Relevance of the AquaWatch mission for cyanobacteria management

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8th ANZ Cyanobacteria Workshop 26-28 September 2023

- The goal is to establish an integrated ground-to-space national water quality monitoring system
- Support water management with accurate data and predictive forecasting

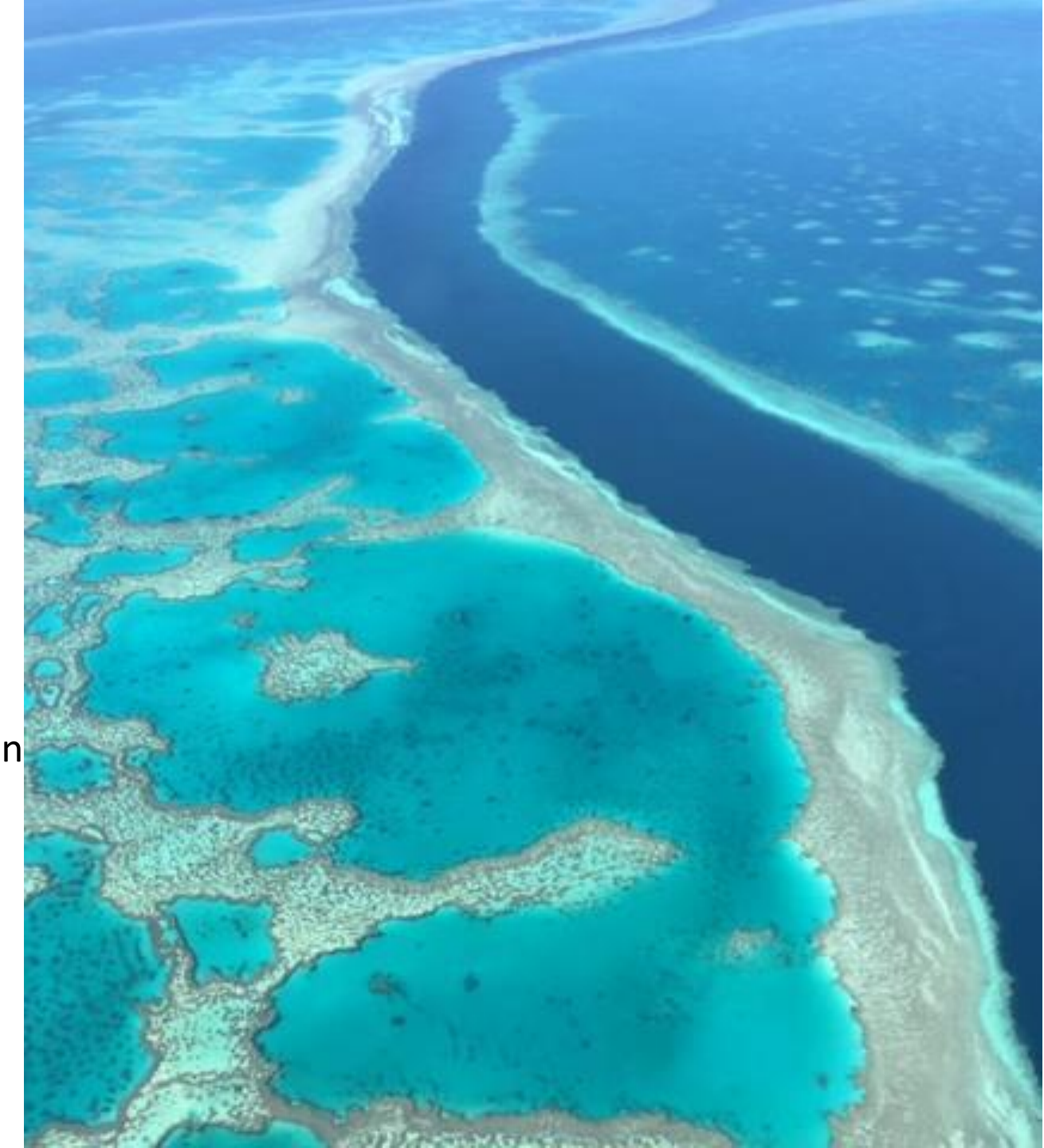

ABC NEWS

AquaWatch Australia: a weather service for water quality

- More than 3 billion people at risk from unsafe water
- Increased pressure on inland and coastal water resources
- Significant costs for industry and environment
- Lack of continuous, routine water quality data over much of Australia and the globe

AquaWatch will support monitoring and water management, allowing for modelling and forecasting on any time scale.

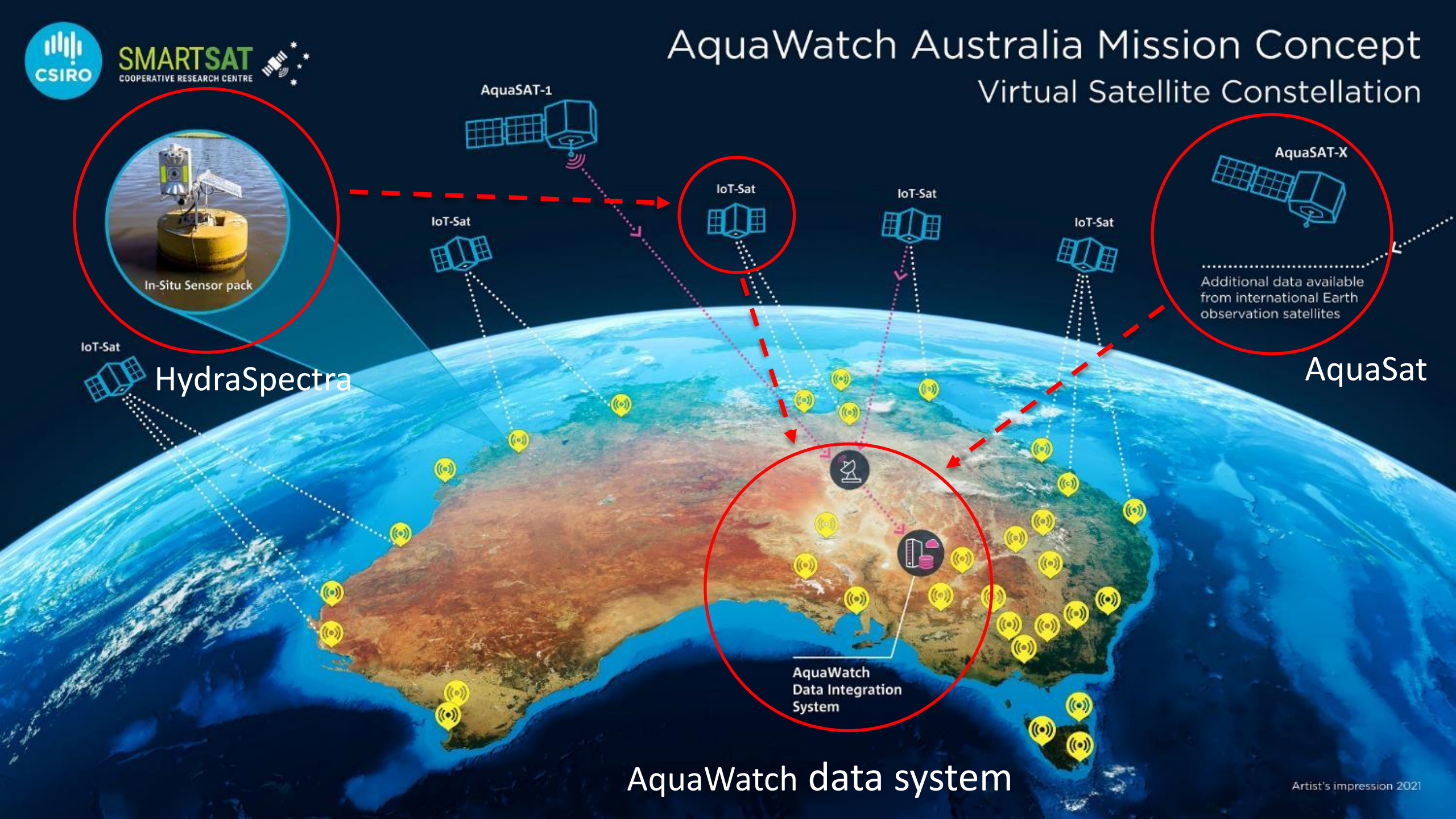
UN's Sustainable Development Goals globally.



AquaWatch Australia Mission Concept

Virtual Satellite Constellation

CSIRO SMARTSAT COOPERATIVE RESEARCH CENTRE



HydraSpectra

AquaSat

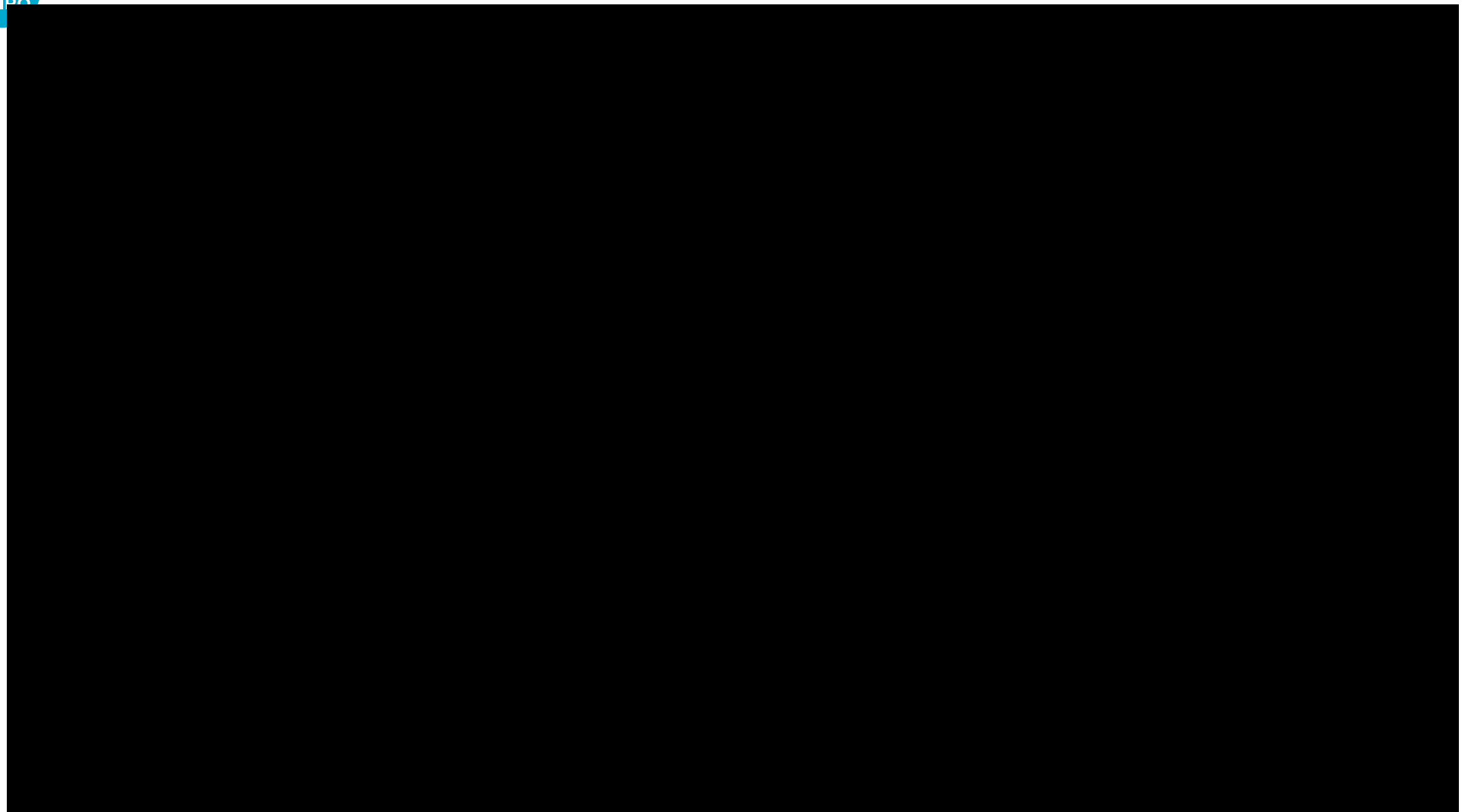
AquaWatch data system

Artist's impression 2021

Impacts

- Ensure safe and clean water for drinking and sanitation
- Improved management of inland and coastal water ecosystems and resources
- Forecast harmful water quality events and reduce their impacts
- Define best practice and harmonise water quality monitoring between jurisdictions
- Support Blue carbon activity

AquaWatch Australia



Implementation

- **2021** - System co-design and user needs assessment
- **22 March 2023** - Mission Launch and start of implementation
- **2026** - System fully integrated across pilot site network (~15 sites) using existing commercial EO data
- **2028** - Integrate Cyanosat and Australian EO satellites
- **2030** - 50-100+ research, validation, industry & commercial sites in operation globally

Ongoing

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

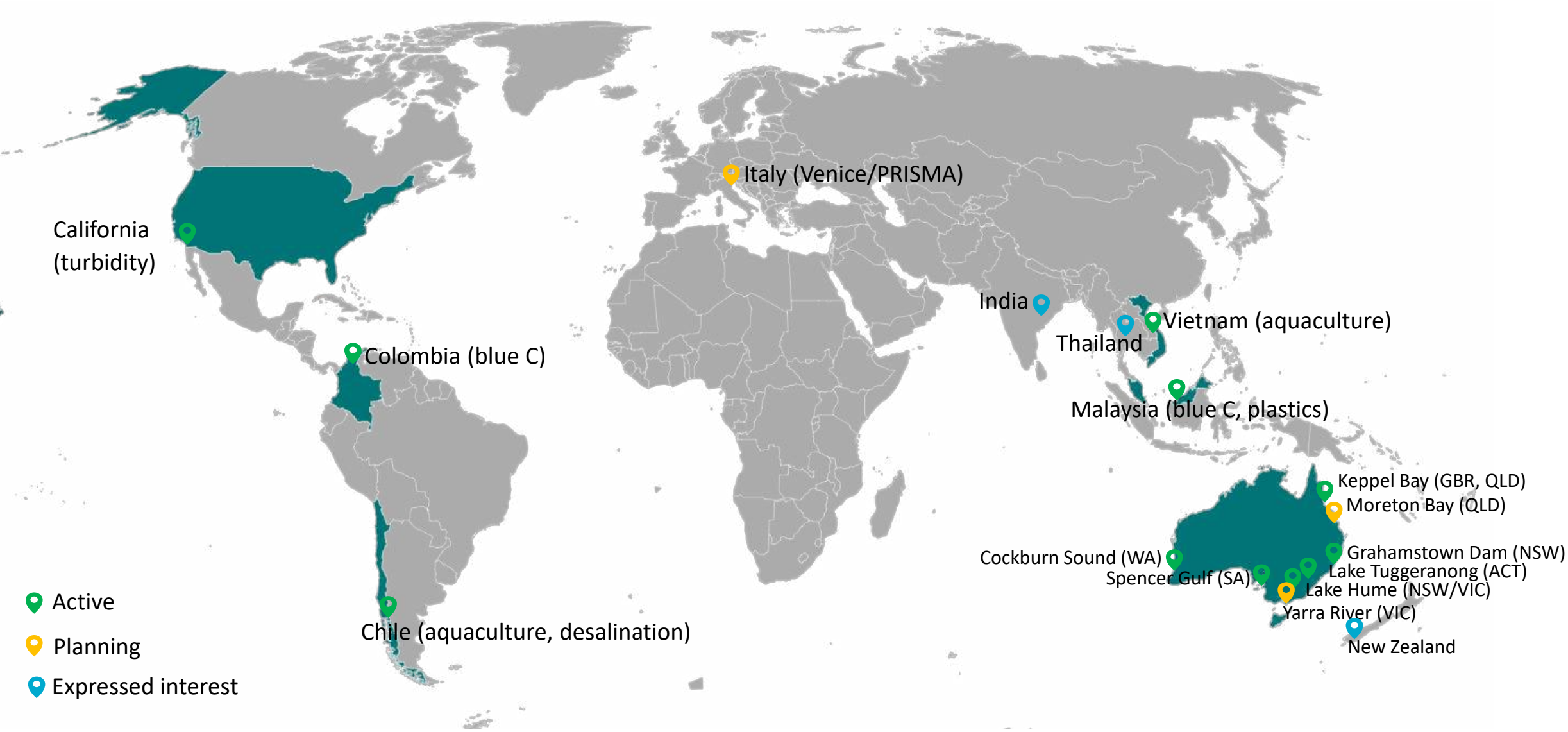
Future

- Support advanced ecosystem monitoring

Pilot sites in AquaWatch

- Engage with research, government and industry partners to build and improve the robustness and accuracy of the AquaWatch system,
- Build up the user network amongst partners (agriculture, aquaculture, irrigation, drinking water supply, desalination, blue carbon, extreme event management)
- Develop capacity to enable partners to be the key custodians of each site
- Attract co-investment with the project partners to increase the activity at each site and demonstrate locally-applicable outcomes

Pilot Sites (2026 – co-designed with partners)



AquaWatch Inland Water Pilots

Grahamstown Dam

Lake Hume

Lake Tuggeranong

Connection to this workshop

- Supporting early warning of harmful algal bloom events
- AquaWatch will support accurate monitoring and forecasting of toxic algal blooms, blackwater and runoff contamination.
- Data generated will help environmental managers improve outcomes for natural environment and aquatic biodiversity including after events like bushfires and floods.
- It will increase resilience of communities for their drinking water need, sanitation and agriculture as they face increasing climate pressures and extreme weather.
- The data will also enhance industrial and commercial water resource management, planning and policy.

AquaWatch Mission End User Consultation Workshop:

HABs Early warning and forecasting

Thursday, 28th September 2023

10:00 AM – 16:30 PM AEST

Department of Civil Engineering
Monash University, Melbourne

CSIRO · Water Research Australia · SMARTSAT Cooperative Research Centre

https://monash.zoom.us/join. Meeting ID: **882 0238 9318** and passcode: **224390**

Program

Time	Item	Responsible
10.00 – 12.00	**Session I:** Welcome, objectives and update on AquaWatch Mission	AquaWatch Team (7 speakers)
	• Welcome • Workshop objectives, structure and feedback tool ONLINE TOOL: https://join.groupmap.com/3D2-E42-88E	Alex Held - CSIRO AquaWatch Mission Tapas Biswas – CSIRO AquaWatch Mission
	• Update on AquaWatch Mission	AquaWatch Team (7 speakers)
12:00-13:00	LUNCH BREAK	
13.00 – 15.00	**Session II:** End users/stakeholders views and expectations	END USER presentations (9 speakers)
15.00 – 15.15	AFTERNOON TEA BREAK	
15.15 – 16.15	**Session III:** Moving from thresholds to impact based forecasting: • End Users expectations – Round Table discussion • Online Feedback Tool: END USER preferences for AquaWatch services	Arnold Dekker – AquaWatch Mission (Lead) Samuela Guida (IWA), Tapas Biswas
16.15 – 16.25	Closing remarks	Alex Held - CSIRO AquaWatch Mission
15.25 – 16.30	Vote of thanks and workshop close	Tapas Biswas – CSIRO AquaWatch Mission

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.

The main objectives of the workshops are:

- Inform local/regional stakeholders on the current research of AquaWatch projects and demonstrate an early version of the operational forecasting service for inland freshwater systems
- Share experiences from managing HABs related risks in Australian freshwaters
- Discuss how forecast-based early warning services for HABs can improve risk management
- Identify expectations of end-users from AquaWatch Mission information services

Roundtable discussions

Key points to be considered in the discussion:

1. Current and future issues with freshwater HABs
2. User needs (AquaWatch early detection, monitoring and forecasting), what are missing?
3. Decision and management tools- application for endusers
4. User friendliness, reliability and confidence
5. Economic aspects: cost/benefit

User preferences for AquaWatch services

- This survey contributes to the AquaWatch Mission's Water Quality information services and it is targeted to **anyone interested in water quality monitoring and forecasting services**.

- It will also contribute to our understanding on **social and institutional attributes to the adoption of AquaWatch services in decision-making**.

- *Anonymous questionnaire*

Thank you

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