



Committee on Earth Observation Satellites

# Land Surface Imaging – Virtual Constellation

Zolti Szantoi/COM-JRC

CEOS SIT Technical Workshop 2020

Session and Agenda Item # 3.3.4

Virtual Meeting, 10/11 September 2020





### Leadership, membership, changes:

- Adam Lewis (Geoscience Australia) (co-lead)
- Steve Labahn/Tim Stryker (USGS) (co-lead)
- Zolti Szantoi (COM-JRC) (co-lead)

### Successfully integrated, based on CEOS Plenary endorsement

- Ad Hoc Space Data Coordination Group for GFOI
  - to become a thematic subgroup on Forests & Biomass
- Ad Hoc CEOS Working Group on GEOGLAM
  - to become a thematic subgroup on GEOGLAM

### Meetings

- Monthly telecons with active participation
- LSI-VC 9 - virtual meeting 2020 April 14, 28, May 12, 13
  - CEOS ARD & Standardization
  - Industry & CEOS ARD
  - CARD4L and the Product Family Specifications (PFS)
  - LSI-GEOGLAM, LSI-Forests & Biomass, ARD Strategy
- LSI-VC 10 - virtual meeting
  - series of thematic sessions (as done for LSI-VC-9) across the weeks of October 5 and 12.
- Additional calls on an ad hoc basis (particular PFS discussion for example)

### Active involvement

Canadian Space Agency  
 European Commission  
 European Space Agency  
 Geoscience Australia  
 JAXA  
 NOAA  
 United States Geological Survey

### Periodic Involvement

Korea Aerospace Research Institute  
 National Institute of Aeronautics and Space, Indonesia  
 National Space Activities Commission, Argentina  
 Institute of Remote Sensing and Digital Earth (RADI), China  
 Indian Space Research Organization

## • Industry

- Direct contacts with key players (PCI, PLANET, SINERGISE, etc.)
- CEOS ARD Webinar #1 – July 1, 2020: [Watch Here](#)
  - 500 registrations, 725 views; further webinars planned
  - Analysis Ready Data Strategy and Early Progress: 16th, #5.2, UTC 1240-1430

## • Scientific

- IGARSS ARD sessions (2018/19/20)
- PECORA
- Geo Week (key side event)
- Living Planet 2019

## • General

- CEOS Newsletter
- WG on Capacity Development and Data Democracy collaboration
- Undertake two actions from the WG Climate Coordinated Action Plan
  - LST Climate Data Records and continuity
- Participation in OGC's TESTBED16 ARD activity

CEOS Newsletter No.55 / August 2020

### Reports of LSI-VC

The 11th meeting of the CEOS Land Surface Imaging Virtual Constellation (LSI-VC) was held as a series of thematic teleconferences from mid-April to mid-May, covering: CEOS ARD & Standardisation; Industry and CEOS ARD; CARDAL and the Product Family Specifications (PFS); and LSI-GEGLAM, LSI-Forests & Biomass, and the CEOS ARD Strategy. The focused scope for each call, as well as strong participation, resulted in good discussions and decision making.

We continue with our efforts to engage groups outside CEOS in the CEOS ARD discourse, in particular the commercial sector. We have seen great interest from industry, and there are currently numerous dialogues taking place across several CEOS entities. LSI-VC is working with the SIT Chair Team to ensure CEOS has a coordinated and unified interface to industry on this topic – in line with the CEOS ARD Strategy.

LSI-VC decided to reform the planned CEOS Industry ARD Workshop into a series of online webinars, with the first held on July 1. There were 490 registrations, 227 people connected to the live discussion, and more than 500 views of the webinar (live and recorded). The initial webinar was organised as a means to strengthen the dialogue between CEOS and the broader community on the topic of ARD, and to explore what interfaces and cooperative activities are needed to increase data use, choice and flexibility for users. Subsequent webinars will take deeper dives into other aspects of ARD and Future Data Architectures (FDA).

In addition to updating the original three CARDAL PFS (Surface Reflectance, Surface Temperature, Normalised Radar Backscatter) LSI-VC has expanded its portfolio of PFS with the endorsement of the Polarimetric Radar (POL) PFS at LSI-VC-9. CARDAL for SAR is particularly helpful at lowering the barrier of entry for users with SAR data, which is inherently more complex. The LSI-VC Leads thank Tadeu Todorov (JAXA), Ake Rosenqvist (JAXA) and the entire CARDAL SAR sub-team for their work on the specification. Good progress is also being made on an Aquatic Reflectance PFS, which is expected to be a timely contribution to the CEOS-GOALS initiative. Finally, in response to CEOS feedback, LSI-VC will also seek to add 'Advisory Notes' as a fourth component of the CARDAL Framework to address issues like data policy, data formats, and interoperability.

Landset Collection 2 (Surface Reflectance and Surface Temperature) has just recently been approved as CARDAL at the 'Threshold' level and Sentinel-2 Level-2A (Surface Reflectance) is expected to follow soon. A number of other assessments are anticipated, including for Synthetic Aperture Radar (JAXA ALOS-2 and Sentinel-1). The LSI-VC Leads would like to thank our IWG3 colleagues, in particular Mochay Thankappan who has served a dual role across both teams, for their assistance with the peer reviews of the CARDAL self-assessments – a critical step in ensuring consistency, accuracy and objectivity in the process.

The LSI-VC Leads would like to extend an open invitation

Adam Lewis,  
Geoscience Australia



Steve Labahn,  
USGS



Zoltan Szantoi,  
EC/JRC



for CEOS Agencies to join the LSI-VC. Should you require information on any of our work, please feel free to get in touch with the LSI-VC Leads or the LSI-VC Secretariat: labahn@usgs.gov, Adam.lewis@ga.gov.au, Zoltan.SZANTOI@ec.europa.eu, matthew@ymbioscomms.com

<http://ceos.org/launcher/virtual-constellations/sit/>  
<http://ceos.org/ard>

# CARD4L, Product Family Specifications




- **Current endorsed CARD4L Specifications:** Surface Reflectance (SR), Surface Temp (ST), Normalized Radar Backscatter, Polarimetric Radar
- **In progress CARD4L Specifications:** Aquatic Reflectance (Coastal), Interferometric SAR, Geocoded Single-Look-Complex (SLC)
- **First CARD4L Datasets:** USGS Landsat Collection 2 SR & ST. COM/ESA Sentinel-2 SR currently being assessed.
- **Interoperability discussions**
  - LSI-VC and Working Group on Information Systems and Services have been developing the terms
  - The current version will be discussed at SIT-TW and is down for endorsement at CEOS Plenary
- **Supporting discussion around adaptation of the CARD4L Framework to support other domains (SIT TW Session 2.2)**
- **Contributing to realization of the CEOS ARD Strategy:**
  - Contributed to CEOS Interoperability Terminology (WGISS, SIT TW Session 5.2)
  - Involved in ARD and commercial sector paper (SIT TW Session 5.2)
  - Exploring opportunities for CARD4L pilots – for feedback and improvement of specs



CEOS Analysis Ready Data

Overview Framework Specifications FAQ Resources **CEOS ARD Strategy** Information for: Data Producers Data Distributors Data Users

CEOS ARD Webinar – July 1, 2020: Watch Here >>



## CEOS ANALYSIS READY DATA

CEOS Analysis Ready Data for Land (CARD4L) are satellite data that have been processed to a minimum set of requirements and organized into a form that allows immediate analysis with a minimum of additional user effort and interoperability both through time and with other datasets.

Information for:

- Data Producers
- Data Distributors
- Data Users

<http://ceos.org/ard/>



*GEOGLAM work is now principally executed by GEOGLAM Coordination Team on EO Data Coordination.*

Essential Agricultural Variables remain primary focus.

- USER/policy-facing
- Some COVID-related delay.
- Variable characterizations are 90% complete.
- Up next:
  - Gap Analysis
    - Methods?
    - Satellite Data?
    - Ground Data?
    - Compute?
  - Outcomes will drive:
    - Research Agenda
    - EO Data Requirements - observations, ARD, access
    - Core priority products for CEOS Land Product Validation collab?

ESSENTIAL AGRICULTURE VARIABLES FOR  Global Agricultural Monitoring

**What are EAV for GEOGLAM?**

**Essential:** key 'building blocks' to produce relevant and timely information products

**Agriculture:** related to agricultural production and land use

**Variables:** that can be measured and reflect state, change, and forecast in agricultural land use and productivity

**For GEOGLAM:** to support our policy mandates, G20-GEOGLAM, SDGs, Climate, Sendai



EAV Working Group co-led by Alyssa Whitcraft & Sven Gilliams (VITO)



## Copernicus Global Land Service

Providing bio-geophysical products of global land surface

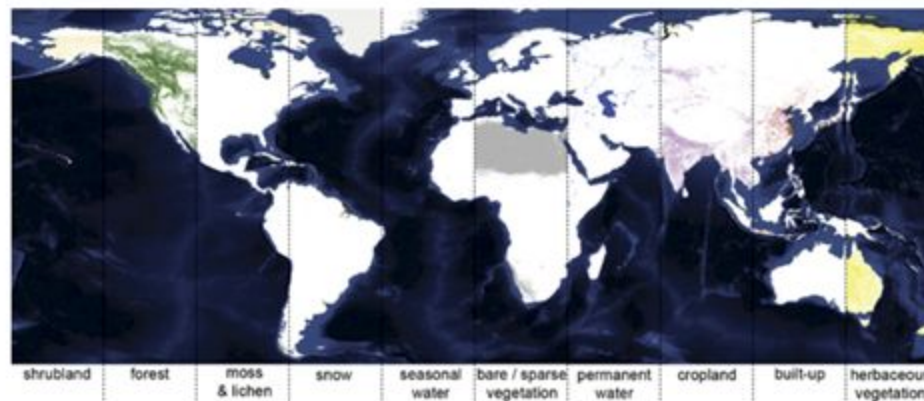

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### Annual 100m global land cover maps available!

**Published on:** 2020-09-09

Global Land's first global 100 m land cover map for 2015 – released just over one year ago – continued to inspire thousands of users with applications in [agriculture](#), [biodiversity](#) & [nature conservation](#) and [natural capital accounting](#).Ov

Today, Global Land's land cover team is happy to release **annual updates to the 100m global land cover maps**, covering the **2015-2019** period, including the same 23-class classification, versatile cover fractions for 10 classes, forest type layer and quality indicators on input data density and the confidence in the detected changes.



Cover fractions for the 9 base land cover classes and seasonal inland water