

# Water Quality Information for the Benefit of Society

## Earth Observation of inland and coastal water quality: recent developments, priorities & public engagement

29-31 August 2018, University of Stirling, Stirling, UK

*a joint meeting co-organised by [GEO AquaWatch](#) & the [NERC GloboLakes](#) project*

GEO AquaWatch and GloboLakes invite contributions to a workshop from the developer and user communities of Earth Observation (EO) data in inland and coastal environments.

Inland and near-shore coastal environments deliver multiple ecosystem services that benefit society, including food, water, energy, navigation and recreation resources that contribute to our economies, whilst also being crucial to regional and global-scale biogeochemical cycles. Freshwater availability is ranked among the greatest threat to global economy, and yet only a fraction of global inland water systems are routinely monitored for water quality.

The United Nations development agenda now fully recognises the importance of managing water resources to reach sustainable development goals (SDG 6, and related) and fosters collaboration across countries. Global Climate Observing System (GCOS) also recently deemed satellite-derived lake temperature, ice cover, and water-leaving reflectance as Essential Climate Variables. Data collection by EO satellites is expanding, and its suitability for 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. The workshop marks the culmination of the six-year GloboLakes project funded by the UK Natural Environmental Research Council, and featuring the latest applications of EO to inland and near-shore coastal waters at local, regional and global scales and contributions to improved water management, climate studies, and achieving SDGs. We will foster discussions of data and technology challenges, linkages between EO data providers and stakeholders, community-based water monitoring, and future GEO AquaWatch activities. The workshop will have presentations from many international projects and partnerships, providing unique opportunity to engage with the international water quality EO community.

**Logistics:** When: 29-31 August 2018

**Where:** Stirling UK (~30 miles from Edinburgh airport)

**Registration:** Cost of Accommodation and Meals £85 per day

Please Click [HERE](#) to register and book and pay accommodation and meal

**Deadline** 31<sup>st</sup> July 2018.

### **Organising Committee:**

Andrew Tyler: University of Stirling, UK  
Evangelos Spyarakos: University of Stirling, UK  
Steve Greb: GEO AquaWatch, USA  
Carsten Brockmann: Brockmann Consult, Germany  
Ghada El Serafy: Deltares, Netherlands  
Douglas Cripe: GEO Secretariat, USA  
Merrie Beth Neely: GEO AquaWatch, USA

## Final Programme

### 28<sup>th</sup> August 2018 Arrivals – Willow Court

<http://www.stirlingvenues.com/accommodation/guest-accommodation/>

15:00 pm	check-in begins Willow Court (Stirling Hotel is 2pm)
17:00 pm	GEO AquaWatch Pre-Meeting <b>Pathfoot Building</b> Meet & Greet of AquaWatch participants and background information (Greb/Neely)
19:00 pm	Welcome Dinner and Reception

### 29<sup>th</sup> August 2018 Day 1 - GloboLakes - Pathfoot Building

9:00-9:30 am	Registration and Coffee
Welcome	
9:30-9:35	Welcome: Vice Chancellor
9:35-9:40	Introduction and House Keeping: Andrew Tyler
9:40-9:50	AquaWatch Overview: Steve Greb
<b>Session 1: GloboLakes: The Development</b> Chair: Steve Greb	
9:50-10:00	GloboLakes: The Overview: Andrew Tyler
10:00-10:15	Optical Water Types and LIMNADES: Vagelis Spyarakos
10:15-10:30	Algorithm Development at the Global Scale: Water Quality: Peter Hunter
10:30-10:45	Lake Surface Water Temperature: Laura Carerra
10:45-11:00	Discussion
11:00-11:20	Tea and Coffee
<b>Session 2: GloboLakes: Data Processing and Analysis</b> Chair: Carsten Brockmann	
11:20-11:35	Near Real Time Data Processing and Calimnos: Stefan Simis
11:50-12:05	Estimating Drivers of Change: Mark Cutler
12:05-12:20	Dealing with Data Uncertainty: Claire Miller
12:20-12:35	Clustering Lake Responses to Environmental Change: Mengyi Gong
12:35-13:00	Discussion
13:00-14:00	Lunch
<b>Session 3: GloboLakes: Understanding Change</b> Chair: Paul DiGiacomo	
14:00-14:15	Status and Attribution of lake Water Quality: Laurence Carvalho
14:15-14:30	Global forecast of the sensitivity of lake phytoplankton to environmental change: Ian Jones
14:30-14:45	Global seasonality of lake phytoplankton: Ellie Mackay
14:45-15:00	Predicting Lake Surface temperature dynamics: Stephen Maberly
15:00-15:20	Discussion
15:20-15:40	Tea and Coffee
<b>Session 4: GloboLakes: Wrap Up</b> Chairs: Andrew Tyler & Steve Greb	
15:40-16:00	Questions and Discussion
16:00-16:20	Summary, next steps and opportunities
16:20-17:00	Advisory Board Meeting
<b>17:30</b>	<b>Coaches Depart for Loch Venachar: Bus Stop at Pathfoot</b>
<b>18:30</b>	<b>Dinner followed by Whisky Tasting</b>
<b>22:30</b>	<b>Coaches return to the University</b>

## 30<sup>th</sup> August 2018 Day 2- Water Quality Community Forum - Pathfoot

9:00-9:15 am	Introduction: Chair Paul DiGiacomo <i>10 minute lightning round talks, followed by topical posters &amp; booth interaction and panel discussion with attendees</i>
<b>Session 5: Partner Projects &amp; Developments Lightning Talks</b>	
9:15-9:25	NERC Knowledge Exchange: EO in Industry and Regulation - Claire Neil/Andrew Tyler
9:25-9:35	H2020 EOMORES – Steef Peters
9:35-9:45	H2020 Copernicus Global Land – Kerstin Stelzer
9:45-9:55	H2020 MONOCLE – Stefan Simis
9:55-10:05	H2020 CoastObs – Steef Peters
10:05-10:15	H2020 Coastal Water Data Cube – Carsten Brockmann
10:15-10:25	H2020 DANUBIUS-PP – Andrew Tyler
10:25-11:35	Tea and Coffee with posters and booth interaction
<b>Session 6: H2020 Community Discussion</b> Facilitator: Arnold Dekker	
11:35-12:30	Presenter Panel Discussion and Q&A.
12:30-13:30	Lunch
<b>Session 7: Agency &amp; International Program Lightning Talks</b> Moderator: Emily Smail	
13:30-13:40	UNESCO World Water Quality Portal – Thomas Heege
13:40-13:50	Water-related SDGs – Bilqis Hogue/Doug Cripe/Merrie Beth Neely
13:50-14:00	GEMS Water and SDGs – Debbie Chapman
14:00-14:10	US CyAN project – Blake Schaeffer
14:10-14:20	US CoastWatch – Paul DiGiacomo
14:20-14:30	CEOS EO for Aquatic Ecosystems Study – Arnold Dekker
14:30-14:40	Trophic state assessment of global inland waters using a MODIS-derived Forel-Ule index. - Shenglei Wang
14:40-14:50	Relevance of thermal forcing for optical remote sensing of stratified lakes - Daniel Odermatt
14:50-15:00	Spatial and Temporal Perspectives on Multiple Stressor Impacts Spanning Inland to Coastal Ecosystems - John Schalles
15:00-15:45	Tea and Coffee with poster and booth interaction
<b>Session 8: Community Discussion</b> Facilitator: Blake Schaeffer	
15:45-16:30	Presenter Panel Discussion and Q&A. Discuss challenge/opportunity
<b>Session 9: GEO AquaWatch Setting the Scene for Day 3</b> Co-chairs: Steve Greb, Paul DiGiacomo, Arnold Dekker	
16:30-17:20	Introductions, Review of the GEO Model, GEO AquaWatch Progress
<b>19:00</b>	<b>Dinner</b>
<b>20:30</b>	<b>CEILIDH</b>

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## 31<sup>st</sup> August 2018      Day 3- GEO AquaWatch – Pathfoot Building

*This day is a working session to engage the Steering Committee and Community in review, discussion and planning activities for the coming year. The day is split into two parts. The first session will focus on building GEO AquaWatch's flagship water quality information service and discuss an action plan to fund and complete work packages 3-7. The second session will identify new issues/activities and further discuss the action plan to fund and address both the WQIS and new activities. The final session, chaired by the entire Steering Committee, will assign tasks for the GEO AquaWatch Annual Workplan.*

9:00-9:10 am	Recap <b>challenges and opportunities</b> from previous 2 days. How can the community activities presented over the past two days help GEO AquaWatch reach its goals? How can GEO AquaWatch help the community reach their goals?
<b>Session 9: Water Quality Information Service (WQIS) Plenary</b> Group Discussion	
9:10-10:30	Review of Work Packages 3-7. Detailed group discussion of the <b>WQIS</b> and tasks to completion for a global product. (Facilitators: Ghada El Serafy and Carsten Brockmann)
10:30-11:00	Tea and Coffee
<b>Session 10: Working Group Breakouts – Working Group Co-Chairs</b>	
11:00-11:50	How can GEO AquaWatch address the identified action & knowledge gaps? What new issues can/should GEO AquaWatch address in next 12-18 months and how do we do it?
11:50-12:00	Break
12:00-13:00	Working lunch (continuation of <b>Working Group Breakouts</b> )
13:00-13:15	Break
<b>Session 11: Annual Work Plan &amp; Assignments Plenary</b> Chairs: Entire Steering Committee	
13:15-13:40	Work Group Co-Leads Report Out – 5 mins each
13:40-15:00	<b>Steering Committee Feedback and Plenary Discussion:</b> How will identified knowledge/action gaps shape GEO AquaWatch Annual Workplan? Build a Framework to implement agreed upon tasks, schedule next 12-18 months, and assign people to tasks.
15:00-15:10	Farewell Thoughts