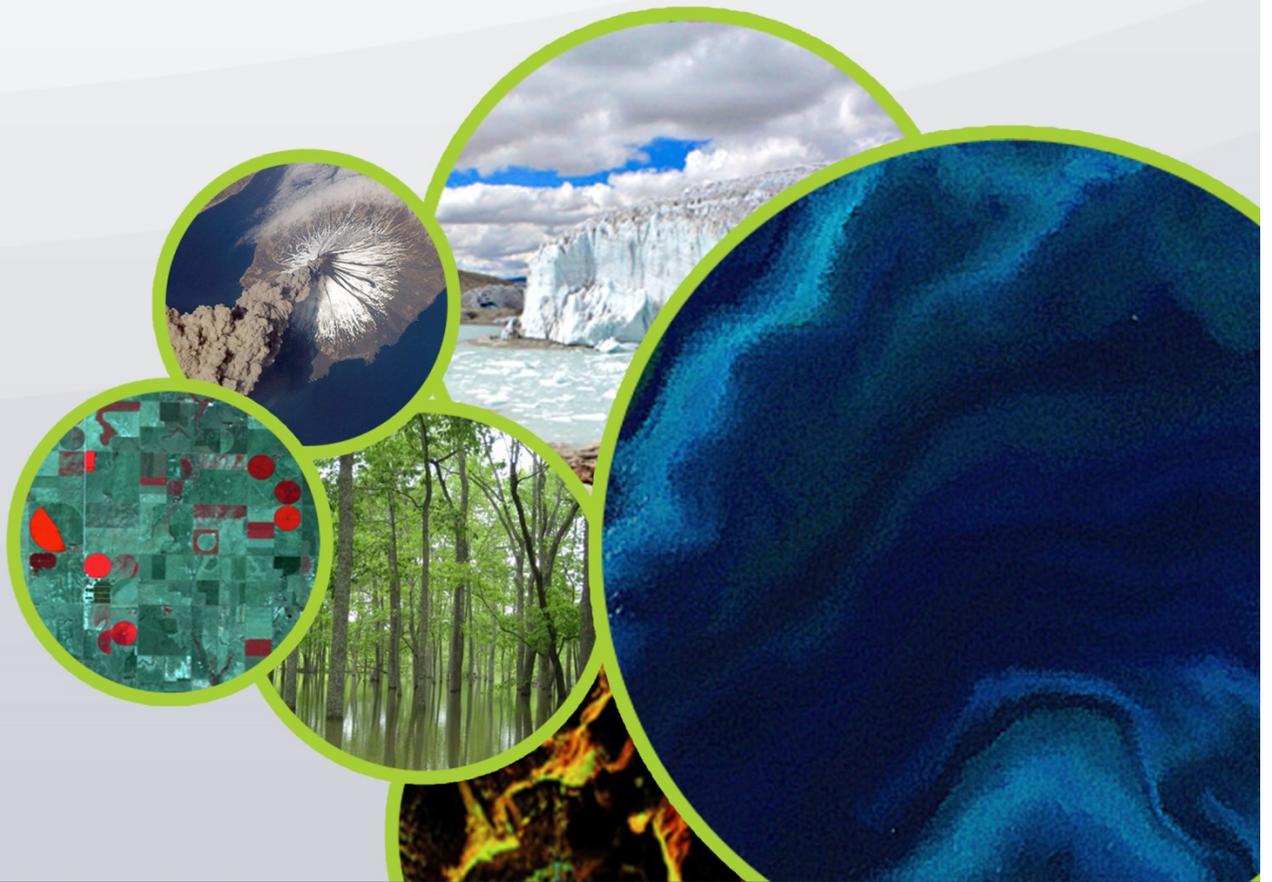




Committee on Earth Observation Satellites



The Land Surface Imaging Virtual Constellation Implementation Plan

August 15, 2017

Introduction

The CEOS Land Surface Imaging Virtual Constellation (LSI-VC) was reconstituted at the 28th CEOS Plenary in 2014. Below is the revised LSI-VC direction based on the original Terms of Reference (Table 1).

	3-Year Horizon	5-Year Horizon
Space Segment	Aggregate and analyze multiple sets of validated, domain-specific requirements to identify gaps and opportunities for optimization and improve interoperability and complementarity.	Harmonize acquisition plans across major international land surface imaging programs to support validated domain-specific requirements.
Ground Segment and Information Systems	Stimulate an environment conducive to the creation of analysis-ready data to enhance usage and exploitation of the CEOS data portfolio for land surface imaging.	Establish the framework for an architectural network with the capability to analyze very large land surface imaging datasets.
Products and Services	<p>Conduct case study of Landsat and Sentinel-2 ARD interoperability, and then expand beyond moderate resolution to other sensors and instruments.</p> <p>Document, publish, and communicate clearly to the community the objectives and intended uses of the interoperable products.</p>	Encourage complementarity and compatibility among the increasing number of Earth observing systems.

Table 1. Revised High-Level Direction, as modified from the approved LSI-VC Terms of Reference.

This updated Implementation Plan outlines the specific activities the LSI-VC plans to undertake over the next three years, working toward the 3-Year Horizon guidance.

In preparing this Implementation Plan, consideration has been given to:

- The desire to address pressing issues of strategic concern to CEOS and CEOS Agencies.
- The need to work with the resources that CEOS Agencies can realistically contribute
- The need to re-build momentum by implementing solutions that work, increasing CEOS Agency buy-in and contributions.
- The need to build and reinforce strong linkages with other CEOS Entities, such as those identified in the Terms of Reference.

The LSI-VC Focus

The LSI-VC will focus on developing and implementing coordinated solutions across the following themes:

- Promoting analysis-ready data and minimizing the need for end users to understand satellite/pass/sensor-specific processing.
- Draw together validated requirements identified by downstream land user communities to:
 - Identify opportunities to better optimize, and increase resilience of, land surface imaging programs
 - Identify current and potential data gaps (both in terms of geographic and temporal coverage, and in land monitoring requirements)
- Encourage Moderate Resolution Interoperability (MRI) objective for complementarity and compatibility among the increasing number of Earth observing systems in the moderate (10-100m) resolution class for both optical and SAR sensors and the data received from them.

Activities (~ 2017-2019)

The LSI-VC will conduct its activities in accordance with the CEOS Work Plan.

	Objective / Deliverable	Description / Context	Linkages	CEOS Work Plan Ref.	Target Date
ARD	CARD4L Framework Development	LSI-VC will develop the first CARD4L Product Family Specifications, with at least two documents presented for endorsement at CEOS-31. Draft versions of these specifications will be used to inform LSI-VC contributions to FDA-4. A CARD4L Assessment Framework will also follow.	FDA-AHT WGCV	FDA-7	Q4 2017
ARD	Develop a Roadmap for the Routine Production of Intercomparable CARD4L	Building on agreed specifications of CARD4L products, LSI-VC will develop a roadmap for how interested CEOS Agency missions and programs can start processing land surface imaging data to geometrically and radiometrically intercomparable surface reflectance, surface temperature, and analogous radar products.	WGCV	VC-27	Q4 2018

ARD	Trial CARD4L Supply to FDA Pilots	Through the production/provision of CARD4L datasets in support of the FDA pilots, LSI-VC will gather evidence on the associated technical challenges. Where possible, WGCapD capacity development capabilities will be leveraged.	FDA-AHT SEO WGCapD	FDA-4	Q4 2017
Requirements	Assessment of Terrestrial Carbon Strategy Variables	In support of the CEOS Carbon Strategy, LSI-VC will analyze validated land carbon observation requirements and identify the gaps in and opportunities for optimization across CEOS Agency missions. This work will leverage the GEOGLAM requirements 'matrix' as a framework.	SEO WGClimate	CARB-13	Q4 2017
Requirements	Pilot Approaches to Conducting Integrated Assessments of Gaps/Opportunities in Asset Usage	<p>The LSI-VC will, building on the work for land carbon, develop and pilot an approach for analyzing multiple sets of domain-specific requirements and identifying gaps/opportunities for optimization.</p> <p>This effort will integrate validated requirements for forestry, carbon, climate, and agriculture; and identify potential continuity issues for land surface observations from space via CEOS Agency assets.</p> <p>A joint session of LSI-VC, SDCG for GFOI and the CEOS Ad-Hoc Working Group on GEOGLAM will be scheduled for Q3 2017 to progress discussions on this topic.</p>	SEO SDCG for GFOI CEOS-GEOGLAM ad-hoc WG WGDisasters	VC-26	Q4 2017

MRI	Framework for Moderate Resolution Land Sensor Interoperability	<p>Increasing numbers of users are interested in the development of product pipelines that are not completely dependent on the characteristics of a single sensor, when a number of different sensors may be able to provide data that is fit for purpose.</p> <p>Interoperability, however, is challenging to define in a manner that enables such users to move beyond theory and into practice.</p> <p>The framework to be developed will be generally applicable and address factors including radiometry, geometry, data formats, browse information, metadata, data access, metrics and reporting.</p>	MRI WGISS WGCV	VC-29	Q2 2018
MRI	Interoperability Case Study for Landsat and Sentinel-2	The framework for moderate resolution land sensor interoperability (refer VC-29) will be applied to the Landsat and Sentinel-2 missions.	WGCV	VC-30	Q4 2017