

GEO WEEK & MINISTERIAL SUMMIT 2023

Flashtalk

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science & innovation

Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA



GEO WEEK
2023 MINISTERIAL
SUMMIT

GEO GROUP ON
EARTH OBSERVATIONS



Quality Water for All



Dr Marié Smith

Mission

To improve the coordination, delivery and utilization of water quality information for the benefit of society.

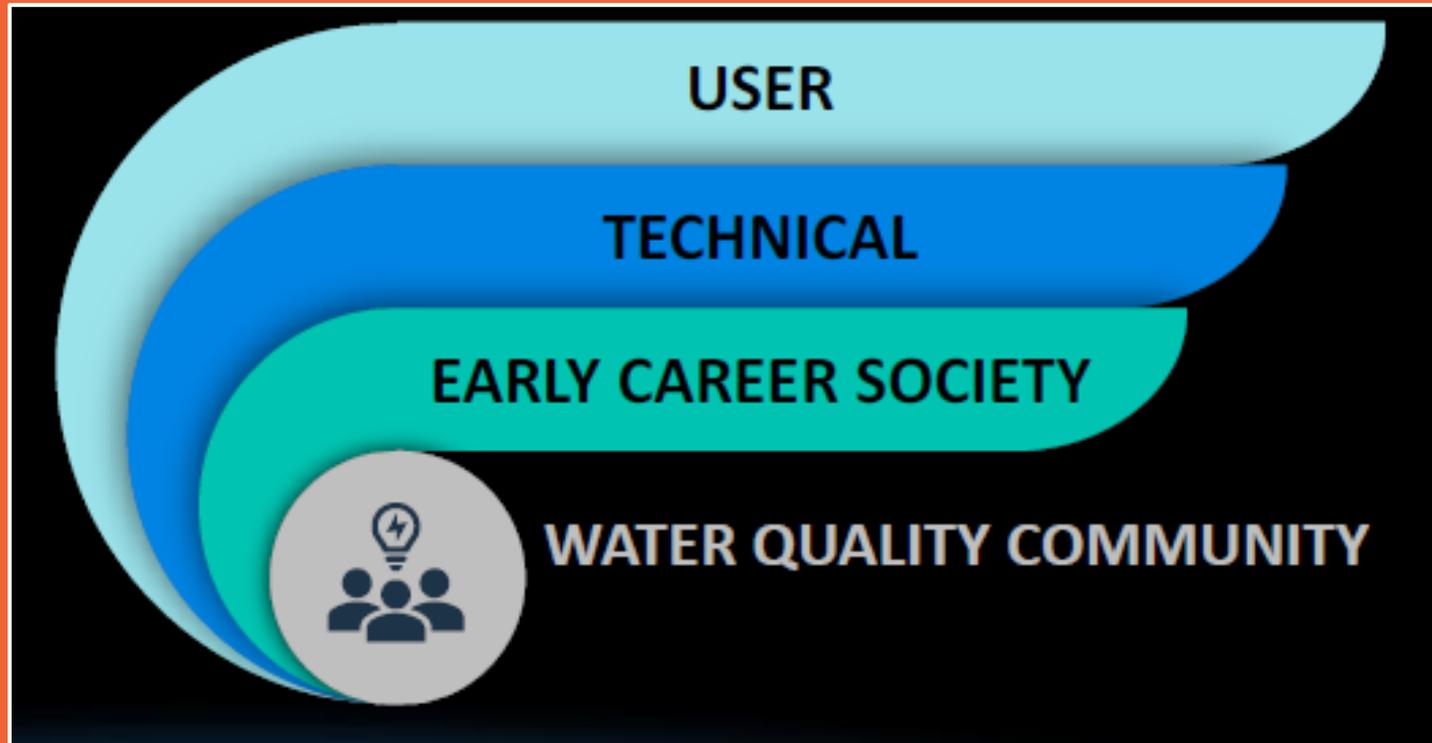


Goal

To help people, globally, to be better informed about their water quality and to effectively manage water resources by incorporating satellite data and field measurements to inform decisions.



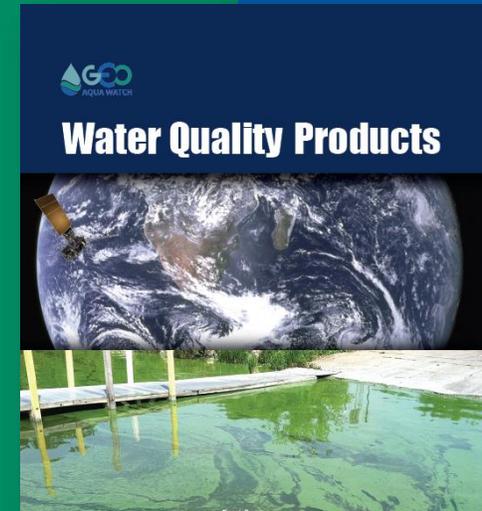
GEO AquaWatch Working Groups



Previous successes

- ✓ Booklets and brochures for non-specialists
- ✓ Curated inventories
- ✓ Best practice guidance
- ✓ Standard-setting journal publications





Water Quality Products

Front Cover

Chlorophyll a

Phytoplankton form the base of the aquatic food web. Satellites measure light in the visible wavelengths reflected from the water surface defining the color of the water – often termed ocean color because the ocean was where the technology initially matured. Phytoplankton contain various pigments which help them capture sugar from light and carbon dioxide during photosynthesis, most abundant of these pigments is chlorophyll a. This “ocean color” information can be used to estimate chlorophyll concentration. Images are available in Near-Real Time (NRT) or with a 24+ hour delay) Source Quality Clouds often block satellite collection of ocean color, but cloud-free qualified products are available in NRT and Science Quality, derived by combining images from various satellites and sensors. USSE: Drinking water, land and aquatic management, recreation and tourism, agriculture/farming, aquaculture/fishing, research.

Total Absorption/Remote Sensing Reflectance/Attenuation Coefficients KdPAR & Kd490

The measure of light absorption and attenuation in the ocean and light reflectance that are used to relate the satellite signal to a parameter of interest, such as Chlorophyll. Visibility through the water column is a direct function of water clarity (or transparency) and water color properties. Light attenuation is affected by phytoplankton (suspended particulates) that absorb and reflect light, color (absorbed and scattered) light, and water column absorption properties. Once coefficients of light attenuation through the water column, and other components related to biological processes (Carbon, Land derived materials, sea gill and aerosols) complex, the interpretation of satellite remote sensing and in-situ water samples. There often exist the kinds of development, applied to satellite data product visualizations and knowledge of these unique wavelengths is of interest to satellite scientists and knowledgeable managers who wish to create, or enhance their own customized products. USSE: Coast and ocean management, research.

Cyano Harmful Algal Blooms and Chlorophyll-a anomaly

Phytoplankton growth can be stimulated by increased nutrient input and warmer temperatures. An overabundance of phytoplankton can become a problem, particularly if toxin-producing cyanobacteria increases in frequency and abundance. These are often termed Harmful Algal Blooms (HABs) and is an important application of satellite remote sensing. Cyanobacteria are often important in harmful algal blooms in inland waters, and they possess unique “accessory” pigments: phycoerythrin and phycocyanin in addition to the main pigment chlorophyll a. HABs in coastal and oceanic waters also have separate pigments making scientists to provide some information on the phytoplankton community composition within blooms. USSE: Drinking water, land and aquatic management, agriculture/farming, aquaculture/fishing, research.

Panel 1 | Exterior



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GEO WEEK & Ministerial Summit 2023

Upcoming Biennial Meeting

One-day GEO AquaWatch Meeting: November 13, 2023, St. Petersburg, FL USA - in conjunction with the International Ocean Color Science Meeting Nov 14-16, 2023.



International Ocean Colour Science
Meeting 2023

Advancing Global
Ocean Colour
Observations



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