

CEOS contribution to GEO

Osamu Ochiai, JAXA
CEOS Water SBA Coordinator
ochiai.osamu@jaxa.jp

7th IGWCO Planning meeting, Univ. of Tokyo, 14th March 2011

1

Plan

- **CEOS Overview**
- **CEOS “GEO” Activities**
 - CEOS Priorities in 2010
 - CEOS Priorities in 2011
 - CEOS Virtual Constellations
 - CEOS contribution to GEO 2012-2015 WP
- **Milestone**

CEOS Overview

- CEOS = **C**ommittee on **E**arth **O**bservation **S**atellites (www.ceos.org)
- Since 1984, Major international forum for:
 - coordination of international civil Earth Observation (EO) satellite programs
 - interaction of these programs with users of satellite data worldwide.
- 30 Members (mostly space agencies) and 20 Associates (associated nation)
 - NSMC/CMA and SANSA joined in last CEOS Plenary (Oct 2010)
 - Individual participating agencies make their best efforts to implement CEOS recommendations.

3

Three primary objectives of CEOS

1. to optimize benefits of spaceborne Earth observations through:
 - cooperation of its participants in mission planning
 - development of compatible data products, formats, services, applications, and policies;
2. to serve as a focal point for international coordination of space-related Earth observation activities;
3. to exchange policy and technical information to encourage complementarity and compatibility of observation and data exchange systems.

4

CEOS Organization

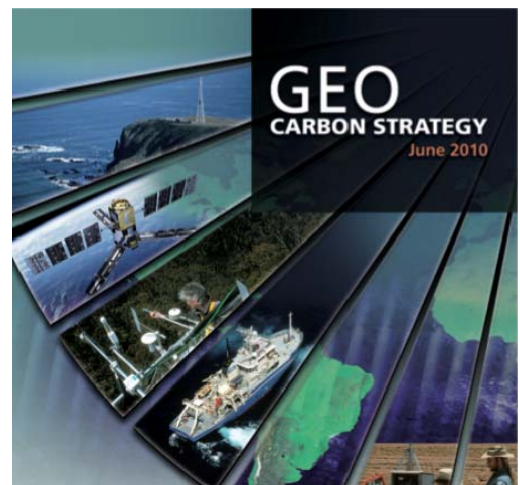


CEOS Priorities in 2010

Carbon from Space

GEO Carbon Strategy

- GEO Carbon Strategy report developed 2010 – updates the IGOS Carbon Theme Report from 2005 (<http://www.falw.vu/~dola/downloads.html>)
- CEOS to consider how to respond to the challenges for satellite observations laid out in the GEO Carbon Strategy
- Carbon Task Force established to interface effectively to the GEO Carbon CoP and to manage the development of a CEOS response



Satellite GHG mission with PBL sensitivity

	2002	2004	2006	2008	2010	2012	2014	2016	2018	2020	2022
CO ₂ , CH ₄		SCIAMACHY			GOSAT		CARBONSAT GOSAT-2***				
CH ₄							G/Fr Climate Mission		SENTINEL 5		
							SENTINEL 5 P				
CO ₂						OCO-2		MicroCarb			
						OCO-3*				JEM-DIAL***	
TBD									ASCENDS		

*OCO-3 instrument will be assembled and ready for integration on to a flight of opportunity as soon as 2015
 **GOSAT-2 mission definition review will be in 2010, and request budget for start-pre-project in 2011.
 ***JEM-DIAL has been studying dedicated CO₂ measurement to be aboard the ISS – Japan Exposure Module

Climate Monitoring

- CEOS climate actions responds to GCOS Implementation Plans
- Satellite based ECVs are essential for systematic observation and data production
- UNFCCC/SBSTA encourages CEOS to continue coordinating and supporting the implementation of the satellite component of the Global Climate Observing System
- CEOS established a new Climate Working Group for strengthening the international collaboration in order to meet the ECV and FCDR requirements

Atmosphere	Surface (0, 0, 6)	Air Temperature; Precipitation ; Air pressure; Water vapour; Surface radiation budget; Wind Speed & direction; I
	Upper air (1, 1, 3)	Cloud properties, Wind speed & direction Earth radiation budget; Upper-air temperature; Water vapour;
	Composition (3, 0, 0)	Carbon dioxide Methane & other GHGs; Ozone; Aerosol properties
Ocean	Surface (4, 2, 1)	Sea-surface Temp; Sea-level; Sea-ice; Ocean colour; Sea state; Sea-surface salinity Carbon dioxide partial pressure
	Sub-surface (0, 0, 7)	Temperature; Salinity; Current; Nutrients; Carbon; Ocean tracers; Phytoplankton
Terrestrial (3, 7, 4)	Glaciers & ice caps; Land Cover; Fire disturbance Fraction of absorbed photo-synthetically active radiation; LAI , Albedo Biomass, Lake levels, Snow cover, Soil moisture Water use, Ground water, River discharge Permafrost and seasonally-frozen ground	

1. Improved coordination of space agency activities related to climate
2. Forest Carbon Tracking from Space
3. Development of the CEOS Strategy for Carbon Observations from Space
4. Advancing the Data Democracy Initiative
5. Further development and operationalization of the GCI
6. Support to the Geohazard Supersites initiative
7. Support to the Joint Experiment on Crop Assessment and Monitoring (JECAM)
8. Support the new Water initiative
9. Support the GEO-BON

146,000,000 worldwide live within 1 meter of MHW

Guerin, Thorp & Thompson (2007) www.architecture2030.org



Hollywood, FL – Population Impacted 140,000



Miami Beach – Population Impacted 88,000



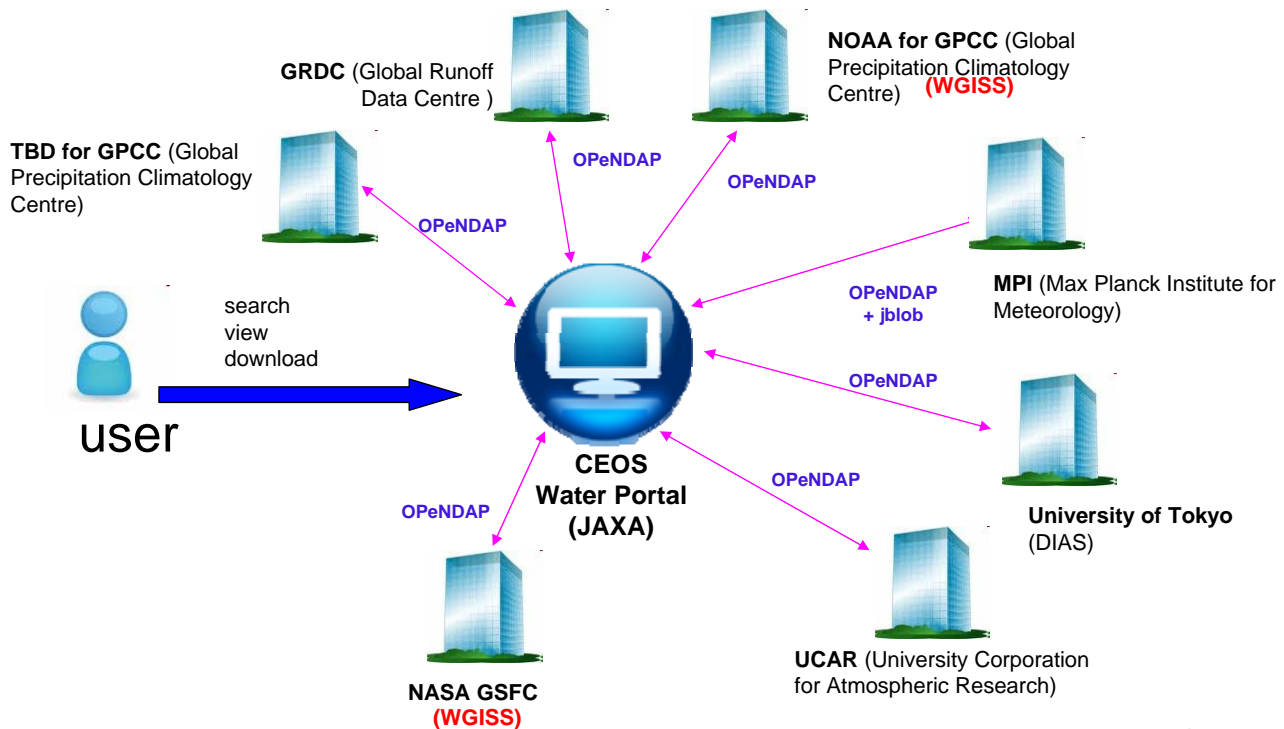
CEOS Constellations



GROUP ON EARTH OBSERVATIONS

PC Constellation





1. GEO/GEOSS Members and POs should provide an official point of contact who should help facilitate support and resources for the GEO WP and its needs.
2. The schedules for many of the Tasks may be too aggressive if all GEO Members and POs have not been consulted and are not ready to contribute and provide resources for input, development and implementation of the WP.
3. It is critical to have support from GEO to facilitate the acquisition of funding sources for reviewed and approved projects. It is recommended that the principal leads of the projects be actively engaged with GEO in the dialogue with potential funding partners.
4. Detailed GEOSS information inputs needed for the 2012-2015 WP Tasks should be identified, in order to support the formulation of responses to societal questions addressed in the plan. These inputs should allow for sustainment or enhancement of the systems needed.
5. A registration process should be pursued for each GEO/GEOSS component. Each registrant should provide a detailed work plan that includes the level of detailed resources to be provided.

CEOS Proposals for GEO 2012-2015 WP

6. CEOS has many ongoing efforts via its Working Groups (WGs) and Virtual Constellation (VC) teams that are directly related to GEO requirements and needs. They are reviewing their individual work plans and ensuring they are supportive of the GEO objectives.
7. A consolidated effort is proposed via GEO Members and POs to emphasize the strong need for defined and dedicated resource support for many of the needed GEO WP inputs and their continuation.
8. Each GEO Member and PO, including CEOS WGs and VCs, should review data and product development requirements needed to support GEO.
9. Quality metrics and truth in labeling (metadata) should be sought for all GEO Task input, output, and scientific presentations.
10. It is recommended that the GEO *Quality Assurance Framework for Earth Observation* (QA4EO) effort expand beyond the space domain and be pursued across all SBAs in the GEO WP, as appropriate.
11. As for the CEOS Virtual Constellations, the GEO 2012-2015 WP should provide a supportive governance structure, from overarching Tasks to sub-Tasks, which would facilitate the VCs more effective development and expansion. It is recommended that GEO enable more comprehensive and supportive Communities of Practice to advise on VC observational requirements and priorities.

17

Milestone

- 26th CEOS SIT meeting – Mar 16-17, Tokyo
- GEO WP symposium – May 3-4, Geneva
- CEOS SIT workshop – Sept, DC area
- 24th CEOS Plenary – Nov 8-9, Italy, Lucca
- 8th GEO Plenary – Nov, Turkey

For more information:

CEOS Web Site: www.ceos.org

e-mail: ochiai.osamu@jaxa.jp