for this? Scaling up is an issue, it’s extremely complicated. Kurt says there are folks in IVOS who, without prompting, would probably like to have input into the traceability. It’s a different set of channels though, so we need to check. **Miguel will take on this action to talk to subgroup counterparts on how to get traceability for FRP.**

Doesn’t appear there are any emergencies WRT sites.

**Supersites - Fernando**

Mar Bleu peatland site. Do we want to add? We do have defining criteria. We can evaluate against these criteria.

We have a list of sites proposed, but sites can always be added.

54 sites, tied to a network or a team.

Jadu suggests that in addition to providing the list, it would be useful to also show/post the selection criteria.

Ferran had concerns about the size of the list and perhaps some overlap. Suggests we narrow it down to help focus efforts at certain sites, thus offer more synergy. Perhaps using feedback from the focus areas.

Miguel argues that there has to be a scientific basis for reducing it, most people would want more sites not less. The user can look at the criteria and decide how to narrow it. We need more, not less, in order to achieve stage 3.

Ferran also suggests adding other sites not on the list.

**Ferran suggests that he can provide input and additional review for the European sites, and then run that by the FA leads again. Action for Ferran and Fernando, but this is a follow-on action, we will move forward with Fernando’s list and close this action.**

**Agency Reports**

**Medhavey Thankappan – Geoscicences Australia**

Australian field campaign for surface reflectance

Digital Earth Australia

Tanzania – LC validation transects

Brightness Temperature (no emissivity)

**Ian Grant – Australia Bureau of Meteorology**

Weather, Climate and Biometeorology

Observing stations

Application scientists

Tool for validation?

Have surfrad network (two are BSRN)

A possible albedo co-lead candidate

**Ferran – ESA**

FRM campaign – FRM4Veg

Several projects for providing fiducial measurements for different products

Will propose methodologies for the def of required FRM, LSR, FAPAR LWC

Prime Contract w NPL, also Southampton University, EOLab

Methodologies that are generated within this study can then be debated for building guidelines for LPV biophysical products.

1 Year plan

Wyndam Woods, UK 2-13 July

Valeri ESU approach

Oxford Site UK (Joanne)

DHP, Apogee

Barrax, Spain – April?

Spectral, TLS, DHP, cholorphyl

**NASA/NOAA – Miguel**

Post MODIS

Continuity of Land products from EOS era into JPSS era

LSR, LST, and downstream products

Most of core products are being continued, extending the MODIS record into VIIRS, and past 2020

TERRA/AQUA/S-NPP/JPSS-1

Land Products will be generated from JPSS-1 (renamed NOAA-20)

Some PIs for core products were lost, so there are concerns about quality in the long term, with unsupported (but mature) algorithms

Decadal survey out, no mission prescriptions, just measurements needed. Now NASA/NOAA/USGS must formulate missions to address the questions. Hyperspectral is included.

Many agencies are working on application specific efforts (arctic vulnerability), and process driven measurement of structure and function. Lots of hyperspectral being collected.

Airborne campaign over hurricane affected areas.

Landsat 9 moving forward. NASA building, USGS taking over after launch.

Next VIIRS is ready for pre-ship in 2 months. (a third VIIRS)

Sustainable Land Imaging (how to continue Landsat type sensors)

Q: Land Cover orphaned?

Yes, but we will be producing MODIS algorithms for C6 at least through 2020.

There is also a chance a new PI could come in in the meantime.

Q: Partioning of classes?

These will be the same as previously with MODIS. Miguel thinks that NOAA may only use IGBP, and took the action to check on this.

**OLIVE Actions – Miguel (before others leave)**

Provided an assessment to get the LAI protocol completed

Not perfect, but served a purposed, and helped us move forward with our framework.

- port into public access, Github

- update

- GSFC tool for OLIVE in Python

Provide updates to modular pieces

- metrics by variable

- FRM by variable

Make the software available

Mid term plan

Roll out albedo protocol

Figure out plan to work with the data providers to provide routine subsets

Reference data

Bring both into C/V portal

Run a live exercise, get satellite products for albedo from all the agencies, site measurements from the networks, and bring into OLIVE or other tool, and spit out results, which are sent to the portal.

Perform an ACIX like study for albedo, led by Zhuosen

USGS already generating subsets

Need EU help, getting all Sentinel data

This needs to be done to get to Stage 4.

Get OLIVE code from Github

Each focus area will have to modify to meet their needs

Miguel requests help reviewing protocols!!

Action: Distribute to WG

**Focus Area Reports**

**VI – Else**

Working on a protocol within the framework of the Copernicus GLS.

Has had many external revisions.

Doing similar analysis within the framework of the S3VT, and S2.

Many things still need to be taken into account, both single sensor Vis as well as multi-sensor, which is used very much in the agricultural communities. Also in discussions with JRC, who regularly use it in day-to-day operations, and also the WFP.

Miguel suggests considerting a chapter on utility to outside communities.

VI product often used in relative terms.

Tomoaki has an early draft of the protocol.

Will work on draft of Newsletter.

**Carsten – SM – has a slide presentation available**

Products are at Stage 3, could be stage 4

Andreas Colianas (?) from JPL, collecting automated data from international networks, and posts into his system and directly compares to his observations, shows examples from SMAP and SMOS. Tools available. (See Presentation).

Data come from the ISMN, which ESA has extended funding for (but they are often threatened being cut off from funds). Long term solution needed. Need to provide TOPC with a $ figure of what is need to keep it going.

Soil Moisture very heterogenous in space and time.

Downscaling – spatial correlation, which changes over time.

Passive/Active, different scales.

NiSAR 2021, will get us to hundreds of meters.

Much work done over ag.

Can’t get SM over forest. L-band can get through veg sometimes.

Definitions needed. Oct meetings on SMAP cal/val, SM applications, and WMO meeting on SM.

WMO developing protocols.

Flood forecasting for SENDAI.

GeoGlam

Bonn Validation workshop hosted by Validation office @ Julich

MW subgroup and soil research missions

SMOS

AMSR, operational

Target dates for SM protocol – see slide – final expected end of 2019.

**LC – Sophie Bontemps**

Will start working on a protocol update – previous one was 2006

Landcover has become more complex, and the ways we collect reference data has evolved.

Validation for land cover has become standard, and most products include validation. There are many protocols for different projects. SIGMA, GlobCover, CCI, multiple efforts, need to be put together and agree on a new protocol.

Need to include LCC and land use. Need to be included in definition of ECV, only succeeded in getting LCC in. Expect we will be able to add later, we need to persist in pushing this.

Need a plan, and a panelist in TOPC to champion the cause. Need to build a basis, have a definition and show you have a community that is organized and is also engaging the modeling community.

Do we change the name of the Focus area and the tabs on the web site?

Protocol

Need to update metrics

Sampling design – systematic, stratify by complexity of landcover

Reference data

 Crowd sourcing? Experts only…? Quality considerations

 Sharing? Cannot be used for training, if online, you don’t know how it’s used.

GFOI – guidance and training REDD countries being trained

GeoGLAM starting to think about offering guidance

Would like to plan a Workshop in 2019

**Phenology – Jadu** (see presentation)

**LAI – Hongliang**

Protocol

Issues include – understory not considered

No mention of how to use LIDAR or UAVs

Use of smartphones – is there missed potential?

Should look at citizen science contribution – use of smartphones - can this be useful? Would need to augment protocol if it is to be included. Can use the newsletter as well to explore this.

Miguel suggests using the RS special issue to call for paper to fill these gaps.

Suggests a Biophysical LAI/Fpar workshop, possibly later 2018. Suggested adding this call to the next newsletter. AGU, IGARRS. Session proposals due in April. Discuss at next telecon.

Can FRM be somehow be included?

**Biomass – Laura – slides**

Bkgrnd – About 2 yrs ago the leads for the upcoming active missions met at the Smithsonian to discuss how to do fusion, cal/val, etc with the modeling and field communities also included. At the end the carbon action plan was used as a guiding strategy. Shortly after this Miguel approach Laura and some of the GEDI team about leading a new Biomass focus area within LPV. Timing was perfect.

Met in BERN last year, with GEDI, BIOMASS, NiSAR teams there as well as JAXA represented. The last day was dedicated to the Biomass focus area. A subgroup was created to focus on the protocol, and they left the meeting with a skeleton of the biomass protocol, created as a community.

A report was created from the meeting – with key points and recommendations, including some key ones for LPV:

1 – Collection of ground plot and lidar data for biomass should be coordinated across the different missions, this would be coordinated by LPV

2 - supersites for biomass will be well-vetted w/in community with repeat field visits TLS stem map and airborne (LIDAR and SAR). ~50 sites - for calibration of models and for validation of products

3 – User requirements for biomass product validation and reporting – who are they and what do they need. LPV&GFOI will define user requirements, and how can we build validation tools to meet those

See slides for skeleton doc, people assigned to writing of protocol.

GEDI Shiny app - There has been a great Shiny story (Shiny is an R package that allows for others you share your story with to interact with your data analysis) that has been shared with the NISAR team, who plans to use the same tool.

Have been working on portal development, MAP, FOS, OLIVE – need POCs for docs and data.

**Fire – Gareth** (see presentation) **Luigi -**

Protocol Status

Active fire – advanced validation

Fire Radiative Power – high-res, Firebird (DLR), ASTER method not possible, large intense fires saturate other instruments

Burn Area – need to finalize BA protocol

**Fpar – Marie**

Protocol outline completed

- Need to update Fpar definition on web site

- Plan to write Fpar newsletter (Ferran suggests including FRM)

- supersites

- Citizen science discussion came up again. Miguel suggested a cross-cutting group to deal with this, it may be a way to pursue low hanging fruit measurements. Kurt suggested contacting the WGCapD within CEOS, seeking help in accessing a greater audience that is highly sophisticated, but also citizens who want to help. This is their area of expertise, taking things to a broader community, including countries with very little infrastructure. Miguel will also talk to ORNL, who also has expertise in metadata standards, tool building, data stewardship. NEON, we should contact them as well. Michael Cosh has an upcoming call with them, he will inquire.

**Albedo – Zhuosen**

Moving toward stage 4

Continue to review OLIVE and SAL/VAL tools, perhaps use SAL/VAL to update OLIVE

MALIBU deployments are continuing

Disasters – some disaster control systems that use albedo as key input

Plans for high spatial resolution albedo, Landsat and S2 – can start using in urban areas to help reduce albedo from buildings, help to meet ‘green’ building standards

Need review of V1 of Albedo protocol draft

**LPV**

**Need new Vice-Chair nominee.**

Potential Snow co-lead, G. Riggs, GSFC