# Water Quality Information for the Benefit of Society

*The future of Earth Observation technology, products and people*

**A Virtual GEO AquaWatch Community Workshop**
**21-24 March 2022**

The use of Earth Observation (EO) for water quality applications is rapidly advancing. GEO AquaWatch invites you to a four-day gathering of the inland and coastal water quality community. The **objective** of this biennial meeting is to assess the current state of the science, technology, products and workforce of this field and identify short- and long-term priority activities for the GEO AquaWatch community. We will foster discussions of data and technology challenges, linkages between Earth Observation (EO) data providers and stakeholders, EO capacity building and education. The workshop will have presentations from international projects and partnerships, providing a unique opportunity to engage with the international water quality EO community. GEO AquaWatch has a strong emphasis on Diversity, Equity and Inclusion (DEI) policies and these principles will be encouraged in program participants and discussions.

# Program Agenda

## Monday, 21 March - 11am UTC

## Day 1 Understanding Future End User Needs

MIRO White board Facilitator (next 3 sessions): **Carsten Brockmann**

Anticipating and Preparing for the next generation of Water Quality Products. The AquaWatch community should proactively ask ourselves, current users and also potential new user segments: How do you envision science, management or business needs evolving over the next decade and what will you require or would like to get from Earth Observations, in order to help develop or support those activities?

**11:00 UTC Opening Welcome-** Felipe Lobo, Federal University of Pelotas, Brazil, GEO AquaWatch Steering Comm.

**11:05 UTC Meeting Overview and Objectives-** Steve Greb, GEO AquaWatch Director

**11:10 UTC Keynote Speaker** Mark Dowell-European Commission Knowledge Centre on Earth Observation

**11:30 UTC (60 min) Session 1. Recent Assessments of User Needs** Session Conveners and Moderators: Blake Schaeffer USEPA and Igor Ogashawara IGB-Berlin. Pre Recorded presentations (5 mins each)

- AquaWatch Survey: Erin Urquhart, NASA
- H2020 PrimeWater End Users: Lara Agnoli, Burgundy School of Business
- H2020 WaterForce: Elizabeth Gabe-Thomas & Stefan Simis, Plymouth Marine Laboratory
- H2020 CERTO: Federico Falcini, CNR (National Research Council, Italy)

**Community Discussion**

**12:30 UTC (60 min)** **Session 2**. **Future needs of our International Partners** Session Conveners and Moderators: Philip Saile, BAFG and Carsten Brockmann, Brockmann Consult. Pre Recorded presentations

- World Bank - Nagaraja Rao Harshadeep (Harsh)
- International Water Association - Samuela Guida
- Derek Vollmer - Conservation International

Q & A and community discussion

**13:30 UTC (60 min) Session 3. End User Capacity Development and Education,** Session Conveners and Moderators: Andrew Tyler University of Stirling, Bilqis Hoque Environment and Population Research Centre (Bangladesh) & Laurence Carvalho Norwegian Institute for Water Research

- Introduction & Building the theory of change
- 20 minute Breakout Group Discussions
- 20 minute Plenary Breakout Feedback then Identify Actions and Next Steps for GEO AquaWatch in 2022-24

**14:30-15:00 UTC (30 min) Poster Session I**

**Adjourn for day**

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# Tuesday, 22 March - 11am UTC

# Day 2 The Future of Water Quality Science & Technology

MIRO White board Facilitator: **Merrie Beth Neely**

Within the GEO AquaWatch community, we should be able to adjust or develop best practices for EO in the mid-21st century, invest effort into attracting more early career scientists, and foster partnerships with global satellite agencies interested in water quality missions, data products, tools, and services. What are the new frontiers of EO? How can we be of assistance to early career water quality professionals? What focus areas in water quality do Space Agencies see value in partnership with GEO AquaWatch.

**11:00 UTC (60 mins) Session 4. New and emerging data types; Integrating them into the service chain** Session Conveners and Moderators**:** Arnold Dekker SatDek Pty Ltd, Daniela Gurlin Wisconsin DNR, and Ghada El Serafy Deltares

- A CEOS-GEO-AW aquatic reflectance analysis ready data framework: what it means and why collaboration matters - Arnold G. Dekker, SatDek Pty Ltd, Steve Labahn, USGS, Chris Barnes, USGS, and Daniela Gurlin, Wisconsin DNR
- Overview and synergies of current and future hyperspectral spaceborne systems - Nicole Pinnel and Uta Heiden, DLR
- Adding value on Earth observation through cross cutting modeling applications - Apostolos Tzimas, EMVIS Consultant S.A.

**12:00 UTC (60 mins) <u>Session 5.</u> Engaging Early Career Scientists - Keynote and discussion of activities**
Session Conveners and Moderators**:** Megan Coffer USEPA, Igor Ogashawara IGB-Berlin, Felipe Lobo Federal University of Pelotas (Brazil)

- "How to Survive and Succeed as an Early-Career Aquatic Scientist" - Mina Bizic (IGB-Berlin and ASLO Early Career Committee Member)
- 30 minutes discussion in breakout rooms - Topic of the discussion: How can AquaWatch help Early Career Researchers?
- Plenary Feedback from the breakouts

**13:00 UTC (60 mins) <u>Session 6.</u> Space and Operational Satellite Agencies Perspectives- Panel Discussion. Co-Moderated by Paul DiGiacomo (NOAA) & Osamu Ochiai (JAXA)**

- NASA - Laura Lorenzoni
- ESA - Marie-Hélène Rio
- Australian Space Agency - Reece Biddiscombe
- NOAA - Veronica Lance
- EUMETSAT - Ewa Kwiatkowska
- CEOS Analysis Ready Data - Ed Armstrong

**14:00-15:00 (60 min) Poster Session II**
**Adjourn for day**

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# <u>Wednesday, 23 March - 11am UTC</u>

# Day 3 and 4 - GEO AquaWatch – Past, Present & Future

MIRO White board Facilitator: Emily Smail (first 2 sessions only)

Since our last in-person meeting in Stirling Scotland, GEO AquaWatch leadership have committed to ensuring Diversity, Equity and Inclusion are among our core values and to proactively ensure our membership better reflects this commitment by being more inclusive of science/scientists from all geographic regions. We seek to not only amplify the voices of people under-represented in science and Early Career professionals,Mon but also make space for their leadership in GEO AquaWatch. The evolution of GEO AquaWatch has been swift with many important achievements! In these sessions we will examine how key GEO and water quality stakeholder community needs have arisen or evolved. Simply put, what is working for the community and what isn't. With this input and the knowledge gained from previous meeting days, we will commence a discussion of future activities and organizational structure.

**11:00 UTC (60 min) <u>Session 7</u>. Water Quality in the Framework of GEO and the Regional GEO's –**
Session Conveners and Moderators: Merrie Beth Neely GEOAquaWatch and Doug Cripe GEOSEC

**Pre Recorded Lightning Talks**

- GEO - Doug Cripe, GEOSEC
- AfriGEO - James N. Wanjohi, RCMRD
- AmeriGEO - Yasmina Shah Esmaeili, Smithsonian Environmental Research Ctr.
- EuroGEO - Audrey Hasson, ESA and GEO Blue Planet

**Live Panel Discussion (30 mins)**

**12:00 UTC (60 min) Session 8. The GEO AquaWatch organization** Session Convener Steve Greb, GEO AquaWatch

- **Review of AquaWatch governance structure, objectives and funding**
- **Review of AquaWatch's past year's and current work activities**
    - DEI summary
    - Introduction to new AquaWatch regional and thematic nodes
        - Regional Node - Europe Andrew Tyler, University of Stirling
        - Thematic Node - Cal/Val- Igor Ogashawara, IGB-Berlin
        - Thematic Node - Big Data and Artificial Intelligence - Jeremy Kravitz, NASA
    - Working Group and Focus Group reports
        - WG 1 Carsten Brockmann and Emily Smail
        - WG 2 Philipp Saile and Igor Ogashawara
        - WG 3 Ghada El Serafy
        - WG 4 Steve Groom and Megan Coffer
        - WG 5 Andrew Tyler and Bilqis Hoque
        - Algorithm Focus Group

**13:00 UTC (60 min) Session 9A Community Breakout** **Assign breakout leaders and rapporteurs.** This is the first of two sessions held at different times with the same topics to discuss - choose the session to attend which best suits your schedule.

**Part A. Organizational Structure**

- Should there be changes to the current governance structure (Director, working groups)?
- What's working and what's not?
- How do we engage more people in AquaWatch
- Should objectives be re-crafted? What role should AquaWatch play in the data & product world?
- Are there funding opportunities to support programmatic activities?

**Part B. Future Directions**

- What issues are facing the water quality community today and in the future that AquaWatch can collectively tackle?
- How can we more effectively accomplish AW tasks?
- Identify and set organizational priorities
- What resources can participants bring and what external resources are available?

**14:00-15:00 UTC (60 min) Poster Session III**

**2100 UTC (60 min) Session 9B Community Breakout** **Assign breakout leaders and rapporteurs.** This is the second of two sessions held at different times with the same topics to discuss - choose the session to attend which best suits your schedule. See parts A & B discussion questions listed under Session 1 above.

**Adjourn for day**

# Thursday March 24, 2022 - 11am UTC

**11:00 UTC (20 min+Q&A) Prof. Anthony Gidudu** Makerere University Department of Geomatics and Land Management, Uganda '*Satellite Monitoring of Water Quality of inland Lakes in Africa - Experiences, lessons and challenges from Lake Victoria*'

**11:30 UTC (30 min) Session 10 Plenary report outs of Breakout sessions**

**12:00 UTC (60 min) Session 11A Community Discussion/Future Activities - Facilitator Emily Smail, GEO Blue Planet** This is the first of two plenary community discussions held at different times with the same topics to discuss - choose the one to attend which best suits your schedule. Community Discussion on organizational structure and priority setting of future GEO AquaWatch activities

***13:00 UTC (30 min) Steering Committee Meeting (by Invitation only)***

**2100 UTC (60 min)- Session 11B Community Discussion/Future Activities - Facilitator Merrie Beth Neely, GEO AquaWatch** This is the second of two plenary community discussions held at different times with the same topics to discuss - choose the one to attend which best suits your schedule.

**Adjourn for biennium!**