**Biomass Actions 7/8 - Miguel**

What do we want to do here to help further the biomass effort?

The biomass community, those making satellite derived products, not well represented w/in LPV. The in situ folks are, but those generating the products and leading the missions are not.

When you talk about biomass, we have to consider the SAR effort and the lidar effort.

Have to deal with product development and low level efforts toward generating products and combining all these things together. What do we want to do, because we can’t do everything.

CS: Biomass, GEDI and NiSAR - all are talking to each other, and biomass community is well aware they need a common evaluation set. The mission teams already recognize this.

SP: In situ groups are well connected as well. What are the additional elements can LPV bring that will benefit this group and benefit us?

MR: We sold NASA on the idea that we have two missions, we should have just one cal/val plan for both. We want a plan, something we can deliver that helps the mission teams. Who does what?

And lidar gives you canopy structure, we are not directly measuring biomass, we will run into issues with GCOS on this. You are getting height, dbh…. how does that fit into the ECV discussion? If we are going to write a protocol, it would be towards an ECV.

SP: Biomass ESA team and Ralph, Sassan are communicating with each other and in situ teams (forest networks in the Amazon, ESA efforts… etc.). Can we work toward a sustainable set of measuring systems at intensive field sites? Can we get NEON to do what TERN is doing to characterize sites? (apparently not right now, until things shake out at NEON, airborne campaign efforts are stable, but in situ efforts are not)

MR: In situ efforts in US EU Aus are building core sites, and set of golden datasets that support the evaluations and protocols, we need to start formalizing that - efforts like AfriSAR, ground based lidar (Crystal, Disney, Michael, etc.). Can we direct them/suggest priorities for sites/measurements?

CS: Terrestrial lidar communities met in Brisbane to coordinate and intercompare measurement efforts, but it was an early effort, informal. Strahler planning to host another effort at Harvard forest Aug 2017, w/ destructive sampling to intercompare instruments. LPV should help to coordinate these types of activities.

MH: Have to address the different instruments. Also how to sample a large area to do the cal/val efficiently? Lots of people doing this, steep learning curve. Need an LPV biomass protocol for this, one of the key steps. Need LPV endorsed biomass protocol on how to validation biomass products from space. Still many issues, definitions, what measurements, what accuracy metrics do you want?

SP: We should get the existing mission teams to work on this.

(Perhaps all, to start with the definition. But sounds to me like we should get the ground teams to start the effort documenting their experiences with instruments and sampling. They are leading the way. )

CS: As far as GEDI, they are preparing their data set, they are not going to send someone out between now and launch to LPV. Things are just too tight.

MR: Reach out to the folks on the cal/val teams for Biomass, GEDI, NiSAR – get them together – will benefit all 3 missions if they work together on a single document.

MH: In biomass there is also a cal problem. Working toward a combined lidar and radar measurement, you can probably get a better biomass if you combine them in a smart way. Work is mostly empirical, but if you are able to provide cal data on the stem complexity of the forest and the structure of the forest, and get people who can deal with the lidar and radar signals physically in a smart way you underpin with some real data integration.

WGCV – Microwave or SAR groups fit in here??? MW doing SM. SAR w/in CEOS not focusing on biomass. So, there are gaps, but LPV can fill the lidar gap.

WW+: This is an opportunity to bring lidar and radar people together. Lidar community is very mature, very advanced. Product maturity not as advanced in the radar field. Can request that Albrecht offer someone with expertise from the SAR WG. Bring together the SAR community and the lidar community – 2 champions, maybe lidar(US)-radar(EU) together as a team to start and lead the protocol effort.

MR: Have to agree on the definitions, the sampling, have to have the reference data, and the communities generating the products. That is a lot to do, and need to get them all at the table.

WW suggested Juha Hyyppä at the Finnish Geospatial Research Institute connected to all aspects – TLS, radar, SAR, interferometry, mobile laser scanning, Scandinavian community is very strong (commercial?).

CS: Defining sites would be very, very helpful. Even if it’s just one in the US, one in EU, and one in Oz.

Leads for FA – Would want someone from the missions. Academica? Stephen suggests the academics would approach from the theory side. Others suggest it’s the opposite.

Academics currently making the measurements. Agency folks doing airborne measurements. Suggestions

Michelle? (Ralph’s post-doc. She is close to Ralph but not usually the type we select for a FA lead – relatively new in the field, prob very new to validation…)

Klaus Scipal (Scientific Coordinator) – has already been suggested to him

ICOS is writing protocols. We need to work on communication with this network. (just have subscribed to their news and info listservs). LCLUC doing phenology through ICOS (?).

NEON doing the same, but it working with us, and registers our needs.

Wrap up.

We have 2 potential leads (Michelle and Klaus)

The first two components of the protocol we want to focus on are sampling and in situ data, which includes sites. How do we organize ourselves so that we achieve these two.

SP: Carbon actions.

Touch base with other components w/in WGCV, LSI, VCs.

Need better communications within CEOS so that we know what the groups are doing and where their capabilities and expertise lies. Communication may improve with the new WGCV chair.