



GROUP ON
EARTH OBSERVATIONS

AquaWatch
The GEO Water Quality Initiative

The GEO AquaWatch Initiative

The Water Quality Community of Practice

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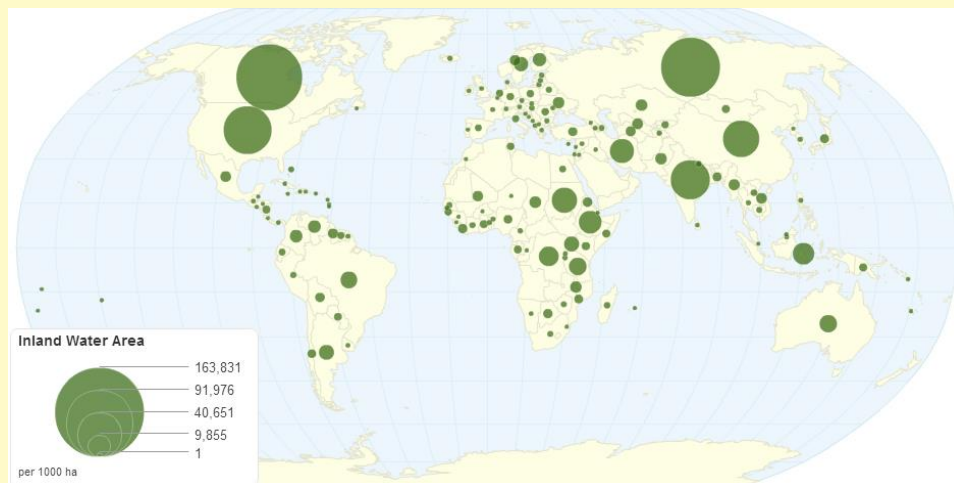
GEO AquaWatch Director

CEOS WGISS-47 meeting
29 April-2 May, 2019
Silver Springs, Md.



Inland and Coastal Waters

- ~117 million lakes globally covering 3.7% of the Earth's land surface, coastal zones ~ 15 percent.
- Critical role in ecosystem services. Only 0.007 percent of the planet's water is available to fuel and feed its 6.8 billion people.
- Water scarcity facing 1.8 billion people by 2025
- Sentinels of change and threatened globally by climate change, eutrophication, toxicity.
- Many gaps in monitoring, particularly in developing countries



GEO AquaWatch Goal

AquaWatch aims to develop and build the global capacity and utility of Earth Observation-derived water quality data, products and information to support water resources management and decision making.



Chesapeake Bay Buoy – NOAA Image



Lakes Mendota & Monona -University of Wisconsin SSEC image

AquaWatch Objectives

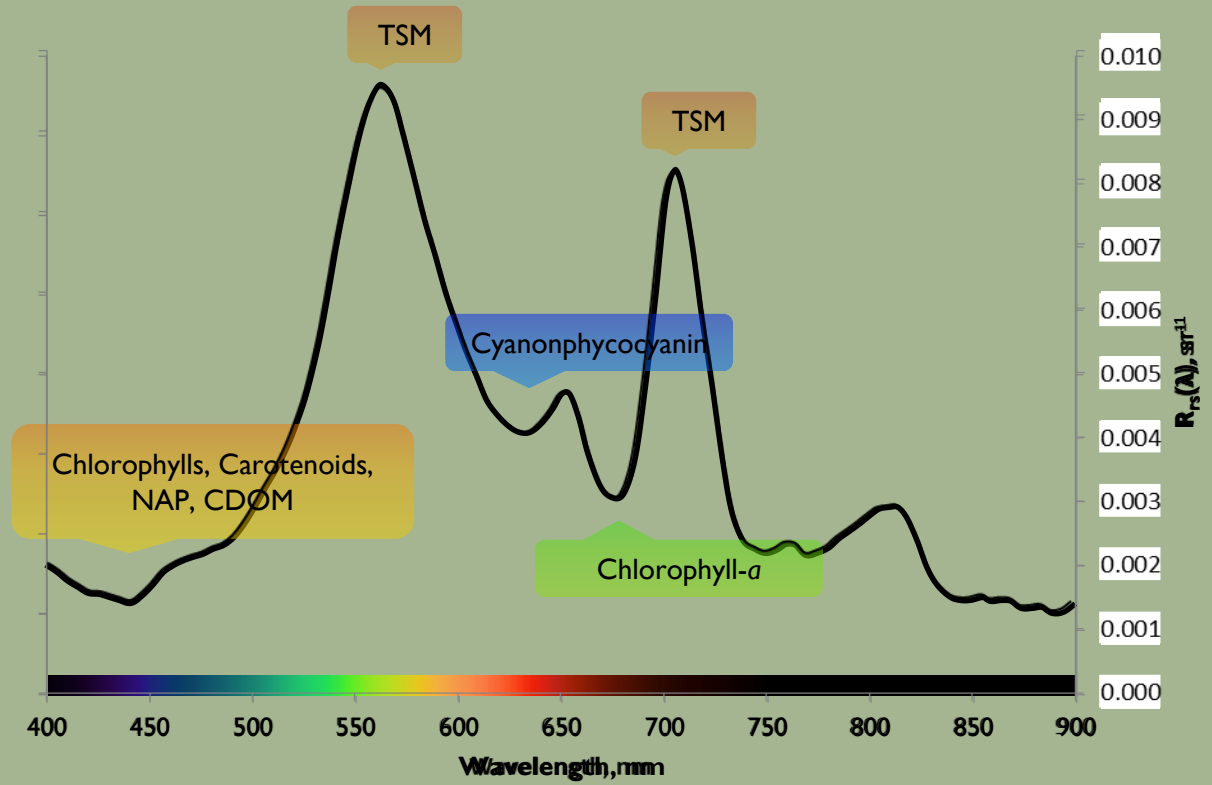
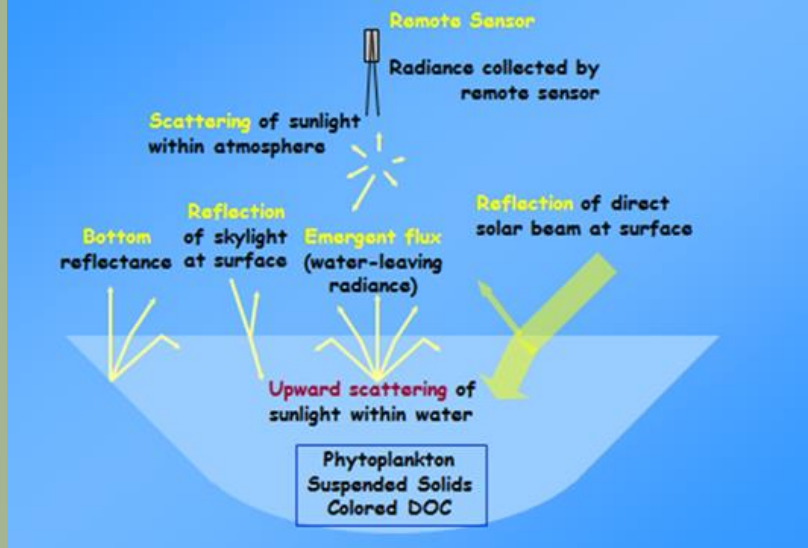


- Objective 1: Facilitate effective partnerships between the producers, providers and users of water quality data, products and information.
- Objective 2: Improve analysis and integration of in situ and remote sensing water quality data.
- Objective 3: Develop and deliver fit-for-purpose water quality products and information services.
- Objective 4: Support technology transfer and access to water quality data products and information.
- Objective 5: Advocate for increased education and capacity for the use of water quality information for decision making.

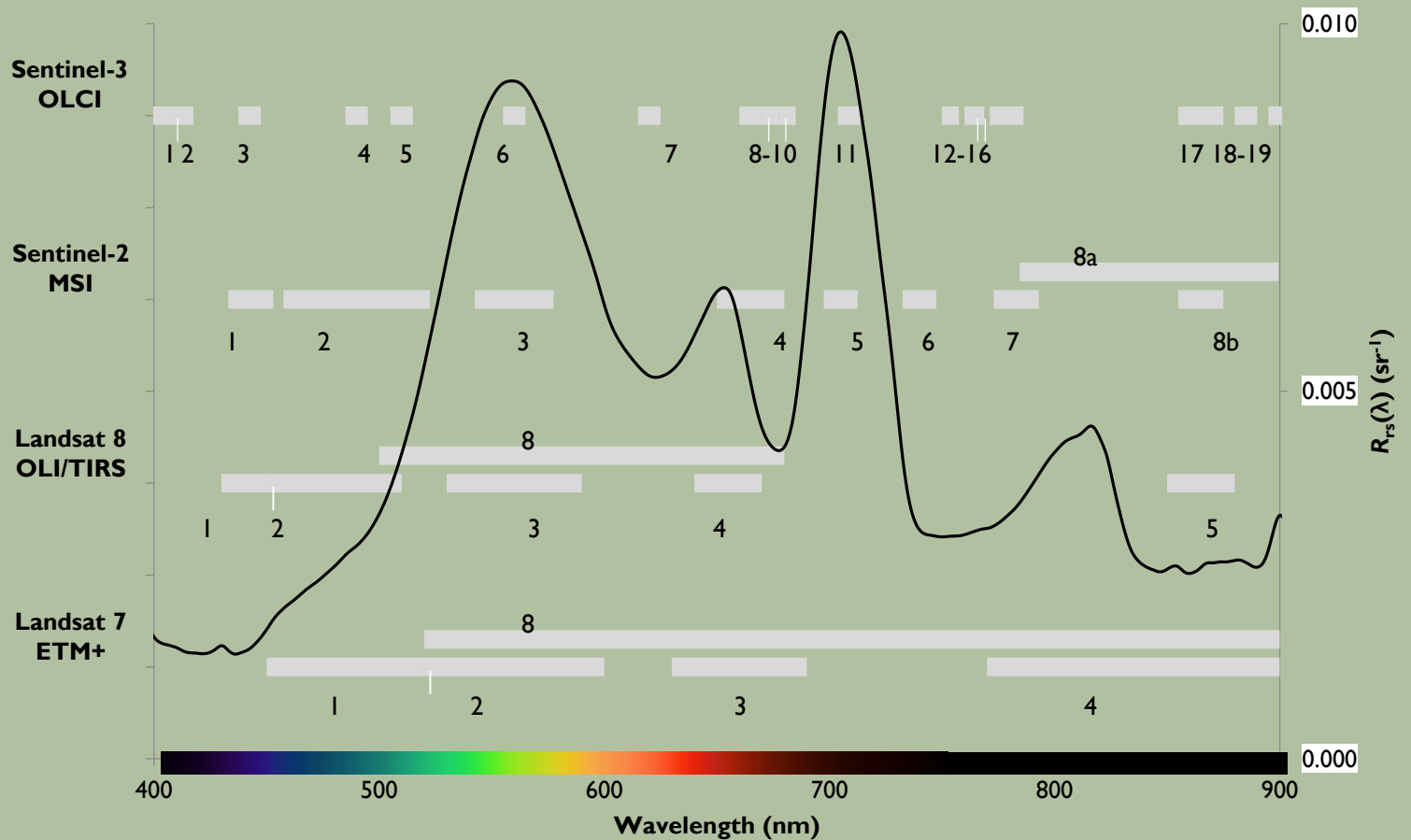
AquaWatch Organizational Model



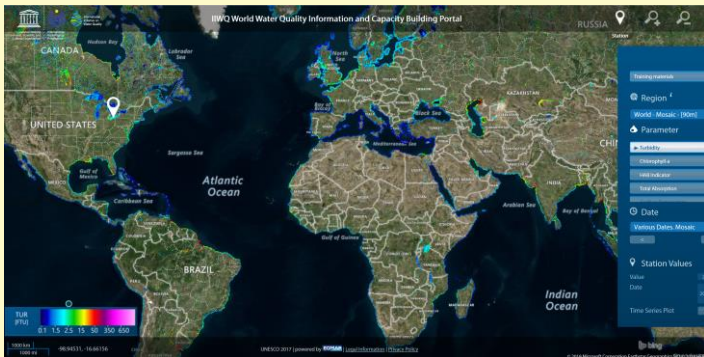
REMOTE SENSING OF LAKES



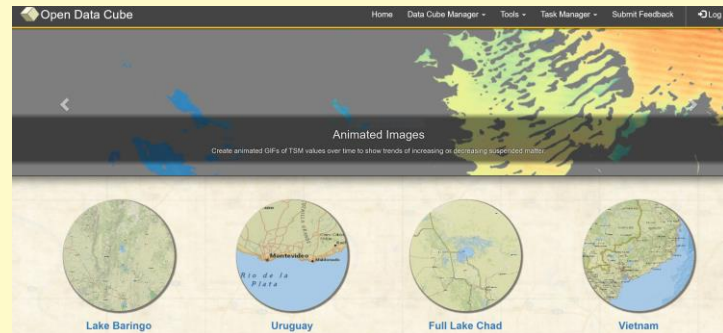
COMPARISON OF EARTH OBSERVATION SENSORS SUITABLE FOR WATER QUALITY ASSESSMENT WITH PUBLIC ACCESS DATA POLICY



Examples of current data and product sources



The TIGER Water Observation Information System (WOIS)



Disparate Data Sources

Different.....

- Sensors
- Regions /AOI
- Time scales
- Time segments
- Product processing

Some open source/some proprietary

Different degree of validation

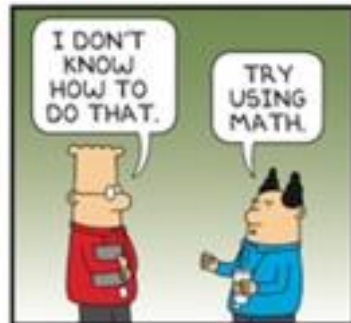
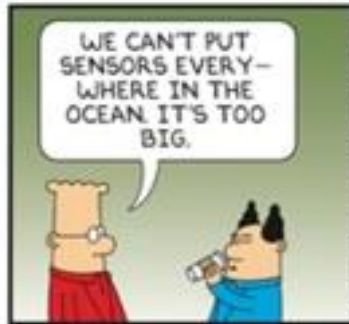
Bottom line.....

Conflicting results from different products for same time/location



DILBERT

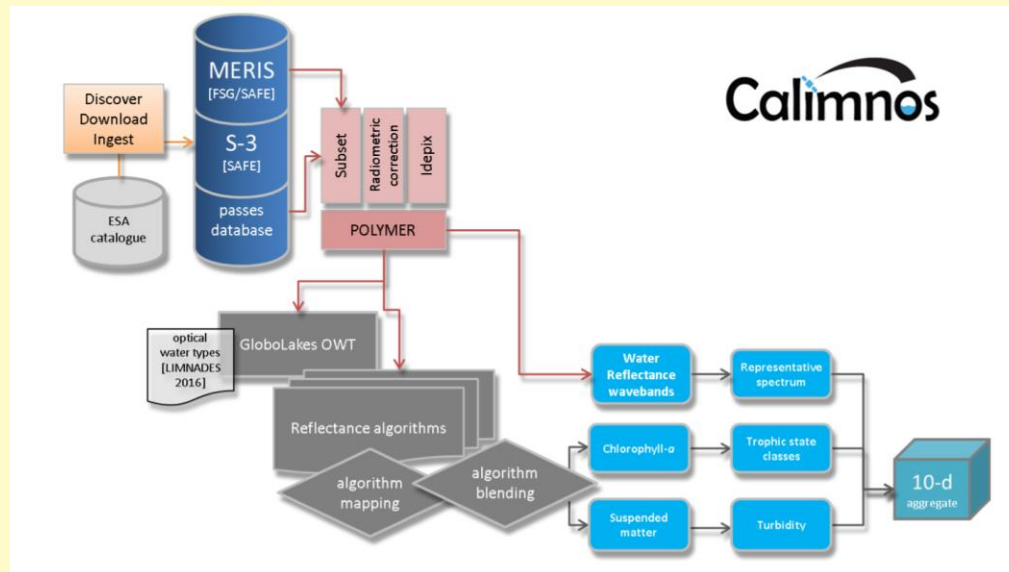
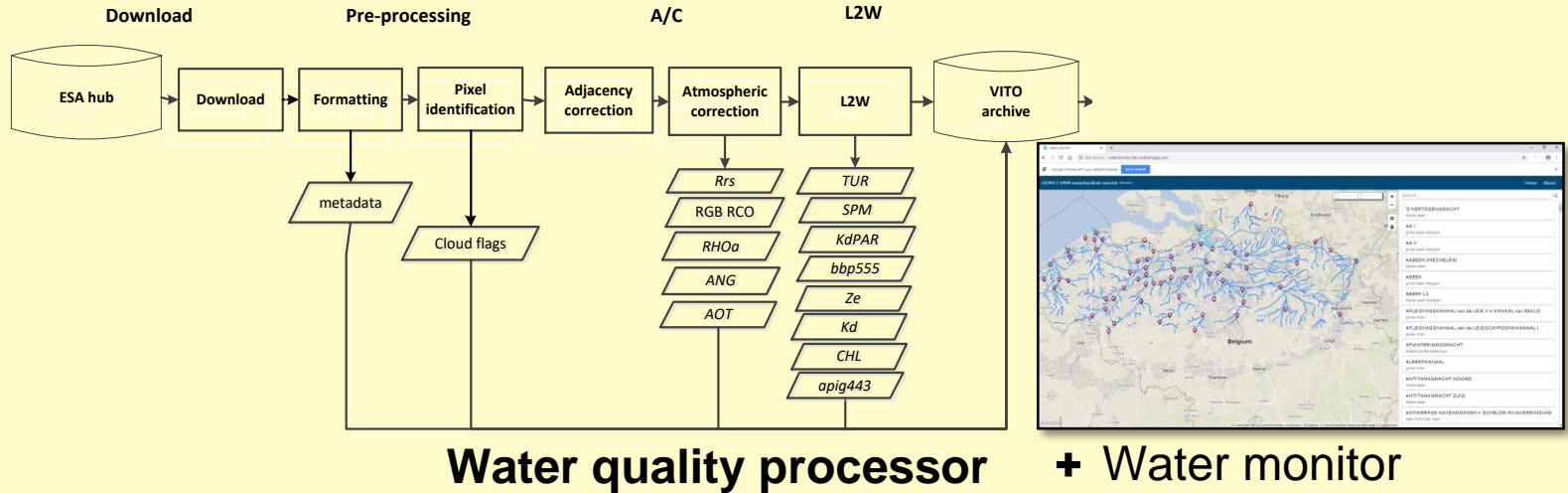
BY SCOTT ADAMS



Two examples of WQ processors

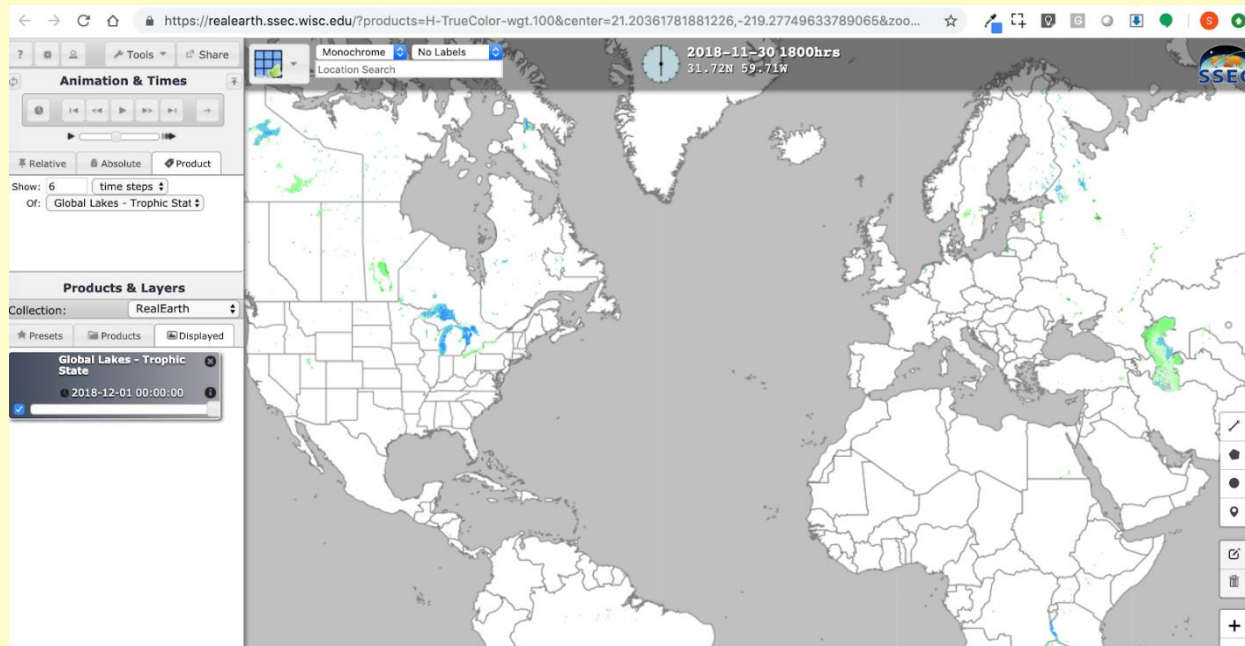
DCS4COP

S2 WATER QUALITY PROCESSOR AND VIEWER



GLOBAL TURBIDITY PRODUCT HARMONIZATION

- AquaWatch data inventory → RealEarth Portal
- Embedded in AquaWatch Website
- Bring together data of varying file formats, naming conventions, and columns, and transforming it into one cohesive data set
- Grab samples, buoy data, satellite products
- Visual display, time series, scroll across sources for data comparison
- Updated hourly



Looking towards the future.....

Continue Expansion of **AquaWatch Knowledge Hub**



Upstream.....Downstream

- Understanding all **user needs**
- **In situ data**- more data needed in underrepresented areas and water types, access to databases for calibration and validation, standardization of methods, instruments, metadata, integrate with satellite data
- **Satellite imagery accessibility and discovery tools**, cloud resources, algorithm library
- **Increased interoperability and standardization** of metadata, sensor specification, calibration reports, updates on processing software
- **Inland and Coastal Analysis Ready Data System**- Demonstration project (10-100m res., 5-10 day).

Additional Resources and leverage ongoing work with similar objectives
UNEP World Water Quality Alliance, SDGs (6.3.2,14.1.1), GEO Initiatives, CoPs

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- **Inland and Coastal Analysis Ready Data System**- Demonstration project (10-100m res., 5-10 day). **Incorporate in respective WPs?**

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Contact Information

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www.geoaquawatch.org