



INTRODUCTION TO EARTH OBSERVATIONS FOR WATER MONITORING

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March 20, 2023

UN Water Conference

Side Event

What can you see in Earth Observations?

Earth observations are data and information collected about our planet, whether atmospheric, oceanic or terrestrial.

This includes space-based or remotely-sensed data, as well as ground-based or *in situ* data.



Satellite Remote Sensing



Satellite Remote Sensing

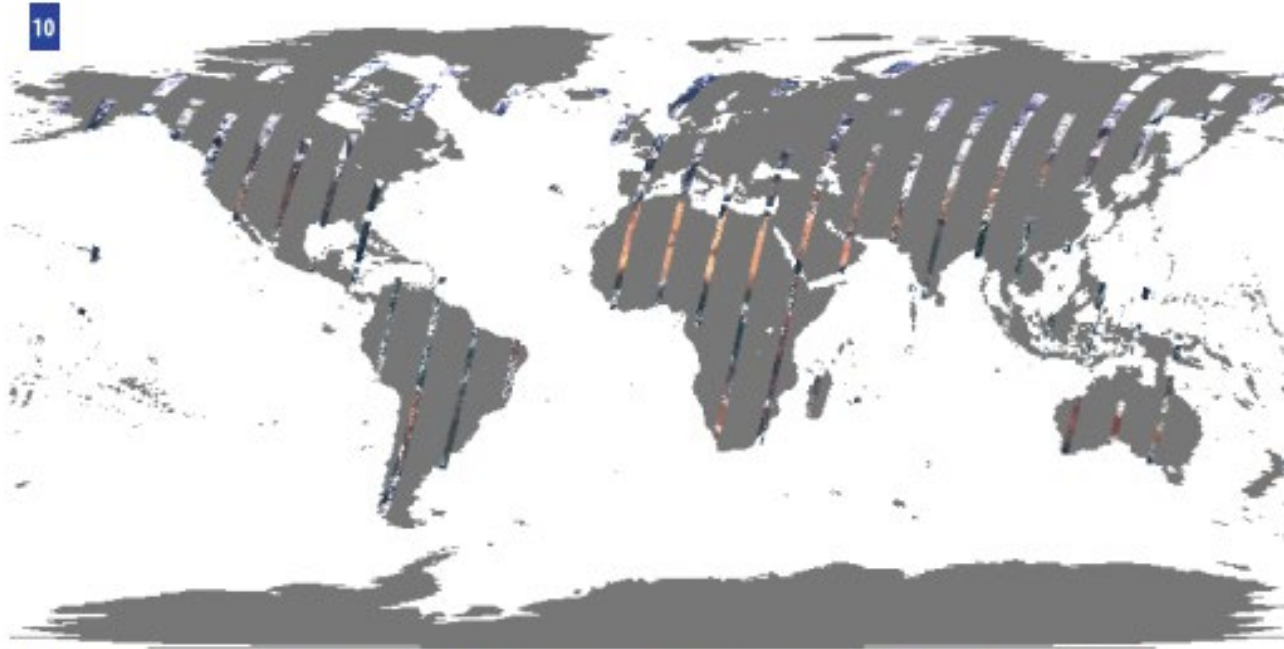
08 October 22, 2016 true colour image of the Earth from the Visible Infrared Imaging Radiometer Suite (VIIRS) onboard the Suomi National Polar-Orbiting Partnership. Data supplied from VIIRS is generated at a 750 m resolution.



09 October 22, 2016 true colour image of the Earth from the OLCI instrument onboard ESA's Sentinel-3 satellite. Data supplied from Sentinel-3 OLCI is generated at a 300 m resolution.



Satellite Remote Sensing



10

October 22, 2016 true color image of the Earth from the Landsat 7 and 8 satellites. Spectral data supplied from Land 7 and 8 is generated at a 30 m resolution.

10



11

12

13

Red/green/blue images of Lake Victoria's Winam Gulf at 750 m resolution (S-NPP VIIRS – January 12, 2017).

11

300 m resolution, Sentinel-3 OLCI – January 11, 2017).

12







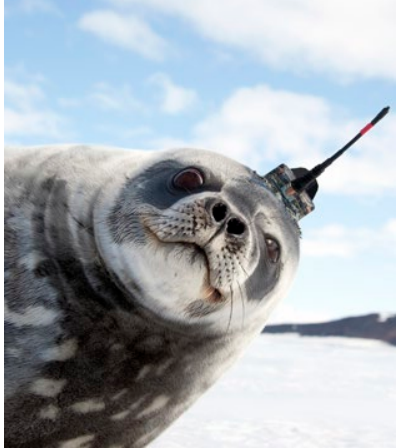



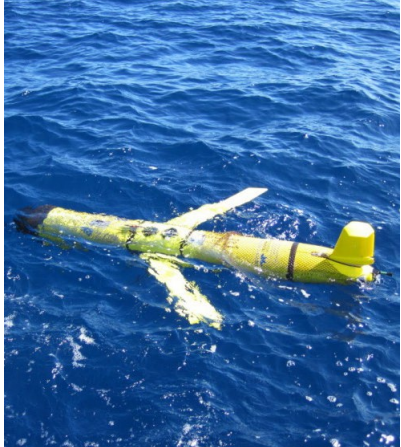
10–60 m resolution (Sentinel-2 MSI – January 12, 2017).

13

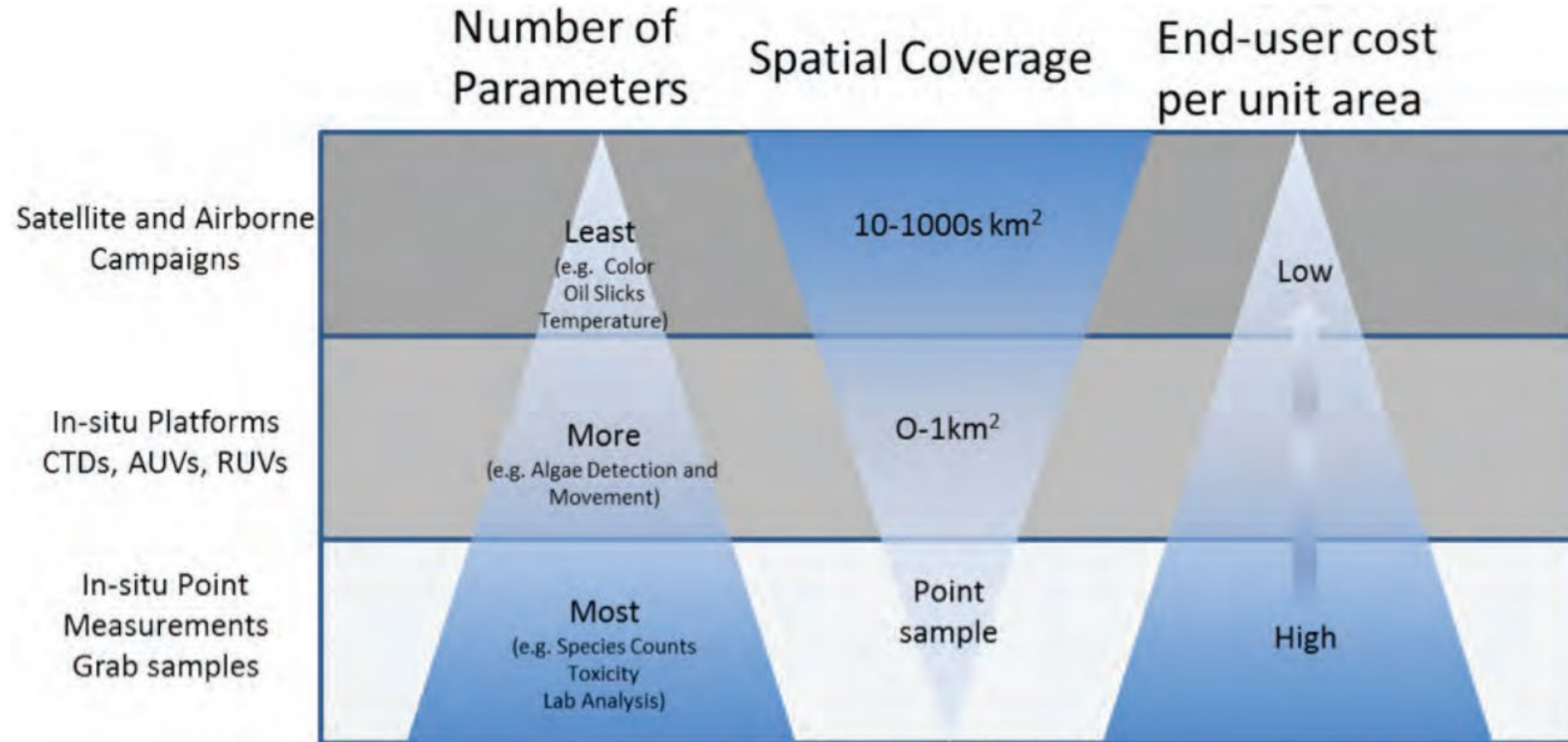
In situ Earth observations

Profiling floats	Data Buoys	Time Series	Repeated Hydrography
			
			
			

In situ Earth observations

Sea Level	Ship Based	HF Rader	Other Networks
		 <p>Global HF Radar Network</p>	<p>Animal Borne Sensors & Ocean Gliders</p>
			
			

Comparison of Monitoring Approaches

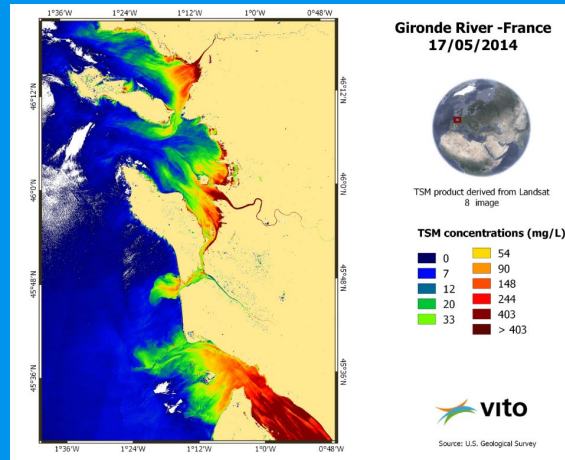


Water and Earth Observations

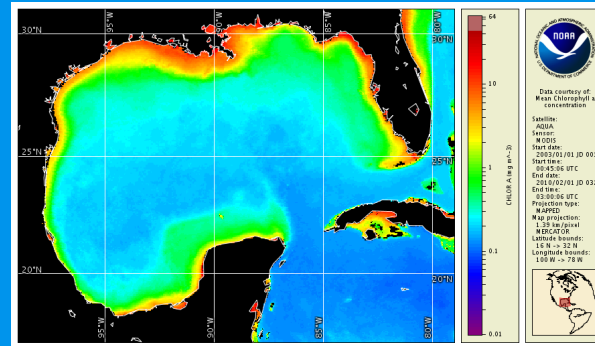
- **Precipitation**
- **Evapotranspiration**
- **Soil Moisture**
- **Groundwater**
- **Vegetation**
- **Vegetation Cover**
- **Level and Extent of Surface Water**
- **Snow Cover**
- **Temperature**
- **Water Quality**

Example: Water Quality Products

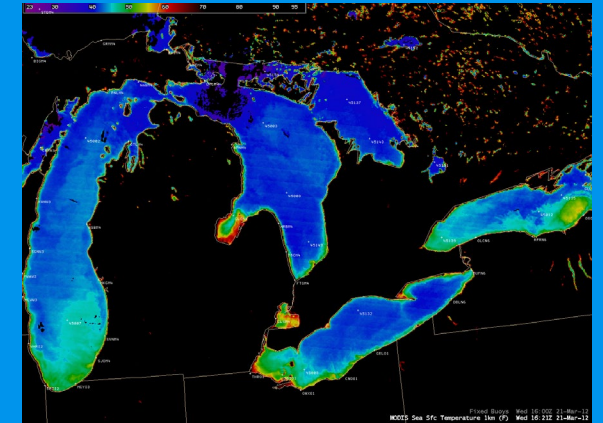
Turbidity, suspended solid



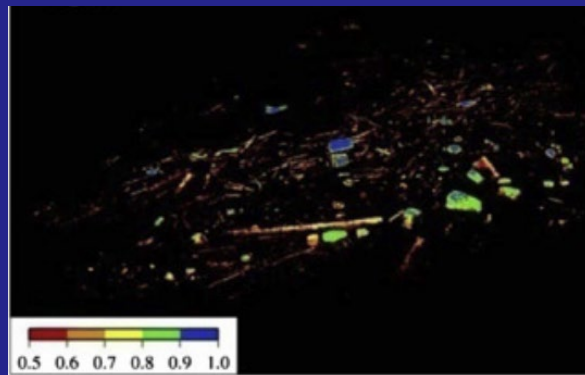
Chlorophyll-a, CDOM



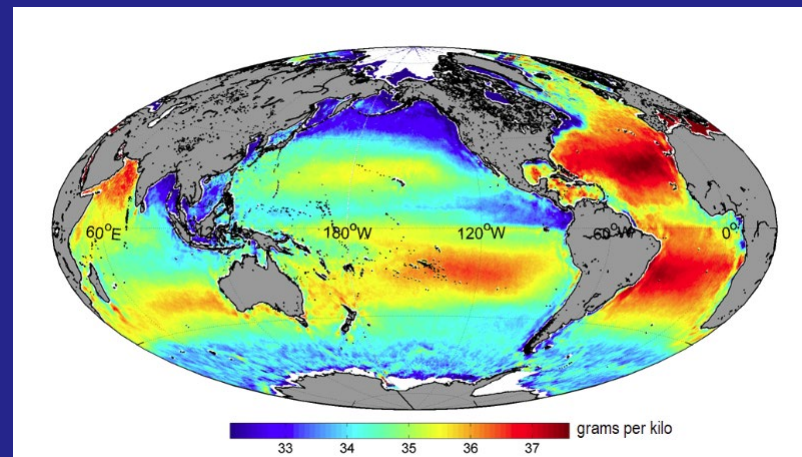
Surface Temperature



Macro-debris



Salinity



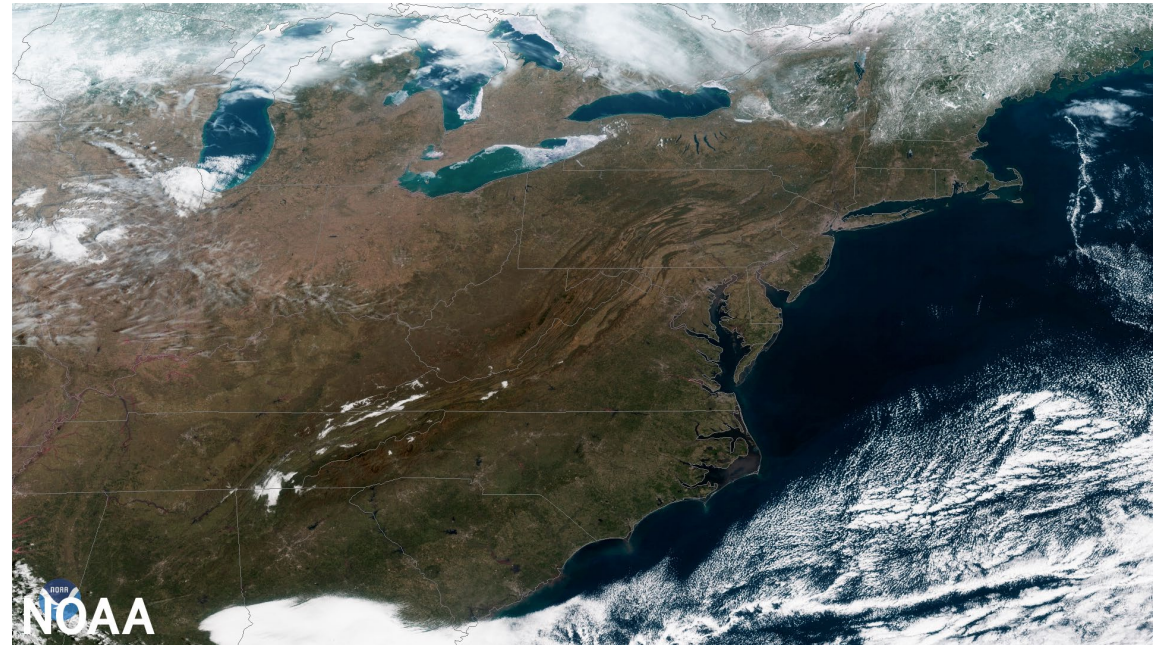
Slicks



What you will see today

Examples of monitoring tools for water monitoring

- Flood forecasting
- Water-related pathogens
- Water quality
- Freshwater ecosystems





**THANK
YOU!**

