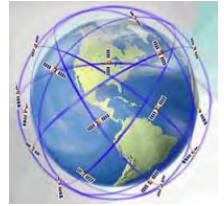


# What is a Virtual Constellation ?

- A CEOS Virtual Constellation is a set of space and ground segment capabilities operating together in a coordinated manner, in effect a **virtual system** that overlaps in coverage in order to **meet a combined and common set of Earth Observation requirements**.
- The Constellation concept builds upon or serves to **refocus already existing projects and activities**.
- The Constellations effort provides a unique forum to **achieve political visibility and increase mutual benefit among space and other environmental agencies** in support of cross-cutting GEO Tasks and Targets.
- In particular, they offer opportunities to
  - share experience in the **development of algorithms**;
  - **standardize data products and formats**;
  - exchange information regarding the **calibration and validation** of measurements;
  - facilitate **timely exchange and access to data products** from existing and planned missions;
  - and facilitate **planning of new missions** – ranging from coordinating orbits to optimizing observational coverage to sharing implementation of mission components.

# What is the Mission of the OCR-VC ?



- The OCR-VC will provide **long time series of calibrated ocean color radiance (OCR)** at key wavelength bands from measurements obtained from **multiple satellites**.
- OCR-VC activities will include calibration, validation, merging of satellite and *in situ* data, product generation, as well as development and demonstrations of new and improved applications.
- NASA's *SIMBIOS*, ESA's *GlobColour*, POGO-GEO-GOOS's *ChloroGIN* and CSA/GEO *SAFARI* projects are examples and prototypes of programs the OCR-VC will require to meet its objectives.

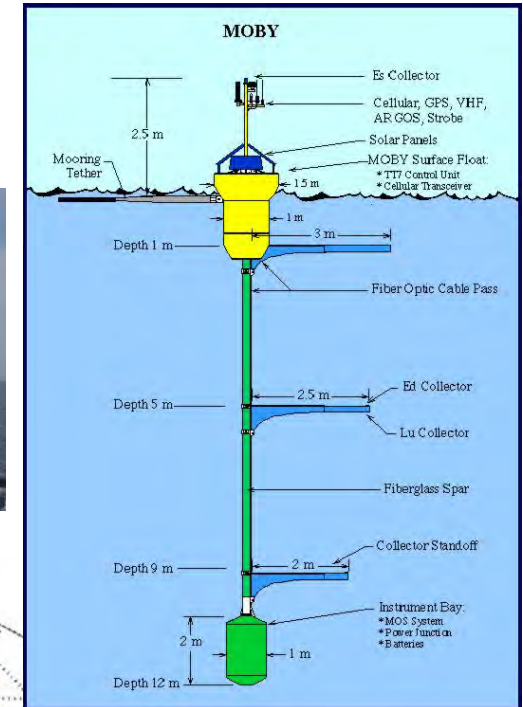
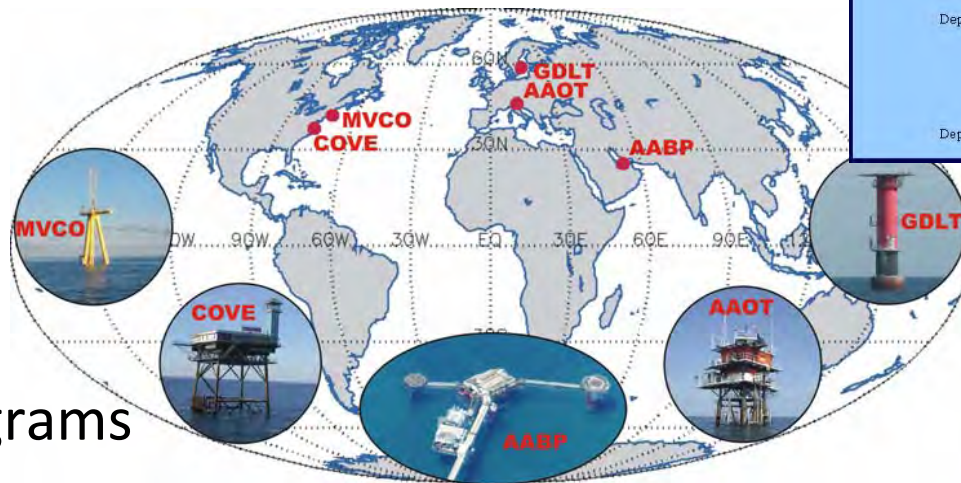
# OCR-VC Priorities Identified

1. Inter-agency **OCR Essential Climate Variable (ECV) implementation** strategy and subsequent execution of this strategy
2. Concerted inter-agency effort on activities relating to sensor inter-comparison and uncertainty assessment of datasets required for ECV generation
  - **International Network for Sensor InTercomparison and Uncertainty assessment for Ocean Colour Radiometry (INSITU-OCR)**

# Cal/Val of INSITU-OCR

*International Network for Sensor InTercomparison and Uncertainty assessment for  
Ocean Colour Radiometry*

- Sensor inter-comparison
- Product validation ← *incl. networking and campaign of international observations*
- Investigate vicarious calibration approaches
- Algorithm parameterization
- Instrument inter-calibration
- Building from previous investments/prototype programs



# What we need to deliver for CEOs

- White paper on INSITU-OCR by Summer 2011 (self-assigned)
- Review best practices & identify gaps
- Address 2 Rs
  - Recommendations
  - required Resources

# Discussion

- We have heard overview of best practices
- We need to identify **gaps**:
  - at the agency/sensor level
  - but more importantly what networking is required across agencies
- **Resources**: we really need to make an effort to identify resources required for individual activities
- Recognize combined contribution of space agency specific programmes and contribution from the scientific community:
  - for the latter encourage coordinated publication of ROs on specific topics.
- **Capacity building**: need to define how to best support Agencies with emerging OCR programmes

# Reality check

- We need to bear in mind that - at present - there are agency level budgets for cal/val, not pooled.
- Need to define a modular programme where individual agencies can pick-up one or more aspects.
- Recognize that there are difference in funding lines: i.e. some agencies have sensor specific cal/val budgets others have dedicate cal/val programmes
- To gain the appropriate exposure of our recommendation these should be linked to the CEOS/GEO QA4EO process.

# INSITU-OCR components

## Mission Feedback

- Science community input
- Comparison with other appropriate products
- New Mission
- Protocol development

## Improved Products & Algorithms

- Reprocessing due to improvements in calibration, masks, binning schemes, product compatibilities, etc.
- New products from bio-geochemical, atmospheric fields, etc.
- Data distribution interface

## Satellite data processing software

- SeaDAS & BEAM for ACE, OCM-2, MERIS, OLCI, SGLI, GOCI, GEO-CAPE, etc.

## Satellite Data from Calibrated Sensors

(2010)

Feedback

## IN SITU-OCR OFFICE

- SIMBIOS type follow-on office (NASA) with agency representatives (under investigation)

## Product & Algorithm Validation

- Atmospheric & bio-optical algorithm validation and development (INSITU-OCR PIs and project staff)
- Match-up analysis via Aeronet OC sites, satellite QC, time series evaluation, Bio-Argo, ChloroGIN etc.
- **Earth System/Climate Model data assimilation**

## Calibration Strategy

### Prelaunch

- Lab. characterization & calibration (SI-traceable)
- Solar calibration (transfer-to-orbit)

### Postlaunch (operational adjustments)

- Solar calibration (daily)
- Lunar calibration (monthly)
- Multiple sites  $L_{wn}$  time series for vicarious calibration (ISRO, MOBY-C)

## In Situ Data

- Collection of required bio-optical and atmospheric measurements (INSITU-OCR PIs)
- *in situ* instrument calibration (Project round robin SI-traceable, IOPs, AOPs)
- Data collection following NASA Ocean Optics protocols
- Archive of calibrated QC *in situ* data (SeaBASS)
- Calibrated instrument pool
- Development of new instrumentation



# Topics

- Calibration, Vicarious Calibration, inter-calibration
- In-situ data - Protocols => Validation
- Algorithm development - Processing software
- Production inter-comparison, data merging

# Calibration, Vicarious Calibration, inter-calibration

- Recommendations
- Gaps and Priorities (focus on networking)
- Resources (activity based)

# In-situ data - Protocols => Validation

- Recommendations
- Gaps and Priorities (focus on networking)
- Resources (activity based)

# Algorithm development - Processing software

- Recommendations
- Gaps and Priorities (focus on networking)
- Resources (activity based)

# Production inter-comparison, data merging

- Recommendations
- Gaps and Priorities (focus on networking)
- Resources (activity based)