

THE CEOS CONSTELLATION FOR LAND SURFACE IMAGING

by CEOS



The Committee on Earth Observation Satellites (CEOS) is an international organization charged with coordinating international civil space missions designed to observe and study planet Earth. CEOS comprises 26 Members, most of whom are national space agencies, and 20 Associate Members that include various national and international organizations that use Earth observation (EO) data in their programmes. CEOS is recognized as the major international forum for the coordination of Earth observation satellite programmes and for the interaction of these programmes with users of satellite data worldwide. It is also recognized as the coordination body of the space component of the Global Earth Observing System of Systems (GEOSS).

THE CEOS CONSTELLATION CONCEPT

A constellation of satellites that routinely and frequently image the Earth's land surface with calibrated wavelengths from the visible to the microwave, and in spatial detail that ranges from sub-metre to hundreds of metres, would offer enormous benefits to society. Such a constellation would provide the fundamental data required by scientists to help predict, and mitigate the effects of, natural disasters; to monitor climate change; to study ecosystems and biodiversity; to address important human health issues; and to undertake many other equally important scientific and practical activities. The CEOS Constellations Concept has been created to reach such an objective and to facilitate CEOS member agencies in supplying the space-based observations required to satisfy the requirements of the GEOSS 10-year Implementation Plan. CEOS has established study teams to define four prototype constellations: precipitation, land surface imaging, ocean surface topography, and atmospheric composition.

LAND SURFACE IMAGING (LSI)

The fundamental mission of the Land Surface Imaging (LSI) Constellation is to promote the efficient, effective, and comprehensive collection, distribution, and application of space-acquired image data of the global land surface, especially to meet societal needs of the global population, such as those addressed

by the Group on Earth Observations (GEO) societal benefit areas. LSI addresses not only the building and launching of satellite systems, but also the development and operation of associated ground segments and the efficient delivery of data to stakeholders.

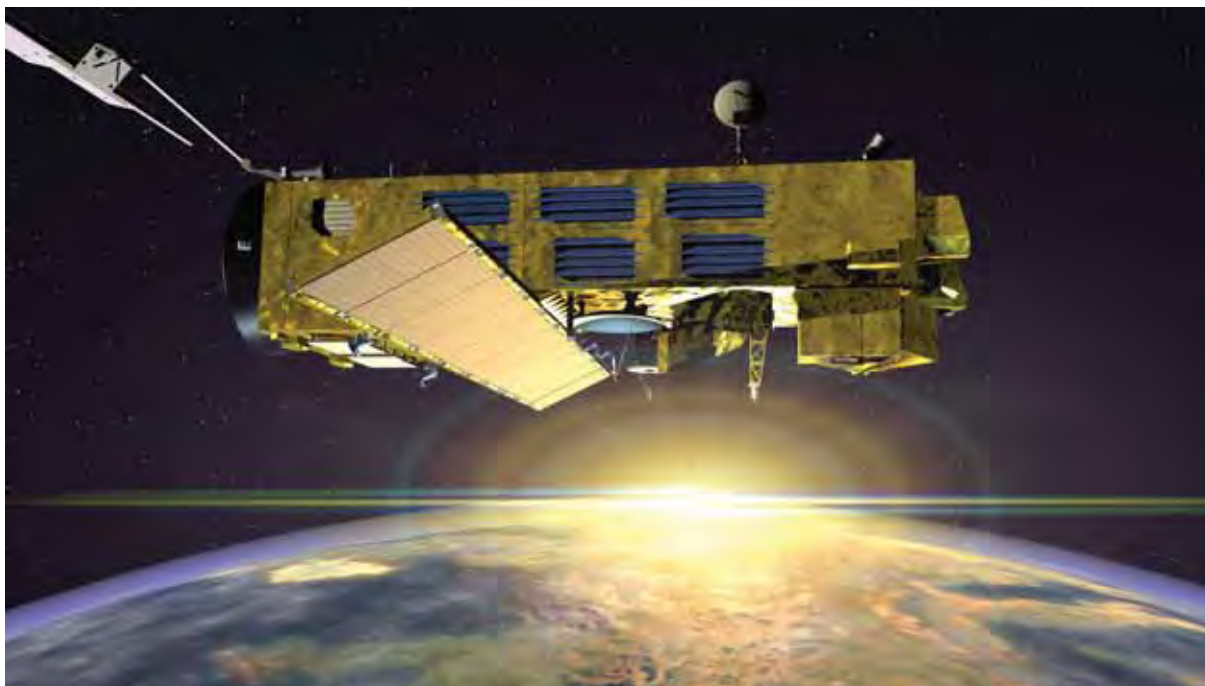
METHODOLOGY AND SCOPE

LSI will focus on the definition and accomplishment of a series of studies and activities. These studies and activities will result in the definition of a broad range of rather detailed characteristics (or standards) that describe optimal, end-to-end capabilities (and policies) to acquire, receive, process, archive and distribute land surface image data. Constellation studies and activities will also address shorter-term problems and issues facing the land remote sensing community today, such as seeking ways to work more cooperatively in the operation of existing land surface imaging systems.



ESA Envisat image

Looking to the future while seeking to optimize benefits from current land remote sensing systems



ESA Envisat, advanced polar-orbiting Earth observation satellite, which provides measurements of the atmosphere, ocean, land and ice

2007 GOALS AND OBJECTIVES

Three main LSI Constellation goals for 2007 have been established, which mainly address mid-resolution (10 m–30 m) land imaging systems. These goals are to:

- establish agreement(s) among space agencies currently operating mid-resolution land surfacing imaging satellite systems, to cooperate more closely and create a prototype LSI Constellation;
- develop preliminary standards for a mid-resolution LSI Constellation, and
- contribute to the production of a fundamental climate data record (FCDR).

The potential value of an operational LSI Constellation is being demonstrated through the provision of mid-resolution land surface image satellite data to support the implementation of the Global Forest Resources Assessment 2010 of FAO.

CEOS SUPPORT TO UNFCCC-REQUIRED OBSERVATIONS

CEOS agencies operate satellites that collect data related to many of the atmospheric, oceanic and terrestrial Essential Climatic Variables (ECVs), which are required to meet the needs of the Parties

to the UNFCCC. The Global Climate Observing System (GCOS) report on “Systematic observation requirements for satellite-based products for climate” clearly outlines the needs of the climate community. CEOS recognizes that meeting these observational requirements would not only lead to a much improved understanding of climate issues it would also significantly contribute to the societal benefit areas (SBAs) of GEOSS.

The CEOS Constellations of satellites and associated ground support systems will therefore work in a coordinated manner to address the actions outlined by GCOS. The issues that will be addressed include:

- continuity of satellite measurements
- systematic data generation
- safeguarding of records
- data access
- international coordination addressing future measurement needs.

In addition, issues such as the reprocessing of historical data collections, improving data continuity and moving measurements from research to operational will be addressed.

RELATED LINKS:

CEOS: www.ceos.org | GCOS report on required satellite observations: www.wmo.int/pages/prog/gcos/Publications/gcos-107.pdf
Report of CEOS response to GCOS: www.ceos.org/CEOS%20Response%20to%20the%20GCOS%20IP.pdf