Water Quality Demonstration

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Goals of Water Quality Breakout Workshop

- To present economic argument for EO data adding real value to the economy
- To understand the political and legal context, current implementation status, guidelines
- To understand roadblocks for using EO data by the reporting agencies, but also opportunities
- To demonstrate real-life policies and implementations that are operational
- To understand how companies can make profit using EO, market driven view, requirements towards data services provided by space agencies

To discuss potential solutions, priorities, and actions

To discuss what space agencies could do to further unlock EO for operational Water Quality

To discuss specification for data products and services

IOCS Water Quality Recommendations Communication, cooperation, building trust and understanding needs

- ➔ Involve all stakeholders from the beginning
  - space agencies
  - users - national authorities tasked with WQ
  - commercial sector
  - economists
- ➔ Build trust in local communities, engage local decision makers in their own language

IOCS Water Quality Recommendations Science-policy interface

- Engage national authorities
- Engage International organizations or authorities and use your national representatives to pursue the use of EO water colour products in their activities (UN bodies, GEO, Water Europe)
- In Europe for Copernicus Programme :
  - better definition of the role of space agencies, academia and businesses
  - Use JRC, ECOSTAT, national representatives in different committees (e.g. Copernicus User Forum, HELCOM, OSPAR, etc) to get remote sensing accepted as a method
  - Promote water quality related parts of the Water-ForCE Roadmap https://waterforce.eu/roadmap (Copernicus focused, but global cooperation recommended)

IOCS Water Quality Recommendations Satellite fleet recommendations

- Geostationary satellites with dedicated water colour sensors required
  - over Europe, orbits allowing to cover Northern Europe could be evaluated
- IOCCG support for NASA efforts to have PACE II
- Operational satellites, which perform well like S2A and S3A, should not be decommissioned
- Highly dynamic environments (blooms, pollution, etc.) require daily high spatial resolution data (S2-type of imagery)
- Dedicated inland and coastal water satellites desirable, but S2 NG and S3 NG (to be launched in 10 years) are getting close to what is actually needed
- IOCCG support for missions
  - Landsat Next, as planned
  - CHIME and SBG very valuable addition to the existing fleet

IOCS Water Quality Recommendations Data recommendations

- Switching data formats on the fly to adapt to user needs
- Many users like simple RGBs in easy-to-use format like the GeoTIFF
- Presence/absence product may satisfy users needs better than delivering highly accurate concentrations - understanding end users needs
- Indicators used in Water Quality monitoring (usually combining several measured parameters) and indicators used in satellite products (e.g. Turbidity) are not the same.
  - some parameters in current indicators may be replaced by EO products. New (OC+in situ) indicators may be needed
  - co-developed indicators need to be „legalised“
- Ambition to use satellite data in support of compliance assurance
  - uncertainty and reliability of products is important

IOCS Water Quality Recommendations Data quality

- IOCCG should coordinate in situ data collection
  - in situ data across the agencies may be not available to all
  - globally coordinated projects to identify optical water types not covered through in situ data collection across inland and coastal water types
  - cal/val supersites - limited number (high costs)
  - cal/val supersites to include FRM-quality radiometry + water constituents and IOPs
- Training people to collect good FRM quality data. Supersites would be good to carry out such trainings
- Encourage other networks like GLEON to include radiometry on their buoy network
- Community databases, like GLORIA, require institutions that run them. Such databases cannot be kept running without any funding.
- Publishing data articles (e.g. in Nature Scientific Data) should be encouraged as this allows researchers (who often collect the data) to get credit they need