



Water Quality Information for the Benefit of Society

Earth Observation of inland and coastal water quality: Toward water quality forecasting

The use of Earth Observation (EO) for water quality applications is rapidly advancing. Inland and near-shore coastal environments deliver multiple ecosystem services that benefit society and yet only a fraction of global inland water systems are routinely monitored for water quality. Observing inland and near-coastal water bodies makes remote sensing a valuable source of data on water quality and ecosystem condition at local and global scales for the benefit of society. The workshop objective will be an exploration of how water quality forecasting contributes to improved water management, climate studies, and achieving SDGs. Focused discussion on EO multiscale forecasting of inland and near-shore coastal water conditions will be timely, as will forecasting tools and observing opportunities provided by the upcoming PACE and GLIMR and Australian AquaWatch CSIRO missions. We hope to spend some time prioritising future GEO AquaWatch activities as a workshop outcome. GEO AquaWatch has a strong emphasis on [Diversity, Equity and Inclusion \(DEI\) policies](#) and these principles will be encouraged in setting the programme. Meeting participants will be expected to be aware of and follow [GEO AquaWatch's new Code of Conduct](#) during discussions.

GEO AquaWatch Community Workshop Monday, 13 November 2023

8:00 -8:15am - poster hanging

8:20-8:55 am - check in, pick up nametag, order and pay for box lunch (\$10USD cash will be needed - no credit cards or checks please), enjoy coffee/tea service and browse the posters

9:00 Opening Welcome and Meeting Objectives Ghada El-Serafy, GEO AquaWatch Director, Emma Tebbs, GEO AquaWatch Steering Comm.

9:10 Session 1:

9:10-9:30 Keynote Speaker - Tiit Kutser, University of Tartu *Water-ForCE Outcomes*

9:30-9:45 Forecasting cyanobacterial harmful algal blooms utilizing a Bayesian spatio-temporal model within the U.S. lakes - Blake Schaeffer* U.S. Environmental Protection Agency, Office of Research and Development (USEPA-ORD), Natalie Reynolds, Oak Ridge Institute for Science and Education, U.S. Environmental Protection Agency; Hannah Ferriby, 3Tetra Tech; Wilson Salls, (USEPA-ORD); Deron Smith, (USEPA-ORD); John Johnston, (USEPA-ORD); and Mark Myer, USEPA, Office of Chemical Safety and Pollution Prevention

9:45-10:00 Lake Surface Water Temperatures in Google Earth Engine - María Pedreros Guarda, Environmental Sciences with Mention in Continental Aquatic Systems, Department of Aquatic Systems, Faculty of Environmental Sciences, University of Concepcion

10:00-10:15 Towards Fiducial Reference Measurements for water-leaving radiance reflectance with drone observations - Liesbeth De Keukelaere*, VITO; Sindy, Sterckx, VITO; Robrecht Moelans, VITO; Els Knaeps, VITO; Agnieszka Bialek, NPL; and Niall Origo, NPL



10:15-10:30 EO4WQ: Toward operational satellite-based water quality monitoring in near-coastal waters around southern Africa - Marié E Smith*, Coastal Systems and Earth Observation Research Group, Council for Scientific and Industrial Research (CSIR), Department of Oceanography, University of Cape Town and Lufuno Vhengani, Geospatial Modelling and Analysis Research Group, CSIR

10:30-10:45 EOLakeWatch monitoring of Canadian inland water algal blooms; considerations for short- and long- term bloom forecasting - Caren Binding*, Environment and Climate Change Canada, Canada Centre for Inland Waters

10:45 - 12:00 Session 2: Interactive Posters

12:00-13:00 Box lunch (if you paid at badge check-in) outside or wherever you choose to dine nearby.

13:00-15:00 Invited Session 3: Remote Sensing for Eutrophication Monitoring in Support of SDG 6 and SDG 14 (moderators Emily Smail, Executive Director, GEO BluePlanet & Merrie Beth Neely, GEO AquaWatch)

13:00-13:20: Tools for monitoring coastal eutrophication with satellite-data in support of Sustainable Development Goal 14- Sathyadev Ramachandran, RIVA, NOAA CoastWatch with co-authors Emily Smail, Dany Ghafari, Keith VanGraafeiland, Merrie Beth Neely, Veronica Lance and Paul DiGiacomo.

13:20-13:40: Global Eutrophication Watch Tool Genki Terauchi, NOWPAP CEARAC / NPEC with co-authors Elgío de Raús Maúre, Joji Ishizaka, Nicholas Clinton & Michael DeWitt

13:40-14:00: Monitoring Riverine Water Quality for SDG 6 using Landsat-8, Sentinel-2, and Sentinel-3 Nima Pahlevan, SSAI / NASA GSFC

14:00-14:20: AquaWatch Australia Mission Neil Sims, CSIRO

14:20-14:40: Assessment of Eutrophication in European Waters using Remote Sensing Vittorio Brando, CNR-ISMAR

14:40-15:00: Quantifying Harmful Algal Blooms in Lakes using Remote Sensing Megan Coffey, Global Science and Technology, NOAA CoastWatch

15:00-15:15 break

15:30-16:59 Session 4

15:30 - Keynote Speakers Apostolis Tzimas and Vagelis Romas, EMVIS, PrimeWater Outcomes and Water Quality Forecasting User Needs

15:50 - 16:59 Discussion of GEO AquaWatch Role in Water Quality Forecasting & Priority Activities (Moderator: Ghada El-Serafy, Deltares, Rapporteur: Merrie Beth Neely)

17:00 Adjourn biennial meeting and plan for dinner.