



Australian End-Users Workshop: HABs Early warning tools



Thursday, 20th April 2023
11.30 AM - 2.30 PM AEST



Department of Civil Engineering
Monash University, Melbourne



Hybrid event
Register at www.primewater.eu

"Making PrimeWater a Reality"

Welcome & Introduction

- Welcome – **Ha Bui**
- Workshop objectives and Structure -
Samuela Guida
- Introduction of Aquawatch and its relevance to this workshop - **Neil Sims**



PrimeWater

Welcome!

Ha Bui - Monash Uni



European
Commission

The project has received funding from the European Union's Horizon H2020
Research and Innovation Programme under Grant Agreement No 870497

Acknowledgement of Country

Monash University recognises that its Australian campuses are located on the unceded lands of the people of the Kulin Nations, and pays its respects to their Elders, past and present.



PrimeWater

Workshop objectives and Structure

Samuela Guida - IWA



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Agenda

Time	Item	Responsible
11:30-11:35	Welcome	Ha Bui - Monash Uni
11:35-11:40	Workshop objectives and Structure	Samuela Guida - IWA
11:40-11:45	Introduction of Aquawatch and its relevance to this workshop	Neil Sims - Aquawatch Australia
11:45-12:00	Tools for hydro-ecological hazards exposure and vulnerability reduction	Apostolis Tzimas – EMVIS
12:00-13:00	Short to medium-term forecasting of HABs: <ul style="list-style-type: none">• Early Warning System using ML algorithms - Lake Hume (AUS)• EO-based forecasting service for HABs management - Lake Harsha (USA)• Watershed digital twin concept implementation in Mulargia – Flumendosa Lakes (ITA)	Evangelos Romas – EMVIS
13:00-13:10	Discussion (Q&A) and homework	Tapas Biswas – CSIRO
13:10-13:30	Mini break with lunch provided	
13:30-14:25	Round table discussion and stakeholders' expectations	Moderated by Arnold Dekker - SatDek
14:25-14:30	Closing	Arash Zamyadi – Monash University

Presenters



Evangelos Romas
PrimeWater,
EMVIS- Greece



Apostolos Tzimas
PrimeWater,
EMVIS- Greece



Samuela Guida
IWA Strategic
Programmes and
Engagement Manager



Arnold Dekker
SatDek



Neil Sims
Deputy Leader-
AquaWatch



Ha Bui
Head of Civil Engg
Monash University

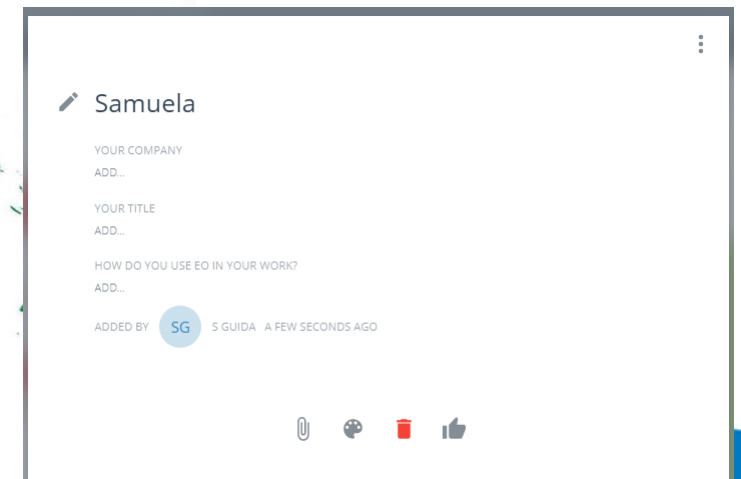


Tapas Biswas
Senior Scientist
CSIRO Environment
& Aquawatch

Welcome & Introduction

Welcome – **Samuela Guida**

<https://join.groupmap.com/E79-E13-375>



Objectives of the workshop

This workshop intends to initiate a discussion on **short to medium-term water quality forecasts** into an **early warning** service for **HAB outbreaks**.

Main objectives of the workshop:

- Inform local/regional end users of the PrimeWater tools and operational forecasting service for inland freshwater
- How forecast-based early warning for HABs can improve operational risk management

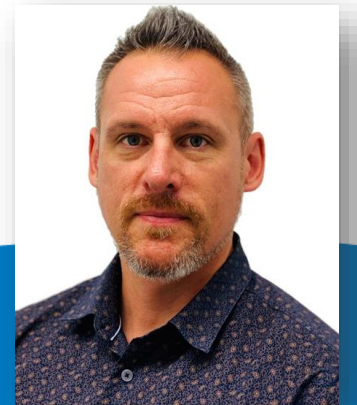
Start thinking: Opportunities, barriers, risks and benefits or anything else?



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Introduction of Aquawatch and its relevance to this workshop

Neil Sims - Deputy Leader, AquaWatch



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AquaWatch Australia: a weather service for water quality

- World's first integrated ground-to-space WQ monitoring system
- Forecast a few days in advance
- Reduce impacts from harmful water quality events
- National goals
 - Improve availability and accuracy of WQ information
 - Harmonise WQ monitoring
- Global goals
 - Be the world's best WQ monitoring system
 - Provide WQ information to ~3b people at risk



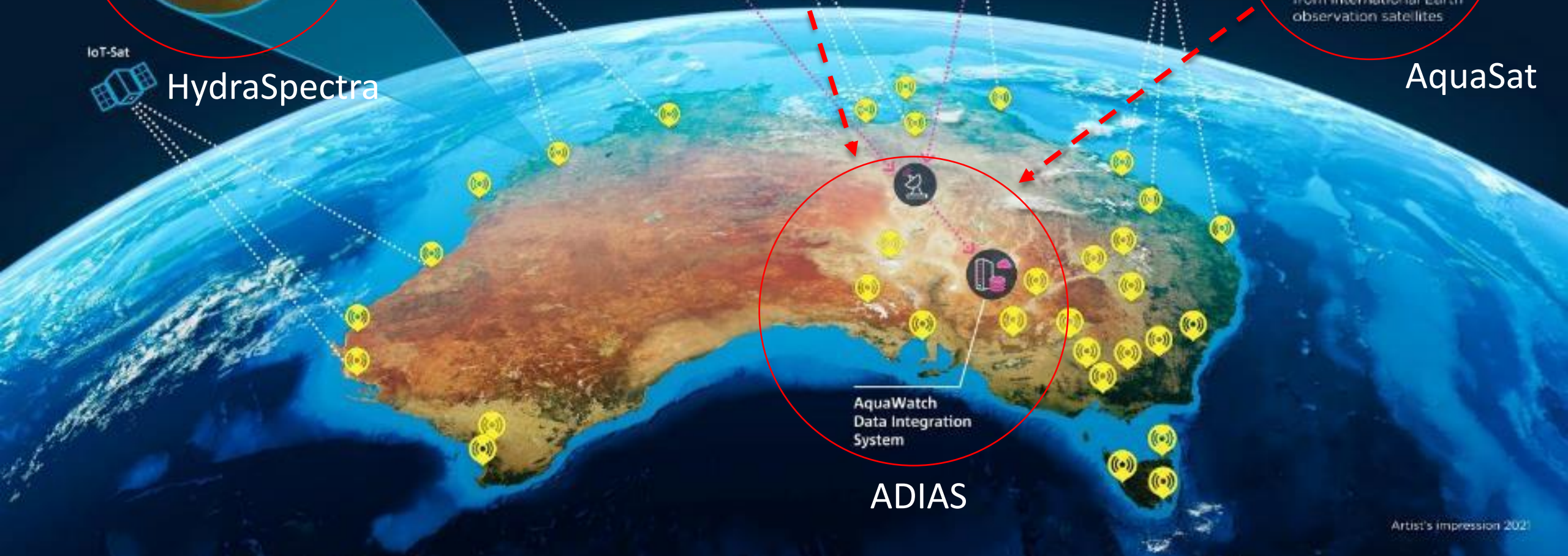
AquaWatch Australia Mission Concept

Virtual Satellite Constellation



HydraSpectra

AquaSat



AquaWatch
Data Integration
System

ADIAS

Forecasting

Prevailing and predicted conditions

- Water quality
- Temperature
- Hydrology
- Coastal Currents
- Others....

Need to observe the land and coastal sector

- Land use and management, surface conditions (organic loads)
- Radar – floods, plastics, ghost nets?

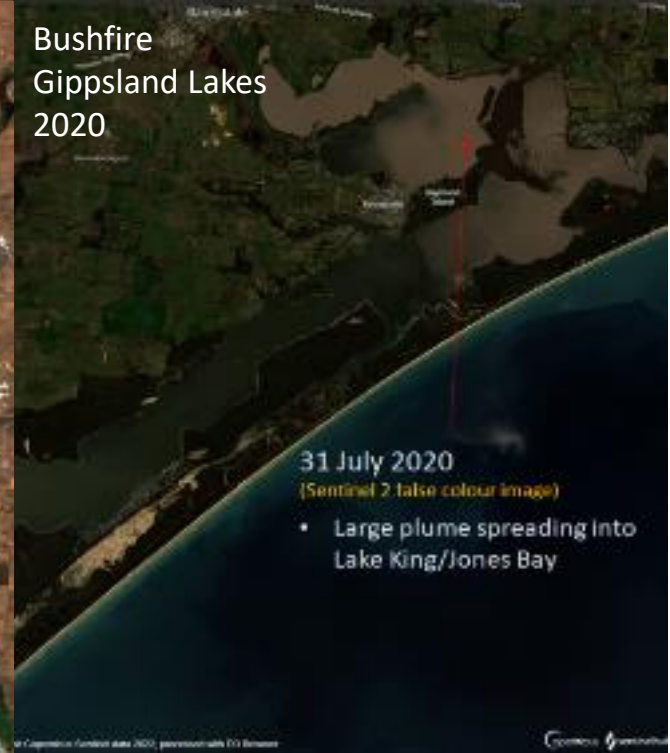
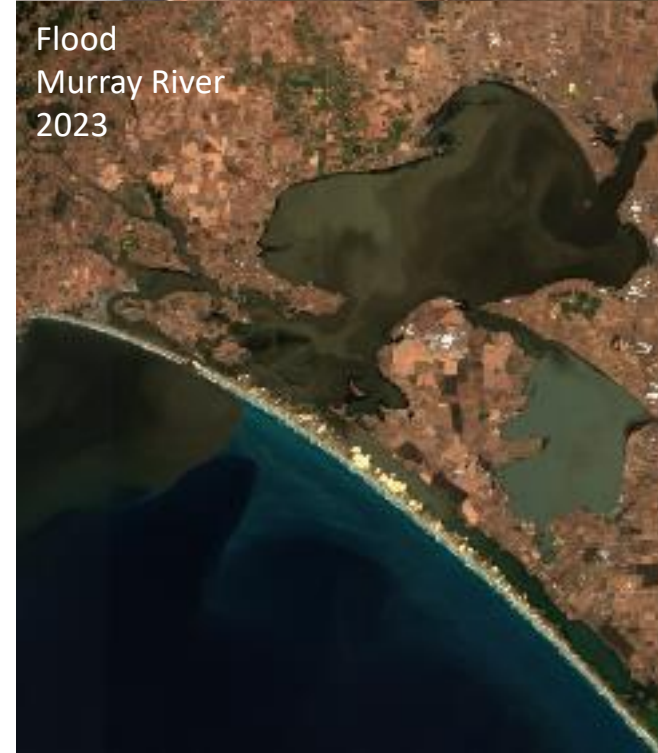
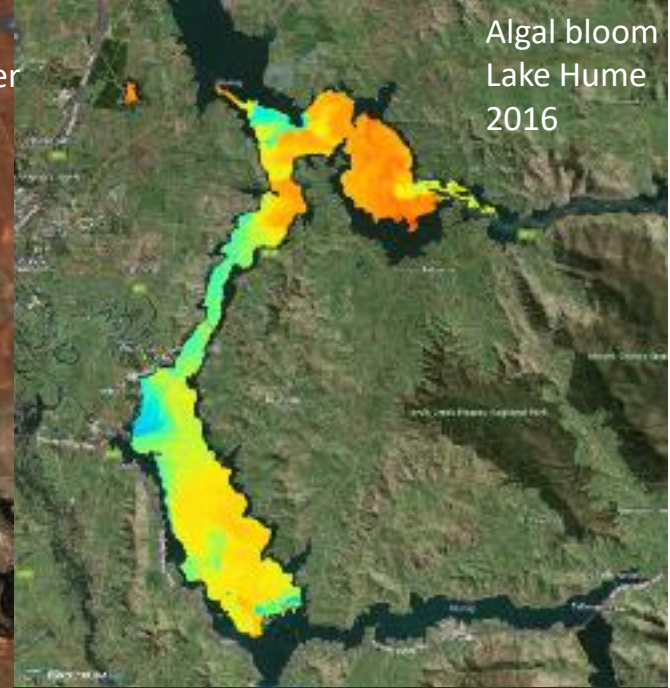
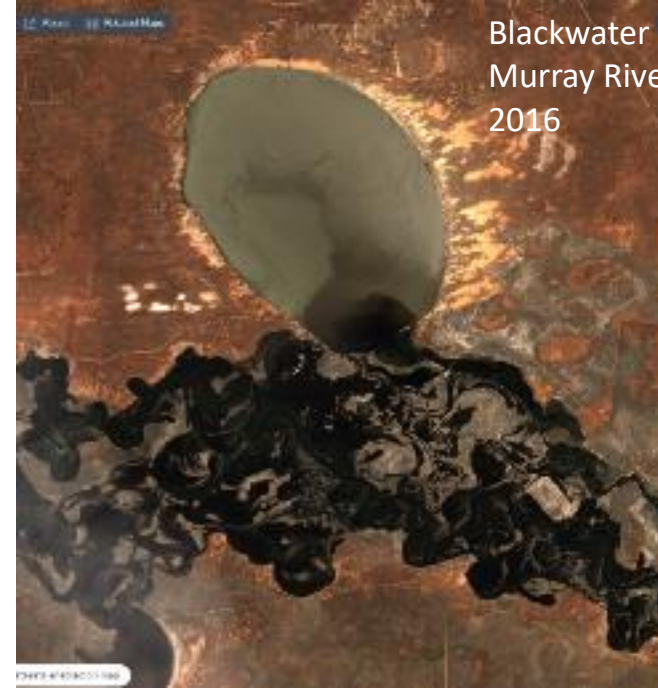
Use cases:

Algal blooms → cyanotoxins, taste and odour

“Black”water → low oxygen, fish kills

Flood plumes → sediment load, heavy metals

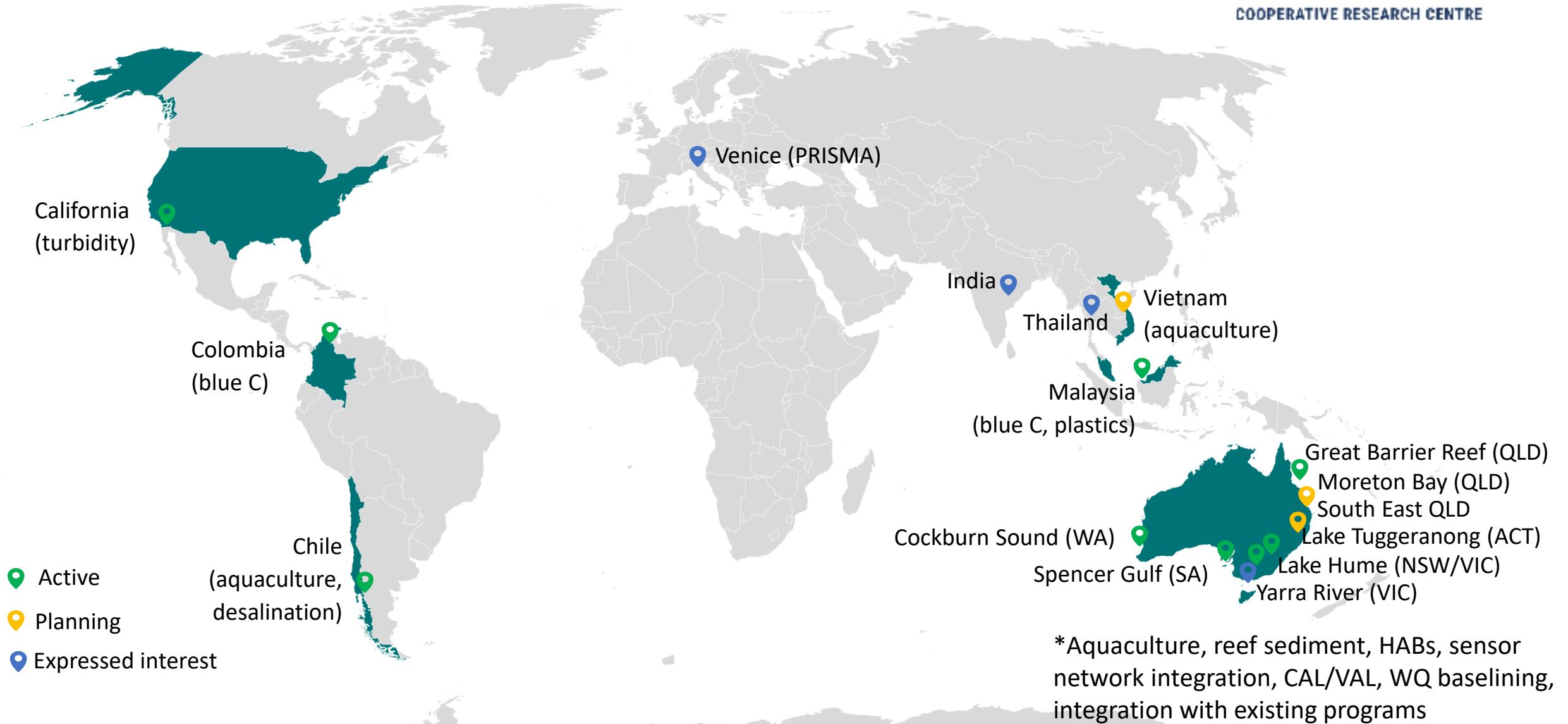
Water quality in regional, un-monitored areas



Pilot Sites (2026)



SMARTSAT
COOPERATIVE RESEARCH CENTRE



Implementation Plan

- **2021** – System co-design and user needs assessment
- **2023** – Mission Launch and start of Implementation
- **2026** – Pilot site network operational, integrate existing commercial EO data
- **2028** - Integrate Cyanosat and Australian EO satellites
- **2030** –50-100 research, validation and commercial sites in operation globally

Ongoing

- Partnership development
- In-situ and EO sensor improvement, cost reduction and miniaturisation
- Establish Community of Practice (COP)

Future

- Support advanced ecosystem monitoring





Thank you

CSIRO Space & Astronomy

Dr Alex Held

Lead, AquaWatch Australia

Director, Earth Observation Infrastructure

alex.held@csiro.au

csiro.au/en/about/challenges-missions/AquaWatch

CSIRO Space & Astronomy

Dr Neil Sims

Deputy Lead, AquaWatch Australia

Program Manager, Space Technology Future Science Platform

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csiro.au/en/about/challenges-missions/AquaWatch



**AUSTRALIAN END-USERS WORKSHOP:
HAB'S EARLY WARNING TOOLS**

THURSDAY 20TH APRIL 2023 | 11:30 AM –
2:30 PM AEST
DEP. OF CIVIL ENG., MONASH UNIVERSITY,
MELBOURNE



Organized by:



EMVIS

WATER RESOURCES
& ENVIRONMENT
MANAGEMENT

**TOOLS FOR HYDRO-ECOLOGICAL HAZARDS EXPOSURE AND
VULNERABILITY REDUCTION**

**APOSTOLOS TZIMAS, PRIMEWATER PROJECT CO-ORDINATOR
EVANGELOS ROMAS, HEAD OF EMVIS R&I UNIT**

In collaboration with:
Monash University
Department of Civil Engineering





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Short to medium-term forecasting of HABs

Evangelos Romas – EMVIS



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Discussion

Tapas Biswas - CSIRO Environment & Aquawatch





Have
a
Break



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Stakeholders' expectations: round table discussion

Arnold Dekker – SatDek



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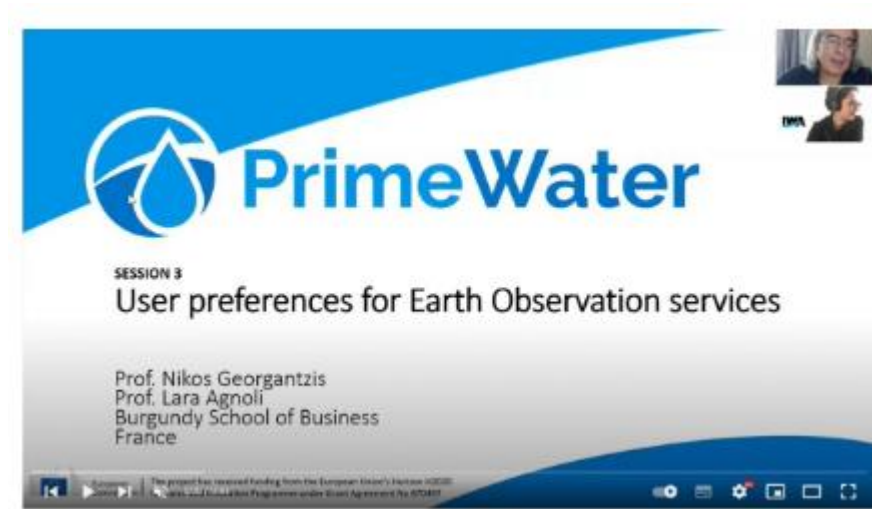
- Inform local/regional end users of the PrimeWater tools and operational forecasting service for inland freshwater
- How forecast-based early warning for HABs can improve operational risk management

Let's discuss: Opportunities, barriers, risks and benefits or anything else

User preferences for Earth Observation services

Please complete our survey!

This survey is important for further activities of the PrimeWater.



Take the PrimeWater survey 'User preferences for Earth Observation services' now!

by admin February 25, 2020

NEWS SURVEY

The PrimeWater survey 'User preferences for Earth Observation services' is now available online! [also in Italian!](#)

The survey is targeted at **anyone interested in water monitoring and forecasting services** and it will help us study the attitudes of users and stakeholders towards Earth Observation services. The survey is part of our **co-creation approach**, integrating the users' preferences and associating user characteristics and needs with specific aspects of available products and services.

Take the survey [here](#) and share it within your network!

Note: The resulting dataset will be processed and stored anonymously.
All information and results will always be presented in an aggregate form and will be used for the purpose of this research only.



PrimeWater

Closing

Arash Zamyadi – Monash University



PrimeWater



EMVIS S.A.



National Research Council of Italy



Swedish Meteorological and Hydrological Institute

EOMAP GmbH & Co.KG



International Water Association



Burgundy School of Business



ENAS Sardegna

Ente Acque della Sardegna



US Environmental Protection Agency



Commonwealth Scientific and Industrial Research Organization



Melbourne Water



SatDek Pty Ltd



European Commission

Horizon 2020
European Union funding
for Research & Innovation