CEOS WORKING GROUP CALIBRATION AND VALIDATION LAND PRODUCT VALIDATION SUPERSITES AND BIOMASS VALIDATION WORKSHOP

2nd – 6th March 2020, Canberra

SCOPE, OBJECTIVES, & AGENDA

Version 1.1, 29th February 2020

Context

CEOS agencies are operating and planning a number of missions (radar and lidar) that aim to provide measurements of above ground biomass. A multi-mission group has been formed and has regular calls to coordinate various aspects related to these missions including validation of the biomass products. Specifically, on the biomass validation aspect, a specialist team within the CEOS working Group Calibration and Validation (WGCV) Land Product Validation (LPV) sub-group has developed the CEOS WGCV LPV Biomass Protocol promoting good practices for validation of the mission products, with a focus on the lidar missions. Recognising the importance of in-situ validation data, complementary to the biomass validation protocol, the CEOS WGCV LPV sub-group also undertook an effort to define and evaluate international land-based sites which, systematically collect multiple biophysical measurements important for validation of Earth observation derived products, on a long-term basis. The result of this work is a collection of LPV supersites drawn from well-known and established networks around the globe (https://lpvs.gsfc.nasa.gov/LPV_Supersites/LPVsites.html).

The Australian SIT Chair team has nominated 'carbon and biomass' as one of the thematic priorities for its 2020-21 term and proposed *'accelerating the policy relevance of the new above ground biomass (AGB) measurement missions'* as a stated objective. Part of the approach will be to ensure awareness and support for the anticipated CEOS WGCV LPV Biomass Protocol, to ensure appropriate application and interpretation of the new AGB datasets.

As a contribution to the CEOS community coordination efforts, CSIRO is hosting a CEOS WGCV LPV supersite and Biomass Validation Workshop in Canberra, Australia in the week of 2nd March 2020. This short paper serves to communicate the scope and objectives for the meeting and to help attendees plan attendance around the provisional schedule for the week. Meeting logistics and programme will be kept up to date on the meeting page on the CEOS website.

Scope & Objectives

In relation to these existing efforts and their promotion and exposure to CEOS Principals and the broader context of seeking to maximise policy impact of the new missions, the following objectives have been set for the workshop (with feedback encouraged from the community):

1. To bring together the ground in-situ measurement networks such as GBOV, TERN supersite, NEON, Enviro-Net, etc. and biomass teams to explore and build on synergies between the CEOS WGCV LPV supersites initiative and biomass protocol work, extending the extensive work being conducted by the CEOS WGCV on LPV supersites, and the develop of a biomass protocol. Topics include:

   – explore synergies between CEOS WGCV LPV supersites and other networks, evaluate and update the status of CEOS WGCV LPV supersites, and evaluate the potential extended use of these sites for biomass validation;

- explore synergies between biomass and other biophysical measurements currently captured by supersites;
- define site characteristics and instrumentation requirements for biomass and other biophysical product validation;
- evaluate interoperability and harmonisation of data between sites in order to allow data exchange, use, integration with spatial and other datasets (linked to FDA, datacube initiatives);
- define needs for more coordinated field and airborne data collection;
- consider synergies and support of the WGCV Biomass Inter-comparison Exercise-2 (BRIX-2) activity and actions for individual CEOS agencies to support.

2. Working with the CEOS WGCV LPV Biomass protocol team to generate a 'pitch' to CEOS Principals at the CEOS SIT-35 meeting in Tasmania in late March to request for the resources that are needed to make a success of the newly-published protocol and to ensure its potential is fully realised.

3. Addressing outreach to relevant policy implementation or inventory agencies such as UNFCCC and take the opportunity to explore potential links from CEOS agency biomass measurement coordination to the CEOS GHG Roadmap and their plan to contribute a prototype product to the 1st Global Stocktake in 2023 - understanding the production schedules from the relevant CEOS mission programs and what might be practical.

Just as the greenhouse gas experts within CEOS have mobilised to develop a coordination roadmap under the umbrella of a CEOS carbon strategy, so too could the biomass experts across CEOS agencies identify possible measures to progress the necessary coordination in a framework that will attract attention and support from CEOS Principals. The workshop could address this possibility and consider how to mobilise resources to address the needs.

Schedule

The workshop will run over 4 days, with a further day set aside for a virtual field trip to the Tumbarumba Terrestrial Ecosystem Research Network supersite and CEOS WGCV LPV supersite and to look at analogues of Tumbarumba at the Canberra botanic gardens. To aid planning of attendance and travel, the following provisional schedule is proposed:

	Mon 2 Mar	Tue 3 Mar	Wed 4 Mar	Thu 5 Mar	Fri 6 Mar
Topics	Validation, Supersites, Networks	Validation, Supersites, Networks	Virtual tour of Tumbarumba and botanic garden	Policy issues & CEOS support	Australian collaobration with international partners Available for biomass protocol meeting or other side meetings
Venue	CSIRO, Canberra	CSIRO, Canberra	CSIRO, Canberra and Canberra botanic gardens	CSIRO, Canberra	CSIRO, Canberra (Half day?)

Detailed agenda is provided below.

Agenda

Monday 2nd March

1000 - 1020	**Introduction to the week** Aims and objectives Running list for Thursday session	Cindy Ong
	Session #1 Agency talks on biomass missions and the relevance of in-situ measurements for validation	
1020 - 1050	JAXA ALOS + MOLI	Hayashi/Rosenqvist
1050 - 1120	NASA GEDI + NISAR	Armston
1120 - 1700	**Session #2 – Supersites for EO land product validation**	Moderators: Fernando Camacho, Joanne Nightingale
1120 - 1140	**CEOS WGCV LPV "Supersite"**	Fernando Camacho
1140 - 1210	TERN supersites	James Cleverly
1210 - 1240	NEON network (20 mins with 10 mins for Q&A)	Phil Townsend
1240 – 1340	**LUNCH**	
1340 - 1410	Copernicus GBOV: contribution to EO vegetation products validation	Christophe Lerebourg / Jadu Dash
1410 - 1440	Japan's activities and plans for biomass supersites (JaSForB & JSS500)	Masayoshi Takahashi/ Kenro Nasahara
1440 - 1510	Integrated European Long-Term Ecosystem, critical zone and socio-ecological Research Infrastructure and the global LTER (ILTER)	Michael Mirtl
1510 - 1540	**BREAK**	
1540 - 1610	FRM4Veg – ESA contribution to European land validation supersites network	Joanne Nightingale
1610 - 1640	TERN's efforts on data /metadata harmonisation	Gerhard Weis
1640 - 1725	Discussion (30 mins discussions, 15 mins presentation of results) Topic: Interoperability between "supersite" networks: measurements protocols, instrumentation, uncertainties, data format, metadata formats, data access and automated networks, etc.	

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Tuesday 3rd March

	Session #2 Supersites for Land Product Validation continue	
0840 - 0900	ICOS	Dario Papale
	Session #1 Agency talks on biomass missions and the relevance of in-situ measurements for validation continue	
0900 - 0920	BIOMASS	Clement Albinet
0920 - 0940	ISRO NISAR	Misra-Ray
	Session #3 Biomass Validation Protocol	
0940 - 1010	CEOS WGCV LPV biomass validation protocol: Overview, knowledge gaps and recommendations	Duncanson
1010 - 1030	Forest Observation System - Extending existing networks to include biomass validation, strategy for ALS data	Dmitry Schepaschenko
1030 - 1050	Characterization and propagation of errors in biomass from reference measurements to maps	Roxburgh/Paul
1050 - 1120	**BREAK**	
1120 - 1140	New technologies (TLS/drone) for biomass validation: Status, outlook and recommendations	Calders
1140 - 1200	CCI Biomass: Data products, uncertainty reporting and validation data requirements	Lucas
1200 - 1300	Breakout 1 (60 min) - Knowledge and data gaps for biomass product validation and supersites Topic 1: Lidar estimation of biomass for validation: Review gaps in our understanding of associated uncertainties, availability of protocols for data acquisition and QA/QC, facilities for storage/access of data (issues of attribution, etc). Topic 2: Can existing supersites/networks be extended for biomass validation and how?	
1300 - 1400	**LUNCH**	
1400 - 1430	Report back on breakouts and discussion	
	Session # 4 Some of Australia's TERN sites in depth	
1430 - 1500	Litchfield	Lindsay Huntley/Shaun Levick
1500 - 1530	Alice Mulga	James Cleverly
1530 - 1600	Robson Creek/Daintree	Mirko Karan/Kim Calders

1600 - 1700	Discussion topic (45 mins discussion - 15 mins results): How to finance maintenance of supersite network and pitch to CEOS agencies?	
1830	**DINNER at Bamiyan, 62/10 Lonsdale st Braddon ACT 2612**	

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Wednesday 4th March

0900 - 1030	Virtual tour of Tumbarumba	Will Woodgate
1030 -1230	Walk through eucalypt analogues at Canberra botanic gardens	Jacqui Stol & Mike Doherty
1230 - 1400	**LUNCH at Botanic Gardens**	
1400 - 1700	Tumbarumba in depth	Will Woodgate

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Thursday 5ᵗʰ March

	COLLABORATIVE OPPORTUNITIES	
0900 - 1100	Discussion: Collaborative opportunities at Australian sites	
1100 1130	**BREAK**	
	POLICY NEEDS AND DRIVERS	
1130 - 1145	**Introduction – objectives for the session**	CEOS SIT Chair Rep (Alex Held or Stephen Ward)
1145 - 1215	**Policy needs and drivers for biomass data and its supply and processing**	Jo Nightingale (collaboration with Martin Herold)
1215 - 1230	**Earth Observation & climate policy process** - UNFCCC needs - Global Stocktake process	JAXA (Osamu Ochiai)
1230 - 1300	**National Inventory User Perspectives**	Govt Australia (Shanti Reddy) Others?
1300 – 1400	**LUNCH**	
1400 – 1500	**Discussion Session #1** **- CEOS AFOLU Roadmap** - What should it aim to achieve? - What's the role for biomass? - Who and what to write?	Moderators: Osamu +…
1500 - 1700	**Discussion Session #2** - What do space agencies need to invest in to ensure data is policy-relevant? - What do they get in return? - What is planned and what is missing? - The Pitch to CEOS @ SIT-35 - Will the multi-mission group continue?	Moderators: TBD Laura Duncanson & Stephen Ward
1500 – 1715	**BREAK**	
1715 – 1800	**Way Forward & Actions** - AFOLU Roadmap - SIT-35 (Prep, presentation…) - GFOI Plenary - CONVENTIONS (UNFCCC SEC…)	

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Friday 6th March

0900 - 1200	Available for other side meetings	