



IOCCG Standing Working Group on “ satellite Ocean Colour radiometry Essential Climate Variables assessment”

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Mission Statement of the WG

International scientific Group to undertake a critical comparison of available Ocean-colour ECV products and provide guidance on the generation of better, long-term OCR Climate Data Records

WG Terms of References (1½ – 2 years)

Develop a roadmap, including milestone for completion of the 1st assessment

Recommend comparison / evaluation metrics (in particular with respect to long term trends) and define comparison protocols

Record and evaluate the differences among existing OCR ECV products (basin to global scales), and recommend how differences can be resolved



Establish criteria to be satisfied by OCR ECV products and identify actions needed to ensure the quality and consistency required by GCOS

Respond to CEOS requests for review of OCR ECVs

Establish contact with SST-VC which may have some comparable ECV challenges and solutions

Evaluate Agency efforts to develop / support the development and archive of ECVs including the actions to archive raw data and associated data that are required for full reprocessing

*“The most important ocean-colour ECV products are the **normalized water-leaving radiances and chlorophyll-a concentration**. Other products are in development, such as coloured dissolved organic matter and particulate backscatter (used to estimate total suspended material). “*

ECV: Ocean colour	GCOS/CEOS Action O15		
	Property		
		Water leaving radiance	Chlorophyll
Accuracy (%)	Target	5 (blue/green wavelengths)	30
	Planned	5	30
Stability (%/decade)	Target	0.5	3
	Planned	TBD	TBD
Horizontal resolution (km)	Target	4	30
	Planned	4	4

WG agreed that ECV/CDR metrics for ocean color as listed in the recent GCOS document and the targets, at least for stability and accuracy, will not be achievable with the current suite of instruments.

Reason for the 30km horizontal spatial scale metric for Chl a for climate products is unclear.

WG tentatively accepted the current GCOS definitions for stability and accuracy, but may recommend changes after further technical consideration.



International efforts to produce global OC time-series: “CDR-like” data sets

- NASA-GSFC concatenated time series from multiple sensors (SeaWiFS, MODIS-A, MODIS-T and MERIS)
- NASA’s Ocean Color MEaSUREs Project merging SeaWiFS, MODIS-A and MERIS using IOP’s model. Focus on ESDR (Earth System Data Records)
- ESA’s DUE GlobCOLOUR merged satellite time series (SeaWiFS, MODIS-A, MERIS) at 4.6km resolution. Focus on ocean carbon cycle research
- ESA’s Climate Change Initiative: long-term multi-sensor merged global products (SeaWiFS, Aqua, MODIS). Focus on GCOS climate ECVs (+ IOPs)

Identified actions of the WG

Missions comparative exercise

- identify appropriate metrics for time series comparison and evaluation,
- define criteria for CDR eligibility

Record and evaluate differences among OCR ECV products

- advantages of merged vs concatenated time series
- bias due to different equatorial crossing time
- evaluate compositing schemes (weighting schemes)

Identified actions of the WG

Ensure quality and consistency required by GCOS

- critically examine GCOS / CEOS OCR targets and planned metrics
- investigate trends from other sources (observations , models) to set expectations
- define suitable temporal and spatial resolutions

Establish contact with the SST-VC group

CEOS's target for L_w and Chl stability are 0.5% and 3% per decade, respectively.

Chl trends in 5 global, biogeochemical models run for 1998-2012 and 1998-2027 show that mean trends in Chl are of the order ~ 0.1 -0.5% per decade.

Thus, reaching the CEOS Chl stability target may not be adequate to resolve decadal trends in Chl.

Results also show monthly resolution is insufficient to characterize seasonal cycle of phytoplankton, and also insufficient to detect long-term trends in phytoplankton phenology, and its change (e.g. bloom initiation or duration) [S. Henson & M. Wang preliminary study]



Next Steps

WG will meet in Darmstadt (Germany) just before the International Ocean Color Symposium (IOCS), 6-8 May 2013

WG will likely try to meet again in fall, 2013.

WG goal is to give a complete report of our initial objectives at the IOCCG annual meeting in early 2014 (see TOR and written report for description of goals).