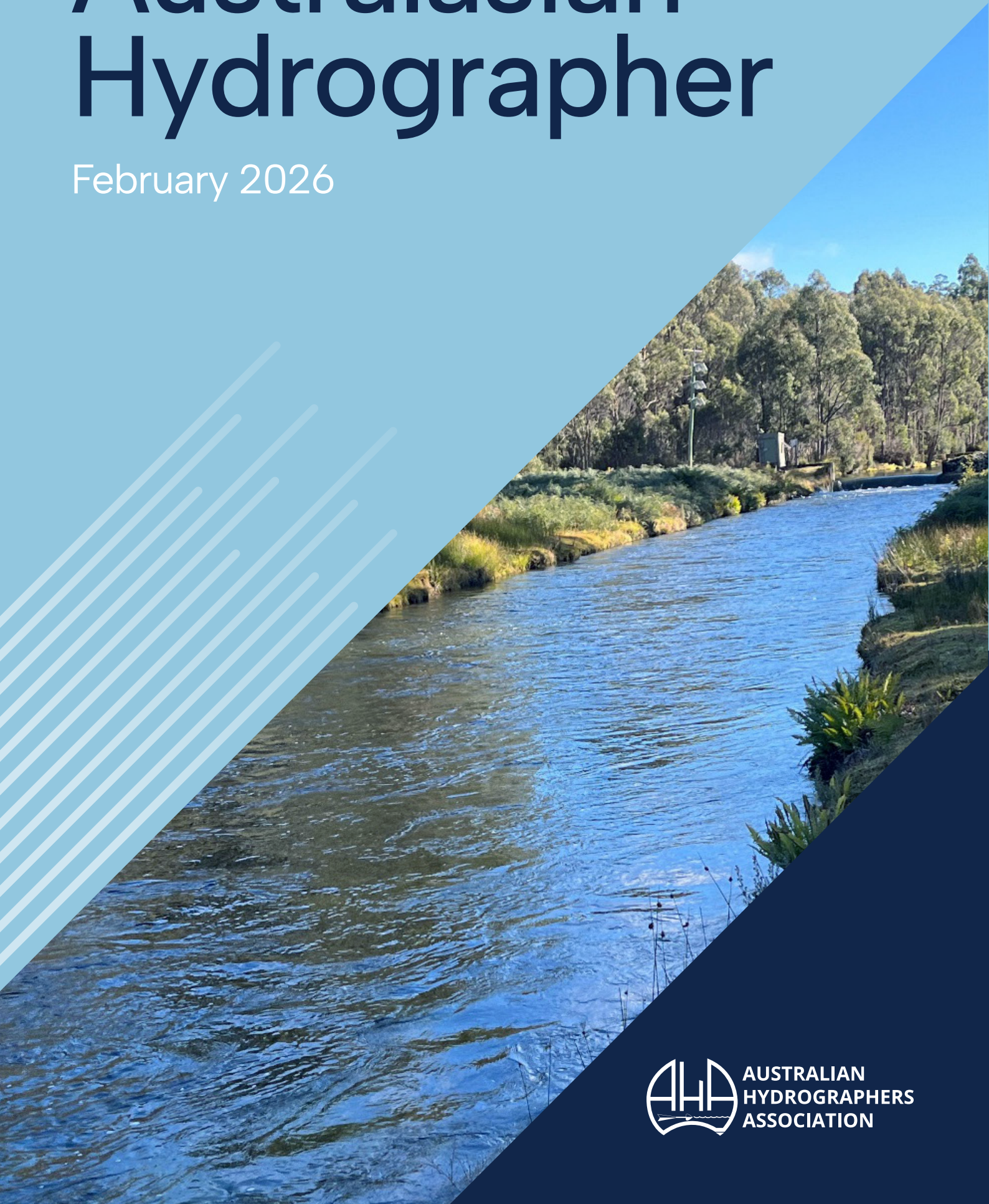


Australasian Hydrographer

February 2026



AUSTRALIAN
HYDROGRAPHERS
ASSOCIATION

AHA
Australian Hydrographers Association

National Office

services@aha.net.au
PO Box 3476
Weston Creek ACT 2611
Australia

Editorial Team

Zac Ward CPH (Editor-In-Chief)
publication.thinktank@aha.net.au

Material Submitted

While every care is taken with solicited and unsolicited materials supplied for consideration and publication, neither the editor nor the publisher accepts any liability for loss or damage however caused.

© 2026 Australian Hydrographers Association unless other copyright is shown



Unless otherwise noted, all material in this journal is licensed under a Creative Commons (CC) Attribution 4.0 International licence (CC BY)

For more information see
aha.net.au/copyright

Photo Credit: (Cover & Below)

James Raeside - Xylem Analytics

Photo Information: (Cover & Below)

Tarraleah Forrest Reserve (TAS) - Pristine Gauging Section

Acknowledgement of Country

The AHA acknowledges the Australian Aboriginal and Torres Strait Islander peoples of this nation. We acknowledge the traditional custodians of the lands on which our association is located and where we conduct our business. We pay our respects to ancestors and Elders past, present and emerging. The AHA is committed to honouring Australian Aboriginal and Torres Strait Islander peoples' unique cultural and spiritual relationships to the land, waters and seas and their rich contribution to society.

Contents

From the Editor-In-Chief	3
From the President	5
Internet Protocol Telemetry – Replacement Project – 3G/Globalstar	6
Satellite Derived Water Quality Monitoring as a Potential Tool to Enhance Water Resource Monitoring Programs	26



From the Editor-In-Chief Zac Ward



As you may have already seen in your respective AHA Member Email Inbox's, our Certification Program has undertaken a realignment and slight change. We are now moving to an Annual Renewal Cycle with CPD Activity logs required to be uploaded this coming June

If you wish to renew your certification (and we hope you do given the exciting AHA year ahead of us) make sure you update all your completed, point carrying activities and apply for one of our certification levels:

Certification level	Annual CPD Point requirement
AHA Certified Associate Hydrographer (CAH)	3
AHA Certified Cadet Hydrographer (CCH)	3
AHA Certified Hydrometric Specialist (CHS)	3
AHA Certified Practising Hydrographer (CPH)	4

Please note the 2 points you can obtain with the following admirable, industry furthering task:

“Teach or Author a Paper relevant to Hydrometric Monitoring”

Always here for a chat should you need assistance authoring a journal-worthy story so please reach out as always.

publication.thinktank@aha.net.au
Zachariah.Ward@ewsaustralia.com

Cheers,

Zac

CPD Activity	Description	Per Activity	activity points per year	Evidence
Attend an AHA approved hydrometric monitoring conference, trade show or field day with published agenda, Gauging Regatta	Providers such as the AHA, professional associations or societies, universities, colleges or technical institutes.	1 point per day of event attendance	3	Evidence such as an invoice, certificate of attendance, or documented evidence of attendance.
Continuous active participation in field and/or office activities specific to hydrometric monitoring.	This would require written proof, endorsed by a manager of continuous ability to carry out field and/or office activities that include tasks specific to hydrometric monitoring e.g. gauging, survey, data edit/management, modelling etc.	1	1	Provide written evidence endorsed (by manager) stating the type of activities and duration.
In house training - AHA approved	A training course provided by an employer that has been assessed and approved by the AHA. Minimum course duration 0.5 days.	1	5	Name of approved course to be recorded.
In house training - unapproved	In house training course of minimum 0.5 day duration. Topic to be directly related to performing hydrometric activities.	0.5	4	Certificate of completion detailing: - learning outcomes - Course date, start and finish - Course presenter, name and contact details - Course location. - Course material to be provided on request.
Workplace health and safety training	Participation in accredited work place health and safety training that has direct relevance to performing hydrometric activities.	1	1	Copy of Certificate of completion.
Mentoring – Hold a senior role in hydrometric monitoring, such as: Team Leader, Supervising Hydrographer, Hydrographic Training Officer etc.	Individuals need to have at least 5 years of experience in hydrometric monitoring and mentoring.	1	1	Provide documentation endorsed by Manager describing role title and mentoring undertaken.
Industry training long - AHA approved	A training course provided by a third party (e.g. a vendor) that has been assessed and approved by the AHA. Minimum course duration 0.5 days.	1	5	Copy of Certificate of completion.
Industry training long - unapproved	A third party (e.g. a vendor) provided training course directly related to Hydrometric monitoring and data management. Course duration minimum 0.5 day. The training course is not assessed by the AHA.	0.5	1	Copy of Certificate of completion including: - Learning outcomes - Course date, start and finish - Course presenter, name and contact details - Course location - Course material to be provided on request.
Industry training short - AHA approved	A training course provided by a third party (e.g. a vendor) that has been assessed and approved by the AHA. Minimum course duration 0.25 days.	0.5	5	Evidence of attendance and completion.
Industry training webinar - AHA approved	A training course provided by a third party (e.g. a vendor) that has been assessed and approved by the AHA.	0.5	5	Evidence of attendance and completion.
Completion of AHA Hydrography course subject (CCH only)	Completion of AHA diploma course subject.	1	5	AHA Trainers certify completion.
Teach or author a paper relevant to hydrometric monitoring presented at a short course, seminar, technical conference, in-house training class or published in a Journal.	Prepare and deliver new material for a paper, publication or training course. Only the initial submission will be allowed when presenting a paper repeatedly. The AHA will assess these activities for relevance.	2	2	Copy of paper including details of publication, or a copy of the outline of short course and details of participants.
Exceptional activities	Activities that do not fall into any other categories may be submitted for the management committee for review. The AHA will assess these activities for relevance. Activities might include overseas study tour or industry leadership activities.	Maximum of 2 points.	2	Documented evidence describing the exceptional nature of the activity.

From the President Arran Corbett



As we move into 2026, conditions across Australia remain varied and, in many places, relatively settled compared with the extremes we often find ourselves responding to. While floods, droughts and fires will always remain a defining part of the operating environment for hydrographers, the current period provides a welcome opportunity to focus on consolidation, planning and capability building across the Association.

From an AHA administration and governance perspective, both the Executive Committee and the broader Committee are now back into a regular meeting cadence for 2026. This return to routine has allowed us to progress several important workstreams in parallel and maintain momentum across our activities.

Sub-committees are now active for our upcoming Technical Workshop scheduled for September in Adelaide, with early planning well underway. In addition, initial groundwork has commenced for the 2027 AHA Conference, to be held in Perth, Western Australia, with dates to be confirmed. These events remain central to AHA's purpose – bringing together practitioners, researchers and industry partners to share knowledge, challenge thinking and strengthen our professional community.

Behind the scenes, development of the new AHA member portal continues to progress well, with new functionality being added on a regular basis. Current focus is on the Training portal and the Certification and CPD framework, which will provide members with clearer visibility of professional development pathways and a more streamlined way to record and manage ongoing competency.

As always, these outcomes rely heavily on the time, energy and goodwill of our volunteer committee members and sub-committee contributors. Their continued commitment ensures that AHA remains responsive, relevant and well positioned to support hydrographers across Australia and the region.

We look forward to sharing further updates as the year unfolds and to engaging with many of you through training activities, workshops and upcoming events.

Best regards,

Arran Corbett

President, Australian Hydrographers Association

Internet Protocol Telemetry – Replacement Project – 3G/Globalstar

Presentation from the AHA Conference 2025 – Michael Whiting
(Department of Water & Environmental Regulation, WA)

Background

Department of Water and Environmental Regulation manages and regulates the state's environment and water resources

- Water data is collected at:
 - 281 - Surface water gauging stations
 - 163 - Meteorological sites
 - 2,814 - Groundwater bores
 - 20 - Water Quality buoys
- Measurement Branch - 40+ hydrographic staff in 6 regional offices
- Hydrologic Technology Centre
 - Coordinates and manages water measurement technology.
 - Includes trialing, procurement, deployment and support of:
 - > Instrumentation
 - > Installations / housings / components



Internet Protocol (IP) Telemetry Network

- 354 Telemetered surface water sites
- 248 - Surface water gauging stations
- 86 - Individual rainfall or climate sites
- 20 - Individual water quality sites
- Originally installed 2010-2014
- 177 - Telstra 3G mobile
- 177 - Globalstar LEO satellite





**'If you can't measure it,
you can't manage it'**



HydroTerra

Environmental Monitoring Specialists

**Reliable expertise, client focussed
approach and innovative solutions.**

Get to know HydroTerra



Marketplace & Rental



Workshop, Support
& Training



Field Services



Monitoring Systems

[Contact us
today!](#)



A New Chapter Begins

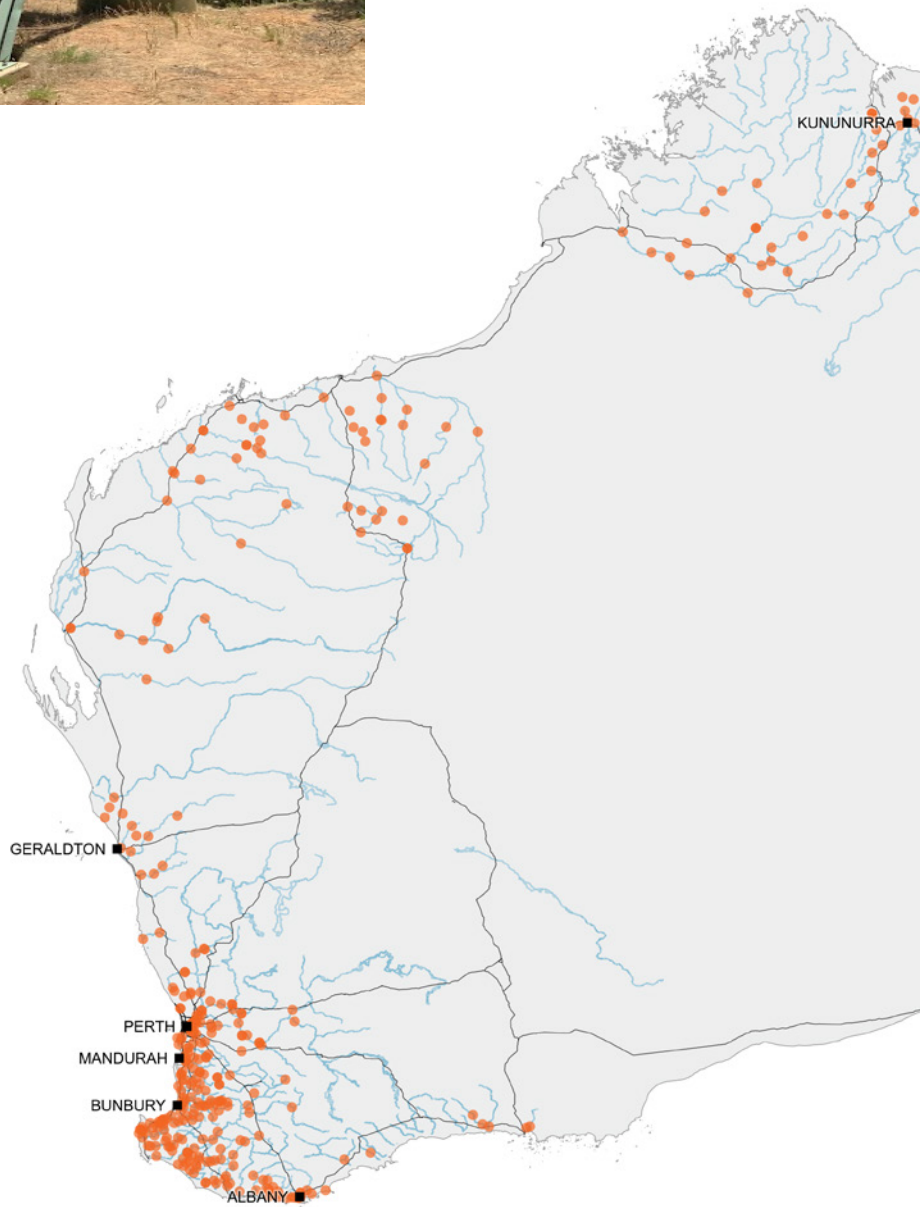
Qteq Pty Ltd has been acquired by GEO Pressure Systems Inc, forming a new, unified identity built on innovation, reliability, and performance.

This is more than a merger—it's a strategic alignment of complementary strengths. By combining our expertise, technologies, and resources, we're expanding what's possible in real-time monitoring.

Together, we now offer the industry's widest range of real-time monitoring systems, delivering accurate, reliable data for any application—backed by decades of field-proven experience.

More information coming soon

Reliability Job 1™





**Manly
Hydraulics
Laboratory**

is a proud partner
of AHA

Water Modelling and Monitoring - Since 1944 -

www.mhl.nsw.gov.au



Ventia is a leading provider of essential services across Australia and New Zealand.

We specialise in the long-term operation, maintenance, and management of critical public and private assets and infrastructure. We pride ourselves on working smart, working safely and working sustainably for our communities.

Learn more at
www.ventia.com



Drivers for Change – Network Closures

- Telstra 3G mobile network closure – June 2024
 - Planned as first replacement
- Globalstar CDMA network retirement – December 2022
 - Notified February 2022 - 8 months to replace 177 systems
 - Replaced by Apple satellite messaging and SOS service equipment
 - DWER and NIWA negotiated extension until December 2023
- Became all in one replacement project



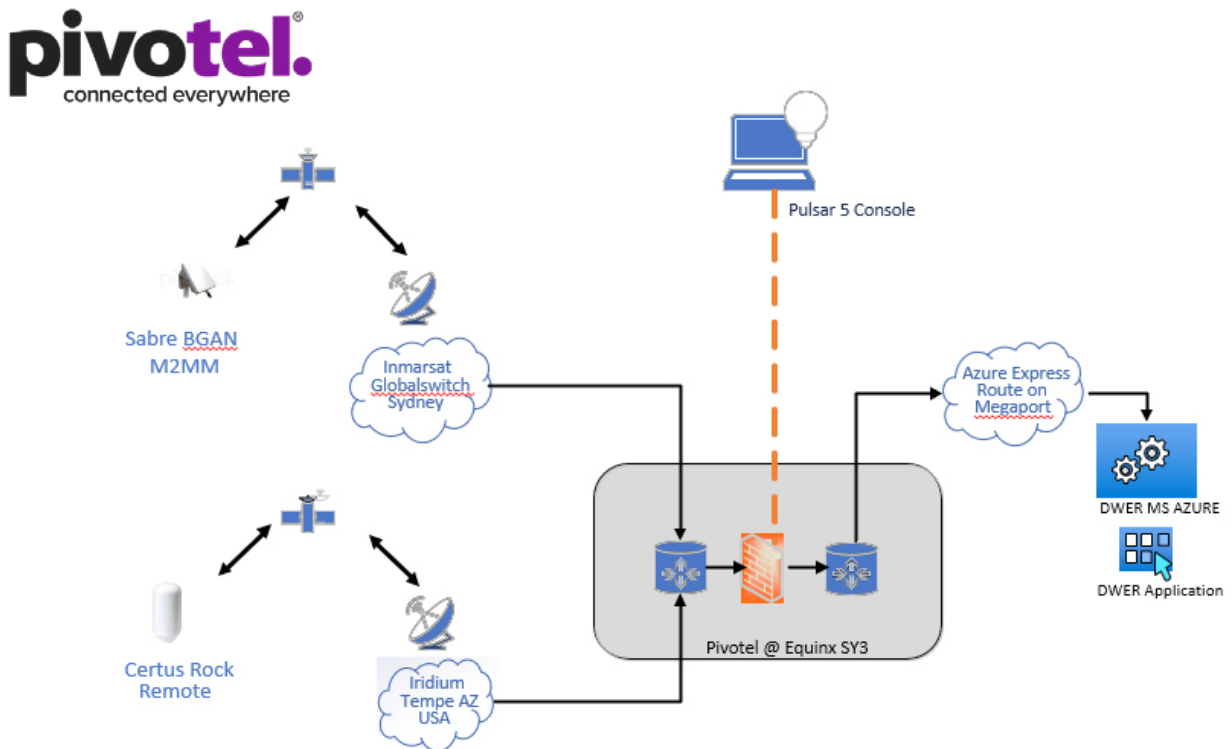
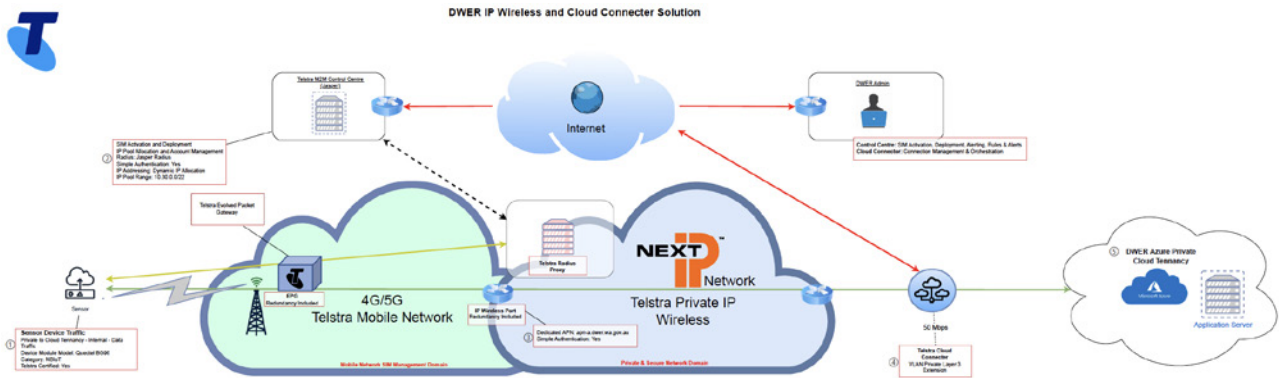
Replacement Communication Networks

- Terrestrial – Telstra - Narrow Band – Internet of Things (NB-IoT).
 - Improved network coverage – expanding
 - Low data cost
- Inmarsat BGAN M2M – Geo-stationary
 - Strengths - bandwidth and cost
 - Future proofing for Velocimetry videos etc.
 - Weakness – Line of sight – visibility / topography
- Iridium Certus – Low Earth Orbit satellite constellation
 - Strength – Connectivity at most sites
 - Weakness – High cost



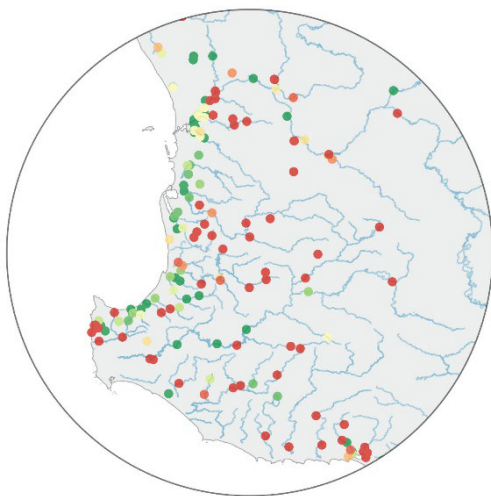
Improved Security

- Increased Cyber Security required
- Traditional on-premise server replaced by Microsoft Azure cloud server
- Two Virtual Private Networks connected via Microsoft Express Route
 - Telstra - Mobile
 - Pivotel - Satellite

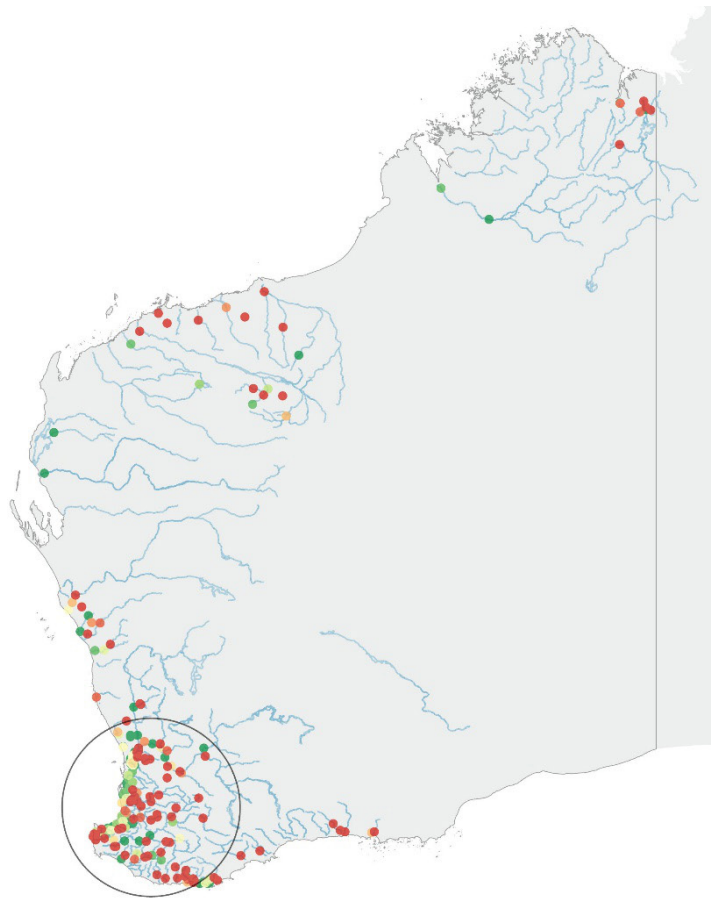
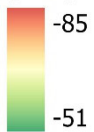


Pre-Planning

- NB-IoT signal tested at each site
- 4G mobile reception not a good indicator
- ETM 770 - NB-IoT Signal tester
- Mobile sites increased by 40%
- Post Rollout used for fault finding / network coverage



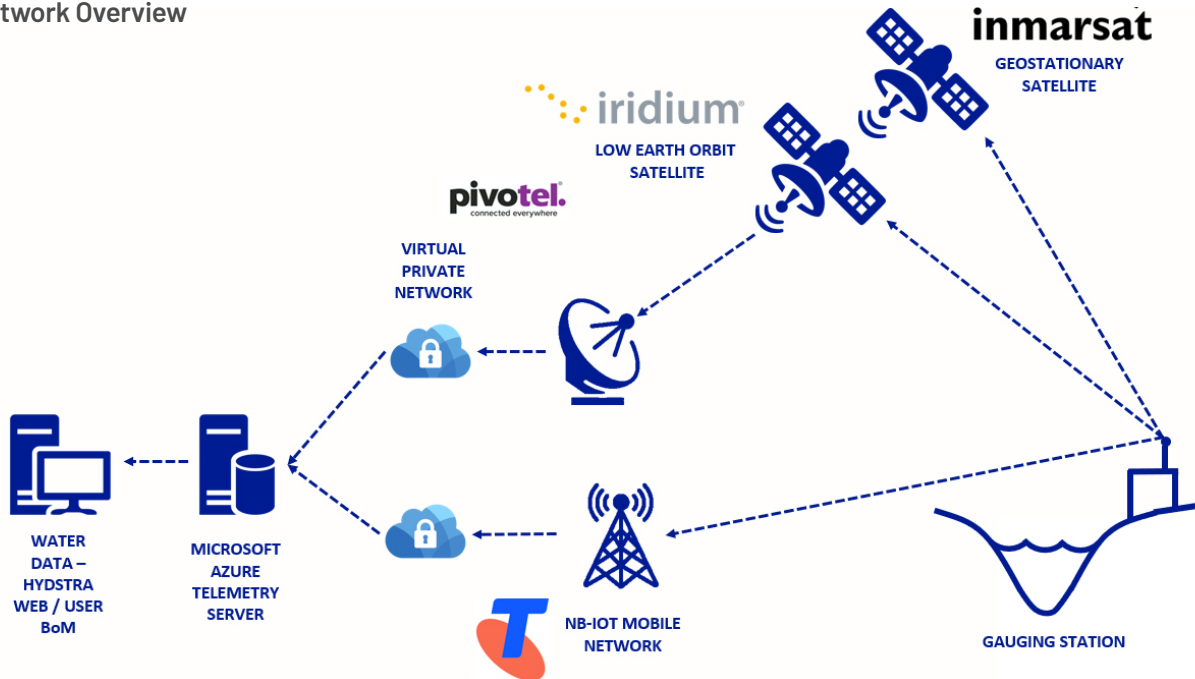
Received Signal
Strength Indicator
(RSSI)



Replacement System

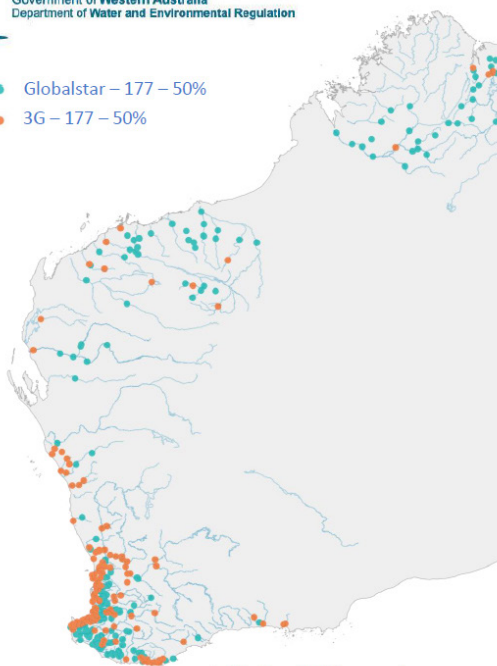
- Utilised existing IP Telemetry system supplier – Unidata Pty Ltd
- Trialing and configuration of alternate systems was considered high risk
- Staff re-training minimised
- Inmarsat BGAN M2M
 - Hughes Terminals not available due to COVID supply chain delays
 - Add Value Sabre Ranger 5000 Terminals were supplied instead
- Iridium Certus – Rock Remote Modems/Antennas

Network Overview



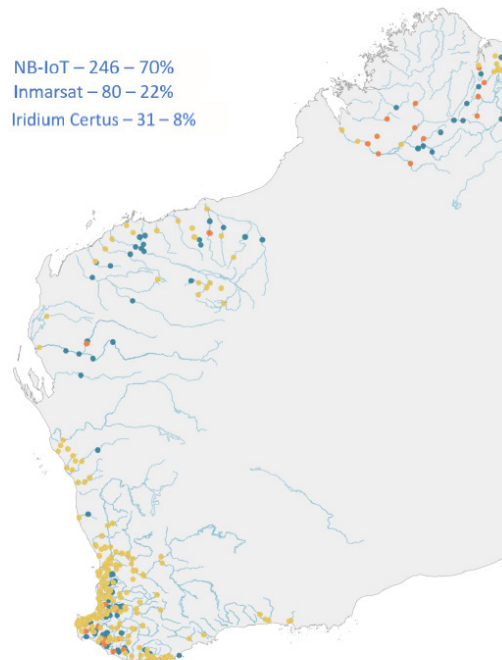
Government of Western Australia
Department of Water and Environmental Regulation

- Globalstar – 177 – 50%
- 3G – 177 – 50%



Existing IP Network

- NB-IoT – 246 – 70%
- Inmarsat – 80 – 22%
- Iridium Certus – 31 – 8%



Replacement IP Network

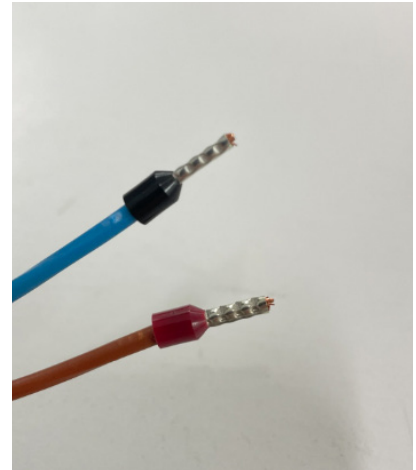
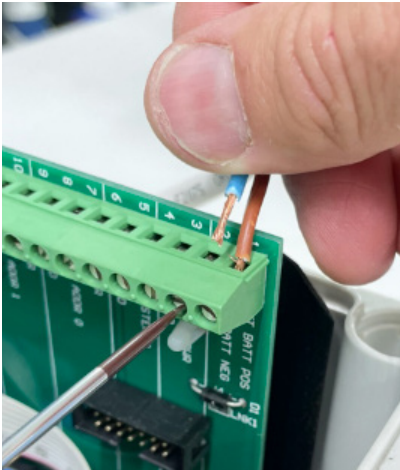
Improvements

Focus on ease of use for Hydrographers and reactive field operations

- Standardised to NB-IoT model - Satellite system added if required
- Instrument wiring
- Onsite Power management and monitoring
- Logged data Maintenance Mode
- Smart data reporting
 - Rainfall >0.2 mm (1 tip) reported on the hour
 - Hourly reporting above flood height trigger levels
- Instrument relay control

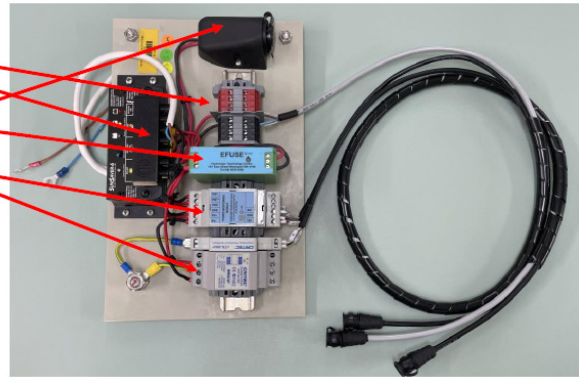
Instrument Wiring

- Onsite wiring eliminated
- All instruments pre-wired
- Boot-lace ferrules used for all wire terminations
- Different signal outputs use different plug pin outs
- Telemetry unit plug sockets arranged to suit common configuration



Power Management

- Standard Power Management Boards
 - Solar Panel Regulator
 - Multiple Instrument connections.
 - Lightning Protection.
 - Electronic Re-settable Fuse (E-Fuse).
 - Power Monitoring Module (PMM).
 - Emergency 12V power.
- Pre-wired including battery connections



Power Monitoring Example

Green – Solar Voltage

Blue – Solar Current

Red – Battery Voltage

Used for:

- Understanding Power supply performance
- Fault finding
- Pre-emptive maintenance or upgrades

Department of Water and Environmental Regulation

HYPLOT V134 Output 16/04/2025

Period 1 Day 15/04/2025 to 16/04/2025

2025

— 802055 Fitzroy Crossing 993.00 Solar Current (amp)

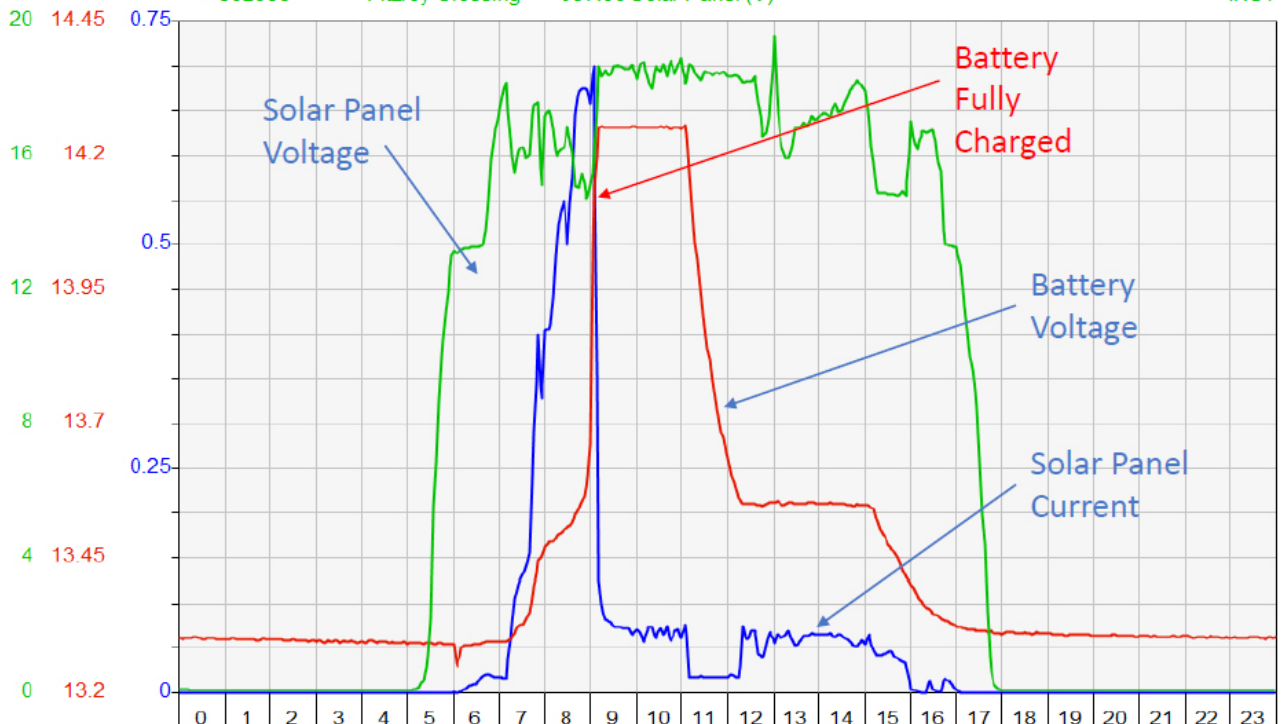
INST

— 802055 Fitzroy Crossing 991.00 External Battery (V)

INST

— 802055 Fitzroy Crossing 987.00 Solar Panel (V)

INST



Maintenance Mode

Green – Maintenance Mode

Blue – Raw Trace

Red – Final Trace

Onsite control of downstream data reporting

Department of Water and Environmental Regulation

HYPLOT V134 Output 19/04/2025

Period 8 Hour 08:00_01/04/2025 to 16:00_01/04/2025

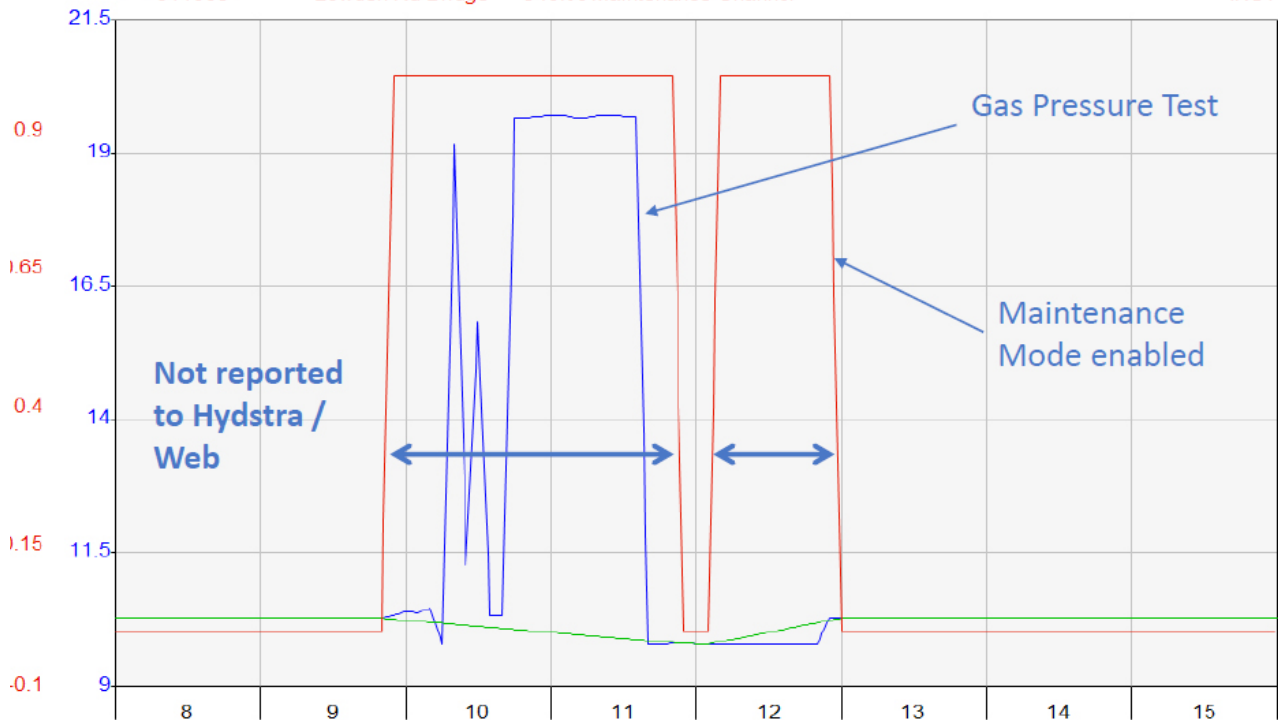
2025

— 611009 Lowden Rd Bridge 10.00 STAGE (m) F

— 611009 Lowden Rd Bridge 10.00 STAGE (m) A

— 611009 Lowden Rd Bridge 940.00 Maintenance Channel INST

INST



Upcoming Event

NZHS Technical Workshop

Back to Basics: Core Principles for a New Era

24–26 March 2026

Shantytown – Greymouth, NZ

REGISTER

Instrument Power Relay

- Remote power- cycling of Instruments
- Avoid costly field trip by road or air

Department of Water and Environmental Regulation

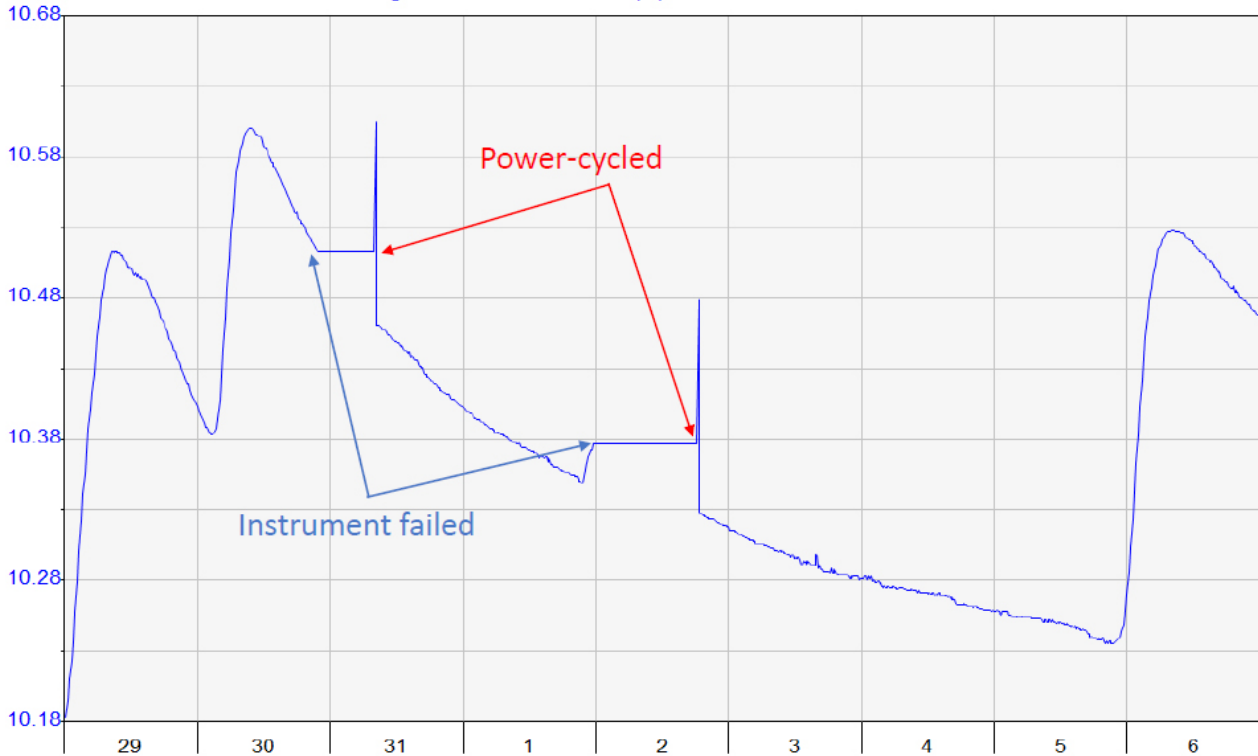
HYPLOT V134 Output 26/04/2025

Period 9 Day 29/12/2024 to 07/01/2025

2024-25

809321 Dunham Gorge 10.00STAGE (m)

ORIGTELEM



Upcoming Event

H HydroTerra
Training Courses



AUSTRALIAN
HYDROGRAPHERS
ASSOCIATION

TRAINING

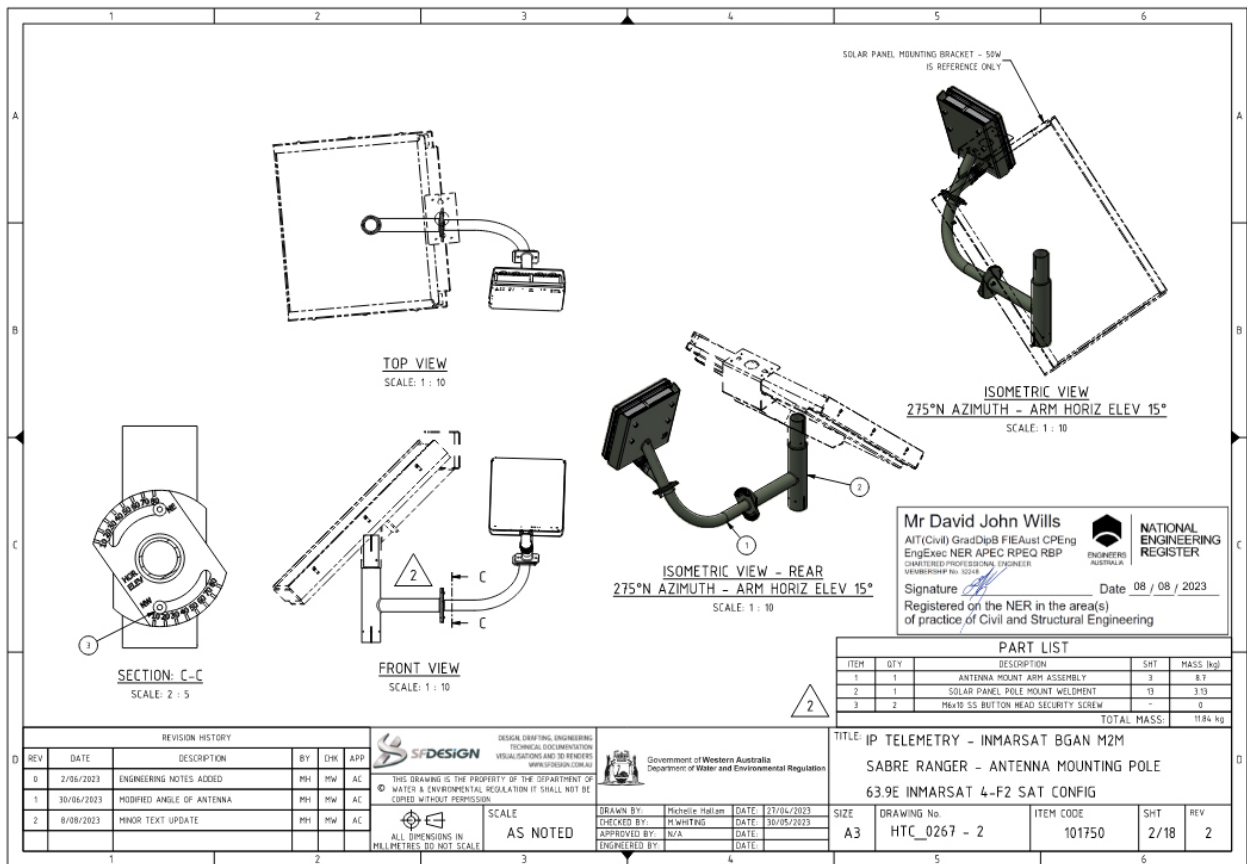
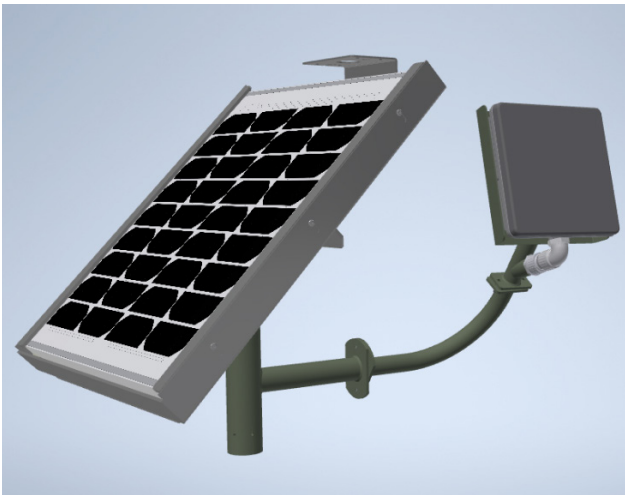
Collect and Evaluate Groundwater Data MSS025034

*Advance your career in Environmental
Monitoring, gain accredited skills in
Groundwater Data Collection and
Interpretation*



Inmarsat Terminal Mount

- Engineer approved for weight and wind load
- Integrated with existing solar panel mounts
- 3-D modelling and printing aided design process
- Focus on easy installation and adjustment to cater for two geo-stationary satellites.



Physical Rollout

- Pre-deployment – Site Equipment Checklist
- Clear dispatch labelling of equipment for each site
- Detailed step by step instructions
- Installation tool kits
- Site specific Azimuth / Elevation to align Inmarsat terminal using a drilling template
- Adoption of common ancillary equipment:
 - 6dB antenna
 - 38Ah sealed lead acid battery
 - 50W Solar Panel



Contents: **NRL - Sat.**

IS Number: **91559**

Job Number: **500667**

Site Number: **703001**

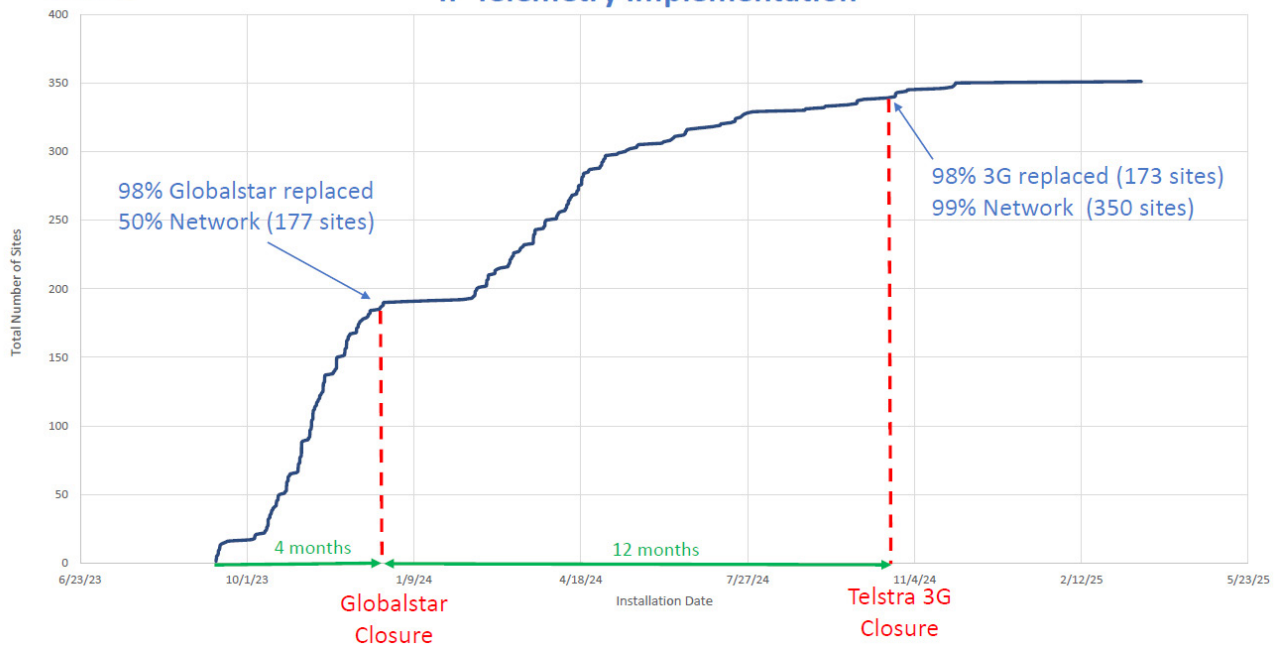
Region: **Mid-West**

Hydrologic Technology Centre
101 Kew Street, Welshpool WA 6106
Ph. (08) 9355 6200; E: htc.admin@dwer.wa.gov.au

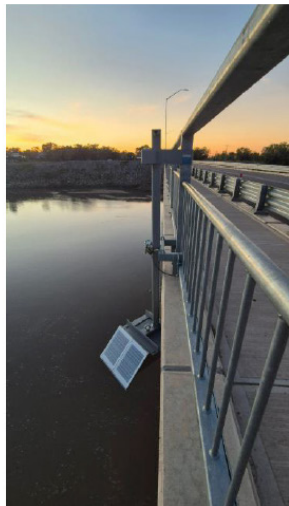




IP Telemetry Implementation



Pilbara – DeGrey River
NB-IoT
Survived Cyclone Zelia



Kimberley – Fitzroy River –
NB_iOT Radar



Kimberley Rainfall
site - Inmarsat



South West
Floatwell – NB-IoT



Instrumentation



South West
Instrument Shelter



Gas Pressure
Instrumentation

Water monitoring

It's time to safely dive into new solutions with the In-Situ range

Introducing the Aqua TROLL 700 and 800 sondes

Our latest advances in surface water analysis, these 6-sensor, 7-port sondes boast new features, like a wiper system and anti-fouling calibration, ensuring dependable data collection. The Aqua TROLL family offers a shared ecosystem.



Featuring our trusted supplier partner

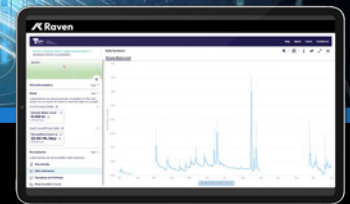


Learn more at thermofisher.com/surface-water

For Research Use Only. Not for use in diagnostic procedures. © 2023 Thermo Fisher Scientific Inc. All rights reserved. Trademarks used are owned as indicated on thermofisher.com/trademarks



Empowering decisions of tomorrow



Discover the power of unified environmental data with KISTERS Raven.

KISTERS Raven is a web-based portal that simplifies environmental data sharing, providing seamless integration, real-time insights, and modern usability for organisations of all sizes.

- **Near-real time access:** Analyse data in one simple interface.
- **Embed live data:** Add live data to your site effortlessly.
- **Advanced filtering:** Locate key stations fast with smart filtering tools.
- **Save & share:** Share datasets and insights instantly.
- **Scalable integration:** Compatible with Hydstra, WISKI and more.



Book your free demo

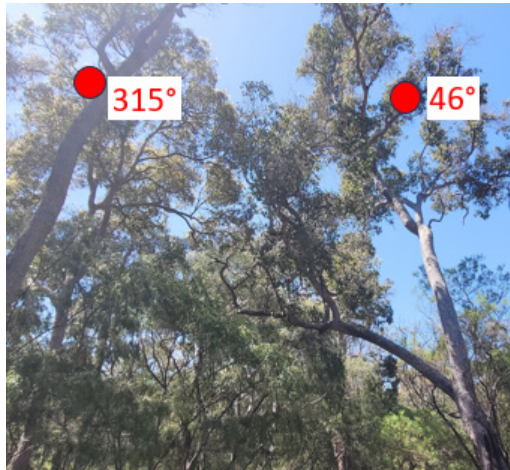


Explore Raven live



Issues Faced

- USB-B cable connector – ‘..Devil is in the detail...’
- Satellite
 - Orbiting Inmarsat satellite replacement and re-positioning caused onsite alignment issues
 - Random Inmarsat Terminal lockups
- Sites in Forested Areas
 - Tree canopy blocking sky view to satellites
 - Canopy change reducing solar panel performance
 - Undersized or old solar panels



Random Terminal Lockups

- Intermittent authentication caused internal Terminal re-boot
- Coincident with power cycle caused Terminal lockup

Department of Water and Environmental Regulation

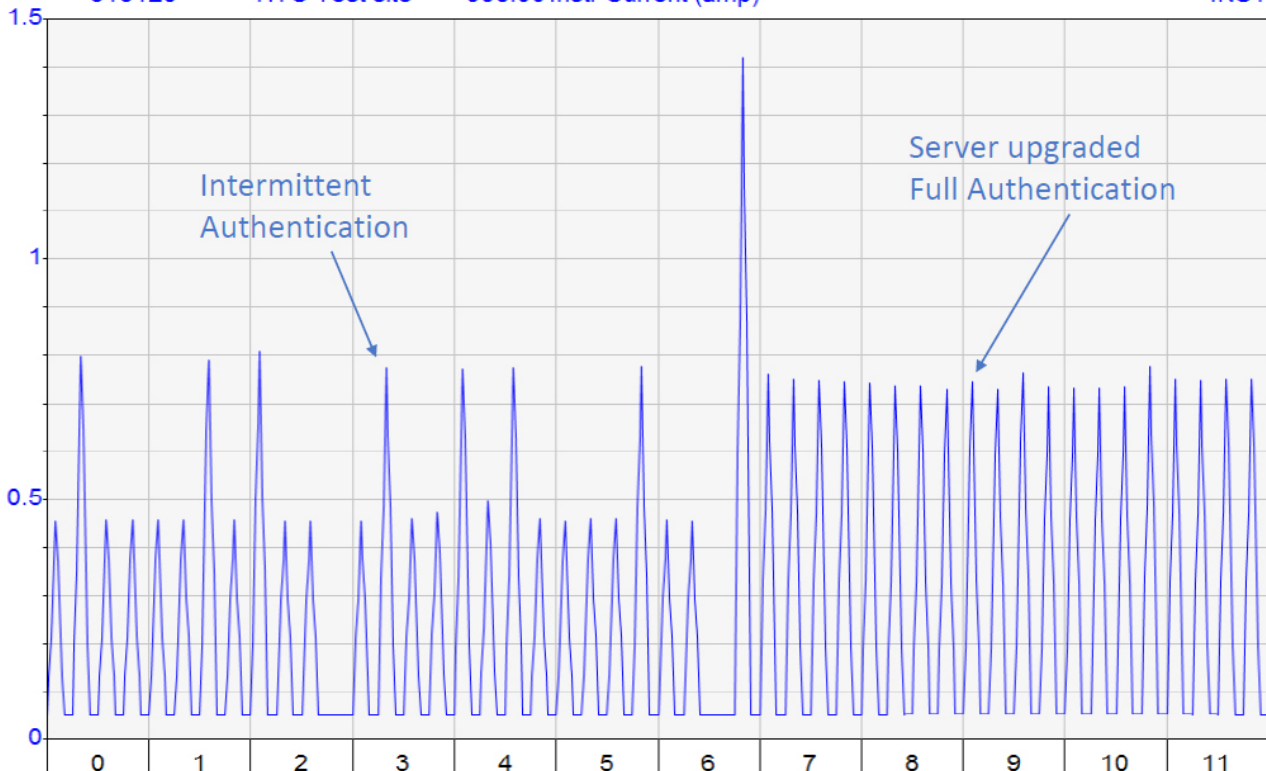
HYPLOT V134 Output 25/04/2025

Period 12 Hour 11/10/2024 to 12:00_11/10/2024

2024

— 616129 HTC Test site 995.00 Instr Current (amp)

INST



Solar Panel Shading

- Poor re-charge
- Options
 - Reduce communication frequency
 - Vegetation clearing (Approval?)
 - Relocate Panel infrastructure

Department of Water and Environmental Regulation

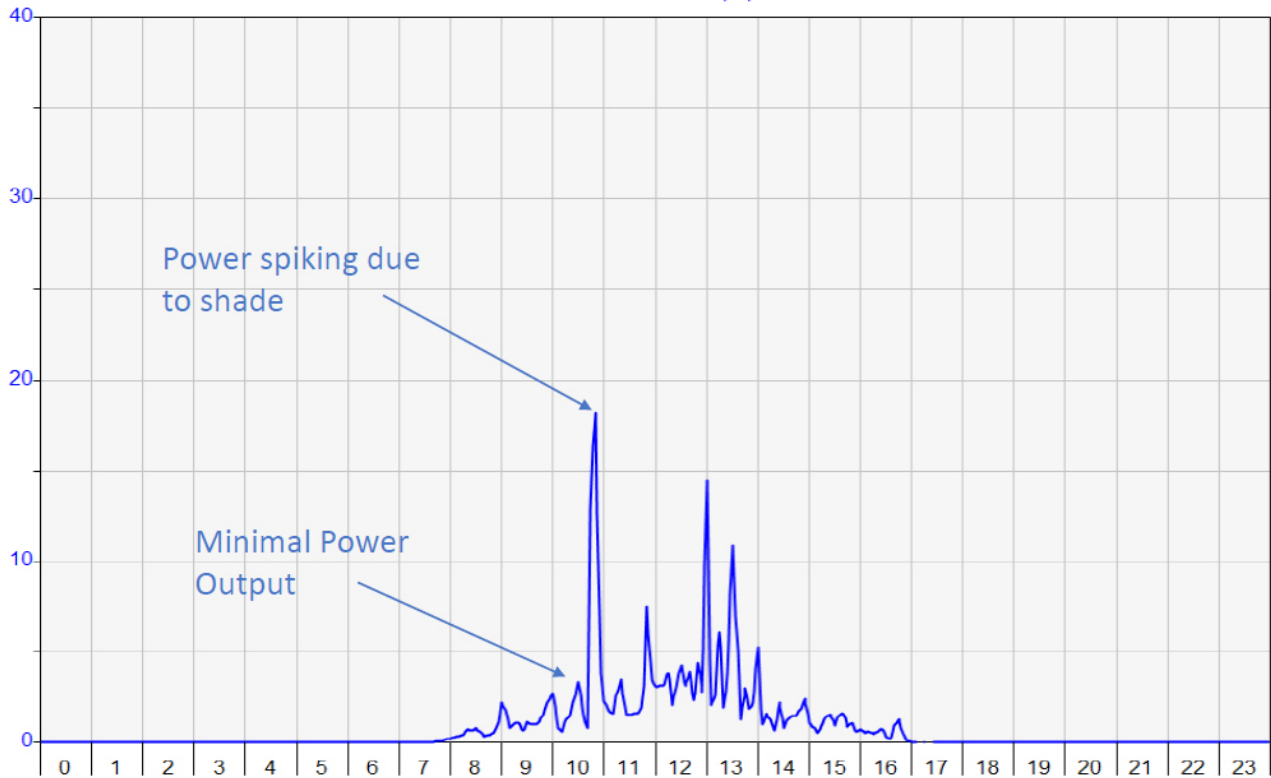
HYPLOT V134 Output 16/04/2025

Period 1 Day 23/07/2024 to 24/07/2024

2024

608002 Staircase Rd 985.00 Solar Panel Power(W)

INST



Upcoming Event

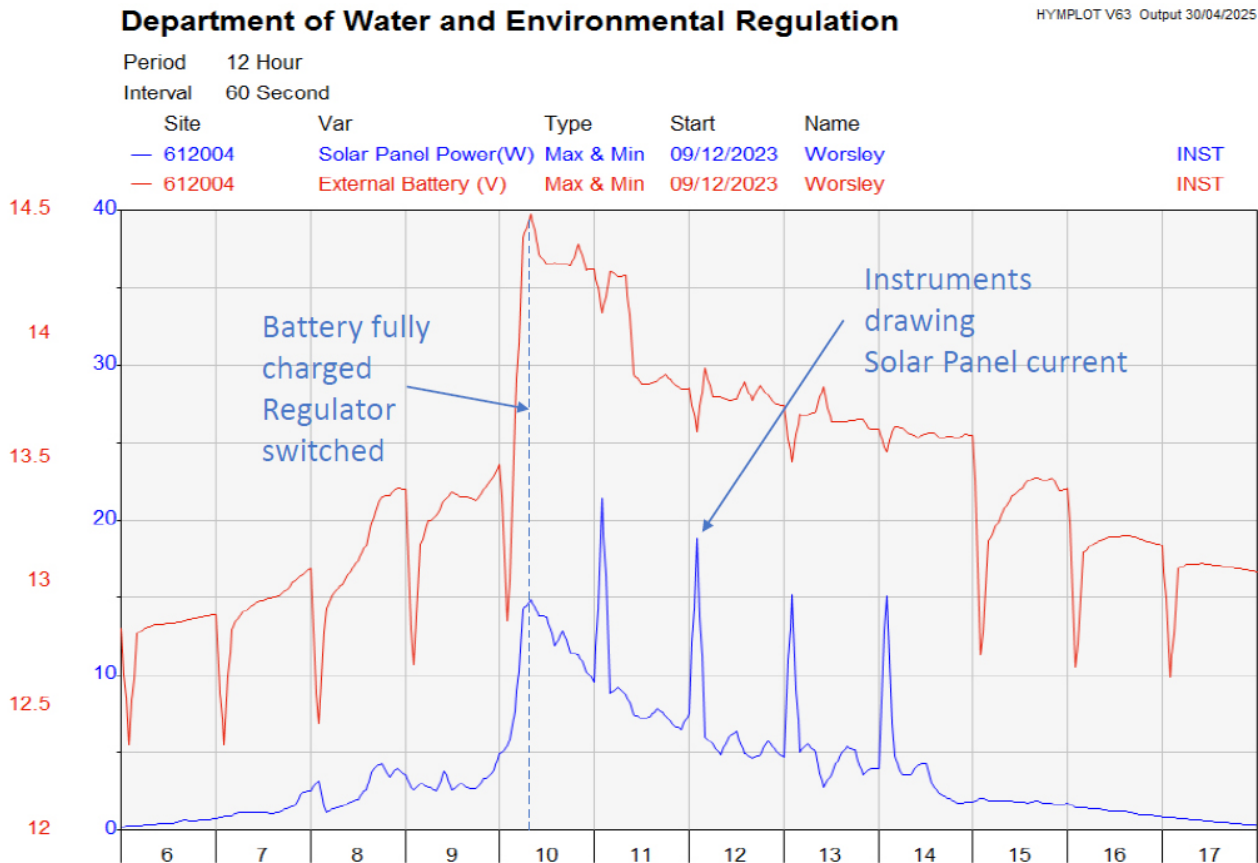


AHA TECHNICAL WORKSHOP 2026

14 - 17 SEPT 2026 | VICTOR HARBOR, SA

Solar Panel Capacity

- 10W Solar Panel output insufficient
- Red - Battery Voltage
- Blue - Solar Panel Power
- Replaced with 50W Solar panel more than adequate



Post Replacement

- NB-IoT network coverage improving - 10+ sites converted from Satellite
- NB-IoT network resumption slow - 3 sites converted to Satellite
- Intermittent Inmarsat communication - 8 sites converted to Iridium Certus

Other successes:

- Field Vehicles - Starlink Terminals - Microsoft Teams calls

Future Improvements

- Satellite based NB-IoT services i.e.
 - Starlink Direct to Cell
 - Inmarsat Direct to Device
- Shade-tolerant solar panels
- Improved power consumption data analytics
- Broader adoption of Lithium Iron Polymer (Li-FePO₄) batteries
- Wind Power as an alternate charging option



Government of **Western Australia**
Department of **Water and Environmental Regulation**

Satellite Derived Water Quality Monitoring as a Potential Tool to Enhance Water Resource Monitoring Programs

Presentation from the AHA Conference 2025 – Justin Stockley
(Surface Water Business Development Asia Pacific – Xylem Analytics)



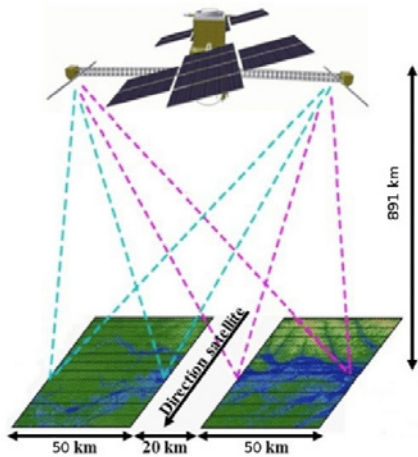
In 2008, more than 150 Earth Observation satellites were in orbit, recording data with both passive and active sensors and acquiring more than 10 terabits of data daily.

By 2021, that total had grown to over 950.

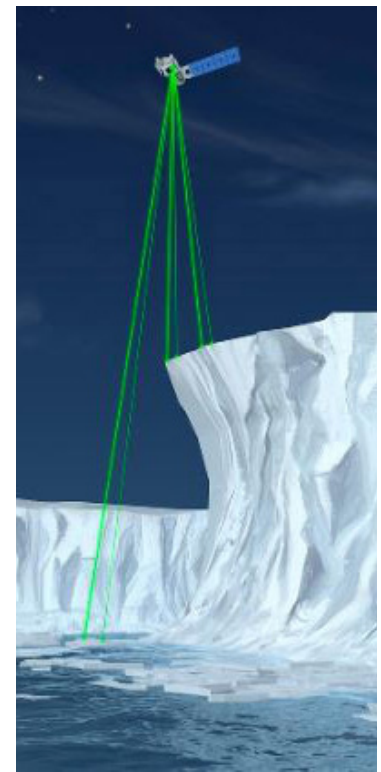
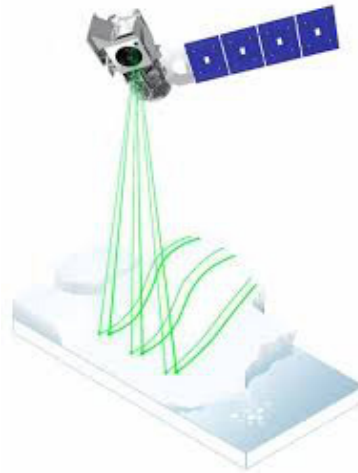
Elevation from Space

The SWOT and ICESat-2 measure Water Surface Slope (WSS).

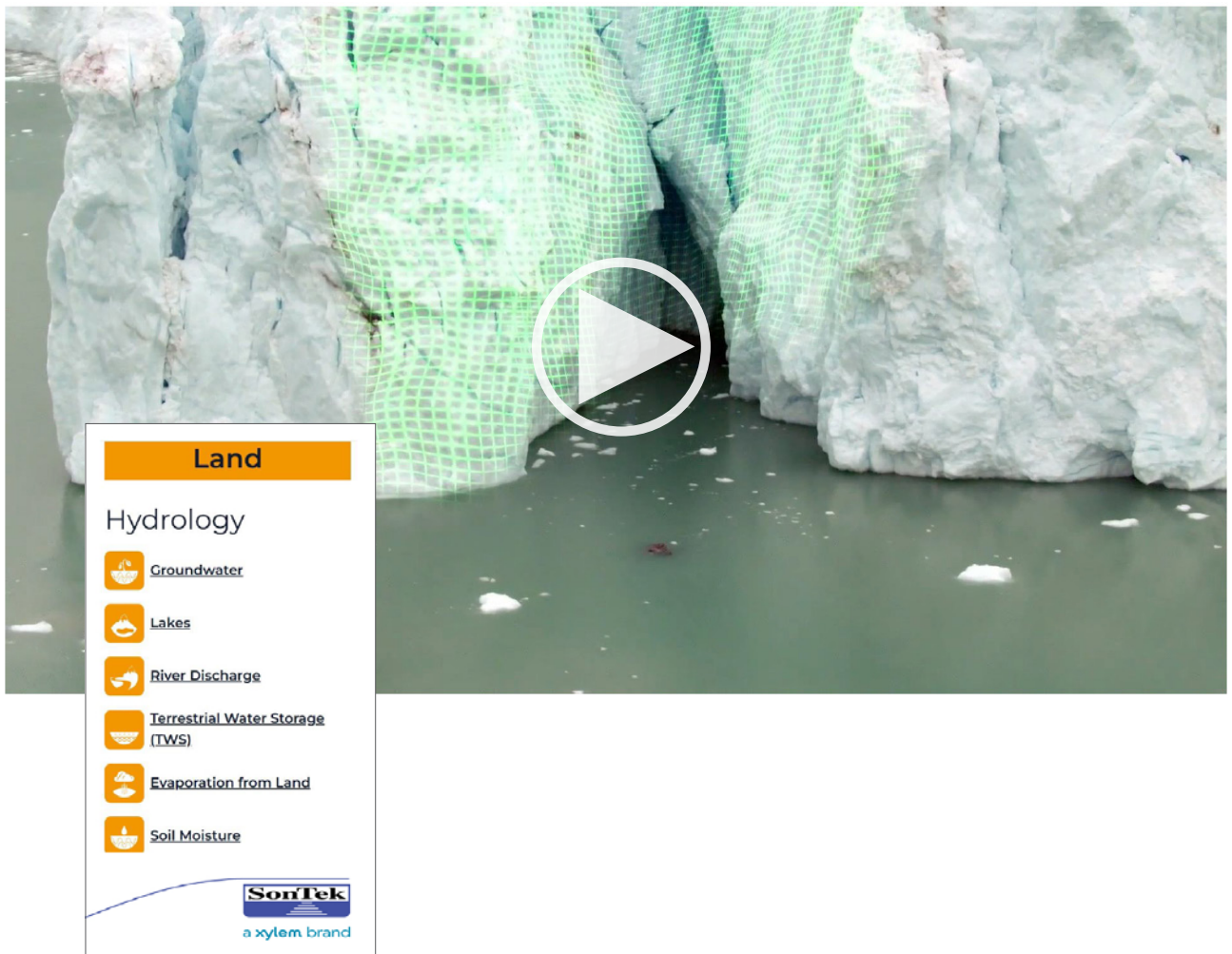
Required to calculate river discharge, one of the Essential Climate Variables (ECV) as defined by the Global Climate Observing System (WMO).



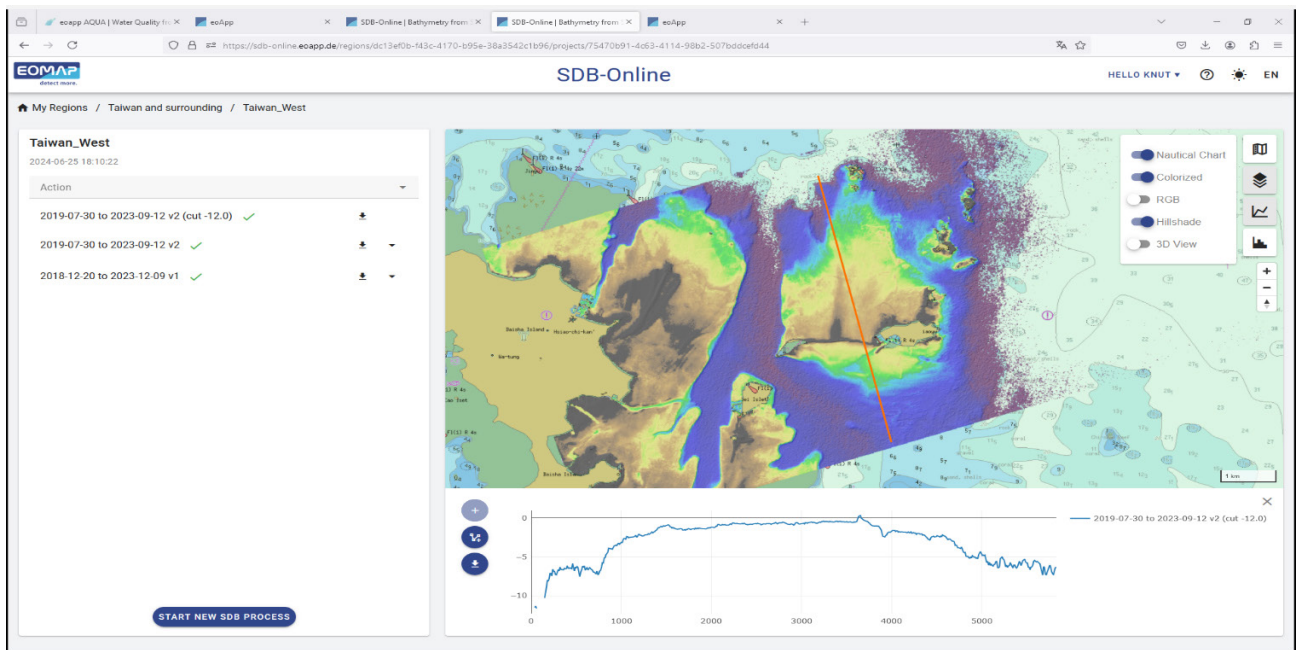
SWOT (Surface Water and Ocean Topography) - 16/12/2022



ICESat-2 15/09/2018



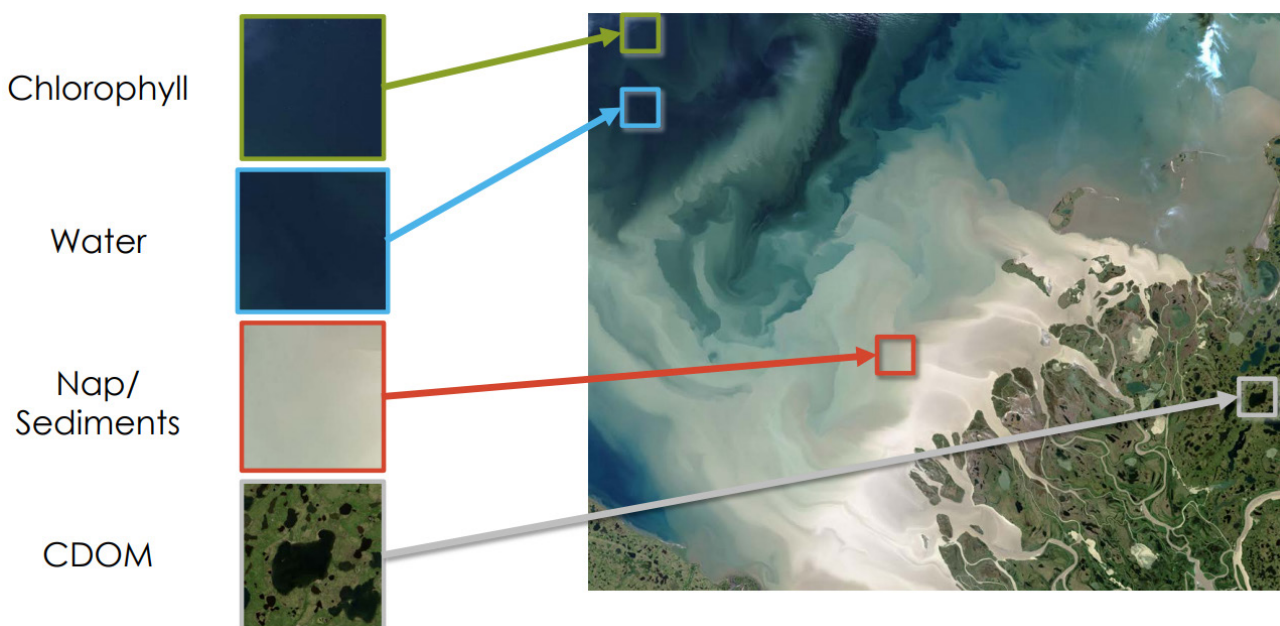
SDB Bathymetry



How are Satellites used for Water Quality Monitoring

Use instruments and sensors to measure the light reflected or emitted from terrestrial and atmospheric sources

- Water quality affects optical properties of water and changes the color of water



WMO-compliant rain gauges.

Powering precision, compliance and climate confidence.

Accurate rainfall data underpins critical decisions in water resource management, flood forecasting, infrastructure planning, and environmental reporting.

KISTERS offers more than a compliant rain gauge our integrated meteorology system reduces manual handling, enables remote access, and ensures a seamless flow from field collection to insight.



Get the knowledge you need to make a smart, compliant and future-ready rainfall monitoring investment.

Download your
FREE buyers guide



Work on the wild side

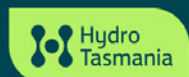
Hydro Tasmania manages one of Australia's most extensive water monitoring networks, supporting renewable energy generation across lakes, rivers, dams and catchments statewide.

We're inviting Hydrographers to register their interest in upcoming roles at Hydro Tasmania.

Complete the form here



hydro.com.au



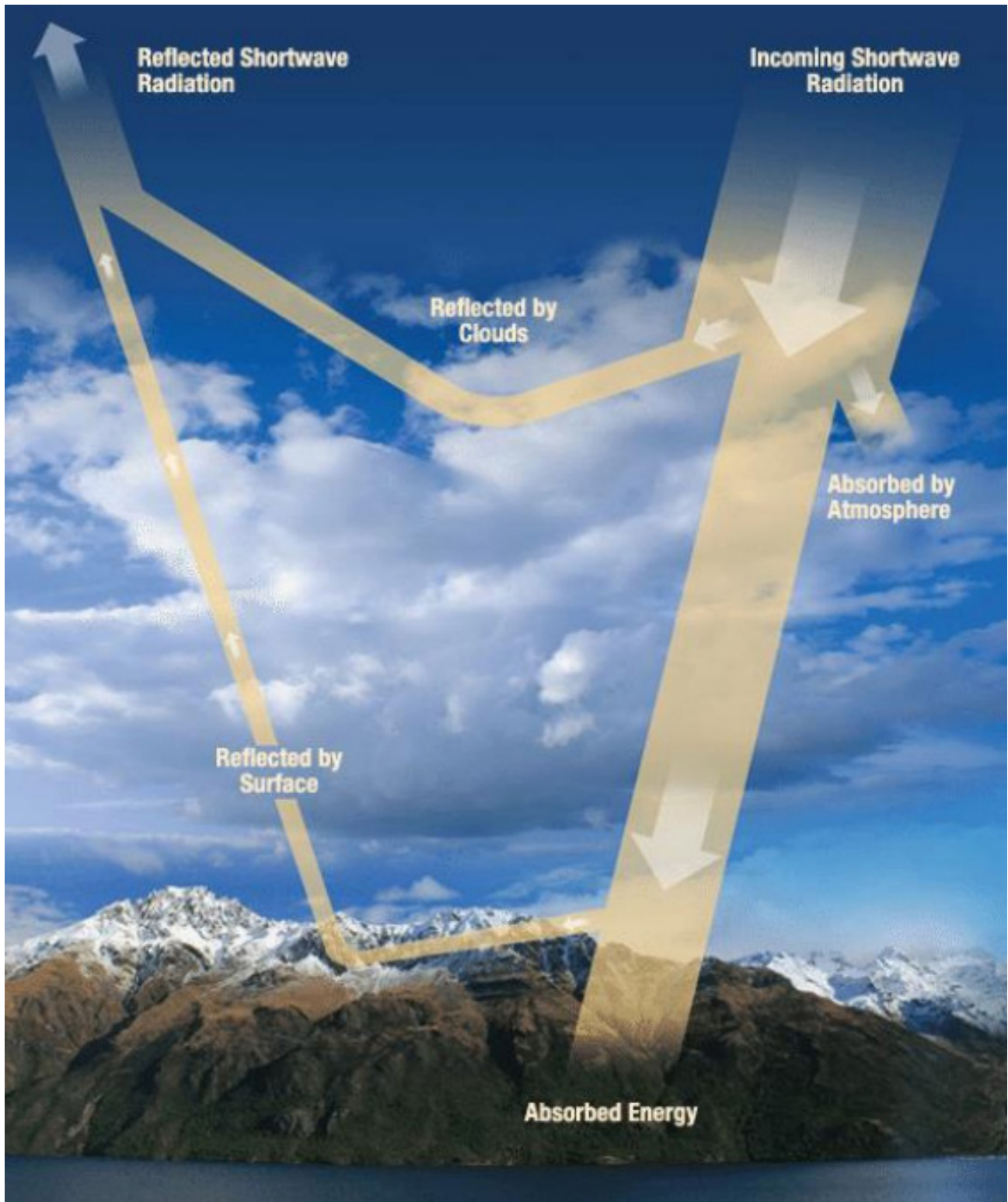
Multispectral Imaging System (MIS)

The sensor is a multichannel detector with a few spectral bands.

Each channel is sensitive to radiation within a narrow wavelength band.

The resulting image is a multilayer image which contains:

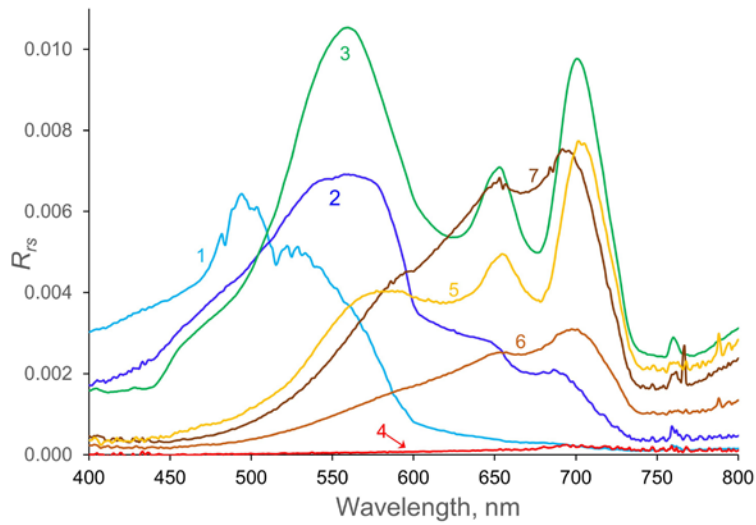
1. the brightness
2. spectral (colour) information of the targets being observed.



Reflectance spectra for waters dominated by various optical properties

1. nearly pure water, 2. clear, oligotrophic water, 3. chlorophyll, 4. CDOM, 5. CDOM and chlorophyll, 6. and 7. CDOM and suspended matter.

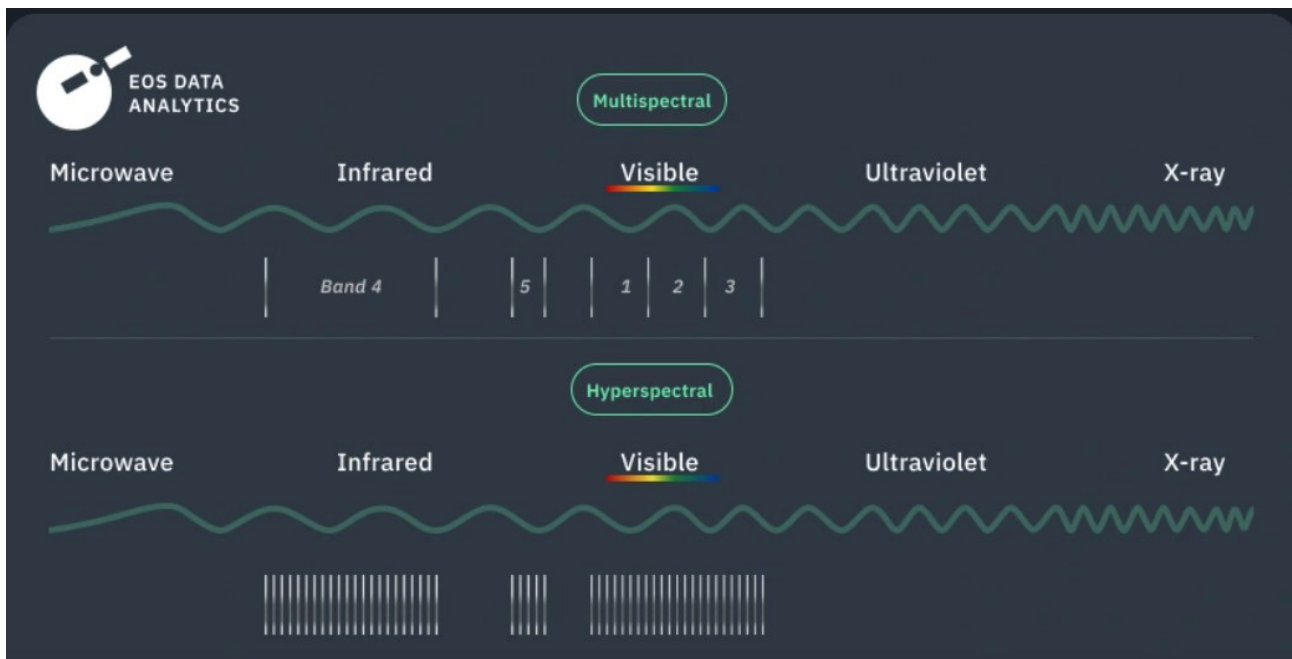
By analysing the spectral signatures of the reflected light, scientists can infer the concentration and distribution of different substances in the water.



Hyperspectral vs Multispectral

Hyperspectral is easily affected by environmental conditions and requires thorough calibration. Because of this, HSI should only be used in controlled settings or for very particular scientific studies.

Multispectral imaging does not have these restrictions; it works well in a wide range of environments and is less impacted by atmospheric interference, hence it has more potential uses.



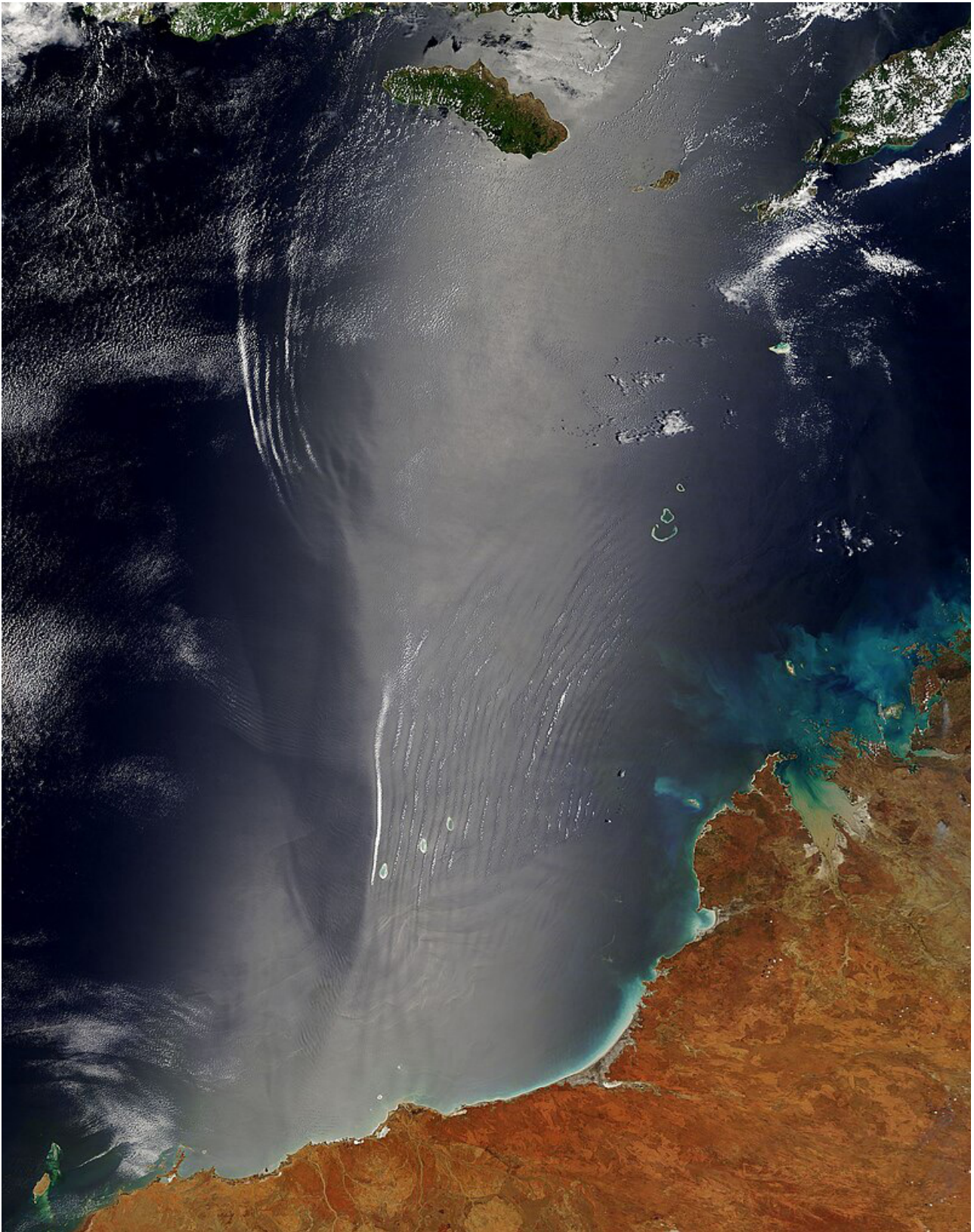
How Satellite Data are Converted to Water Quality Data

Satellite sensors measure top-of-atmosphere (TOA) radiances

- Come from surface and atmospheric conditions (including clouds, aerial particulates)

Sources of Interference:

1. Atmosphere
2. Atmosphere/Surface Interaction
3. Sun-glint



Solar-Powered Flow Monitoring

“Simple installation, simple data retrieval and reliable collection makes this a win for clients all the way around.”

C. Davis, Lower 48 Instruments



Contact MACE Australia: +61 2 9658 1234



AEM Elements® 360 Ready for What's Ahead



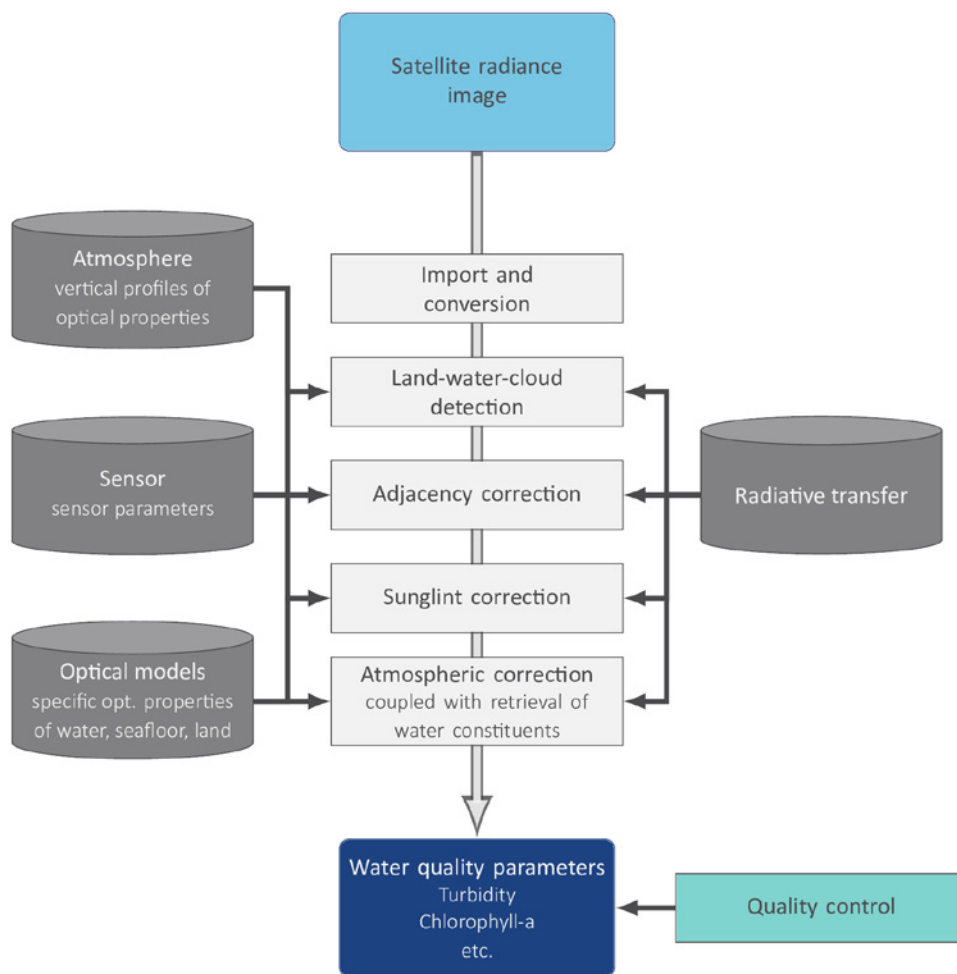
- Seamless drop-in replacement for Enviromon that delivers advanced next-gen capabilities.
- Integrates diverse sensors and 50+ source formats, including ALERT1/ERTS, ALERT2, HCS, HFEM, Enviromon Datagram, and more.
- Tested, verified, and compliant with Bureau of Meteorology operational and cybersecurity standards.

REQUEST A DEMO

Scan the QR code
or visit aem.eco



Example Water Quality Algorithm Process



1. The algorithms take all relevant environmental impacts into account and do so for each individual measurement and pixel including:
2. Water, land, cloud identification
3. Estimation and correction of atmosphere and aerosol impacts
4. Correction altitude level impacts
5. Correction of adjacency impact (light scattering into the water signal from adjacent land surfaces)
6. Correction or flagging of sun-glitter impact
7. Retrieval of in-water absorption and scattering as physical measures
8. Accounting for varying spectral slopes of specific inherent optical properties
9. Provision of uncertainty measures and flagging procedures
10. Accounting for the full bidirectional effects in the atmosphere, at the water-atmosphere boundary layers and in-water, using a fully coupled radiative transfer model
11. Application of procedures to minimize errors, resulting from the coupled interaction of light between atmosphere, water surface and in-water on the signal, through coupled inversion procedures

Example Parameters

ABS
Total Absorption [1/m]
Total absorption is retrieved from the absorption of light by particulate and dissolved organic and inorganic matter at a specific reference wavelength, defined at 440nm.

CDM
CDOM, Yellow substance [1/m]
CDM comprises all colored dissolved organic matter (CDOM) which influences the water color. It is measured in terms of absorption at a specific reference wavelength, defined at 440nm.

CHL
Chlorophyll [µg/l]
Chlorophyll-a is based on the derived information of in-water organic absorption, in-water turbidity, and spectral characteristics of each water body.

HAB
Harmful Algae Bloom Indicator
The algorithm detects areas likely affected by harmful algae blooms formed by cyanobacteria containing phycocyanin pigments by analyzing spectral trends in the green-red wavelength bands as a proxy.

SDD
Secchi Disc Depth [m]
Secchi Disc Depth or transparency indicates the clarity of the water column. The related measure of Secchi Depth (measured with a Secchi Disc) is a common parameter in water quality analysis.

SIA
Sum of Inorganic Absorbers [1/m]
The sum of inorganic absorption is retrieved from the absorption of light by particulate and dissolved inorganic matter at a specific reference wavelength, defined at 440nm.

SOA
Sum of Organic Absorbers [1/m]
The sum of organic absorption is retrieved from the absorption of light by particulate and dissolved organic matter at a specific reference wavelength, defined at 440nm.

TSC
Trophic State Index
Trophic State Index range from 0 to 100.

TUR
Turbidity [NTU]
Turbidity is derived from the scattering caused by suspended particles in water and determined by the backward scattering of light between 450 to 800nm.

TSM
Total suspended matter [mg/l]
TSM is essentially related to the total scattering of particles in the water column and determined by the backward scattering of light in the visible region.

SST
Sea Surface Temperature [°C]
Sea Surface Temperature is calculated from thermal infrared channels.

WEX
Water Body Extent
Water Body Extent discriminator between land/clouds and water pixels based on typical reflectance features in visible and near/shortwave infrared regions.

Main Groups of Satellite Resolution

Resolution	Description	Interpretation
Spatial	Surface area that forms one pixel of the image	Higher resolution means less area covered
Temporal	Time (d) it takes for satellite to complete one orbit (revisit time)	Higher resolution means shorter revisit time
Spectral	Number and width of spectral bands of the sensor	Higher resolution means narrower wavelength range for a given channel or band

2024-04-16 10:48:06
☁ 70.62 % 🌐 Sentinel-2 (+)

2024-04-15 10:22:58
☁ 70.76 % 🌐 Landsat 9 (✓)

2024-04-13 10:38:08
☁ 72.82 % 🌐 Sentinel-2 (✓)

2024-04-11 10:48:03
☁ 28.17 % 🌐 Sentinel-2 (✓)

Temporal and Spatial Resolution – Sensors

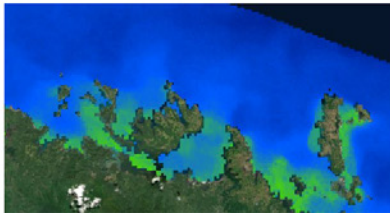
Coarse/Daily Since 1999



Modis Aqua/Terra
VIIRS, Sentinel 3

300 m

Coastal areas, large lakes



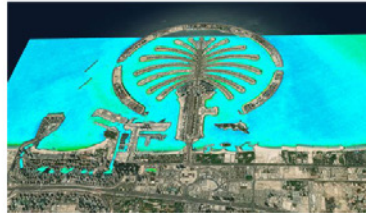
Fine/Weekly Since 1984



Landsat Fleet (5-9)
Sentinel 2A/2B

10-30 m

Smaller structures on a regular
basis



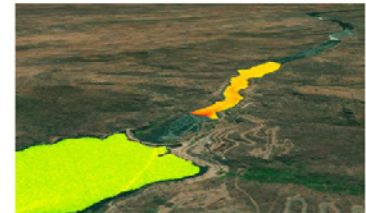
Fine/Daily Since 2019



Planet SuperDoves

3 m

Small lakes and rivers



Advantages of Satellite Sensor-Derived Water Quality Data

1. Bigger spatial coverage and longer periods of time
 - a. Data continuity
 - b. Baselines and trends, tracking of process
2. Globally consistent and comparable observations
3. Many different parameters
4. Data can be cross-checked/integrated with in situ data
5. Mostly free and open access data

Disadvantages of Satellite Sensor-Derived Water Quality Data

1. Difficult to get high spectral, spatial, temporal, and radiometric resolution at same time
2. Loads of data in different formats
 - a. Increases the time to interpret data
 - b. Requires training and complicated processing
 - c. Requires tools to process, visualize, and interpret
3. Shallow water experiences interference from the bottom
4. Smaller bodies of water are not ideal for the spatial resolution of sensors
5. Atmospheric interference

Rapid. Accurate. Reliable.



right solutions.
right partner.



Introducing advanced, AI-enabled velocity and discharge measurement in Australia from global testing leader ALS

Complex monitoring challenges have met their match: ALS now provides hydrological solutions using the Hydro-STIV® portable and real-time monitoring system with video image analysis – innovative technology for rapid and accurate flow velocity and discharge measurement.

Exclusively available in Australia and Papua New Guinea from ALS, our new service offers:

- Minimised manual monitoring in hazardous environments
- Enhanced safety while delivering reliable, high-quality data
- Support that leverages ALS' trusted technical expertise and ISO-certified processes.

From river and stream discharge monitoring and flood risk assessment to research and infrastructure planning, rely on our new service to meet your hydrographic needs.



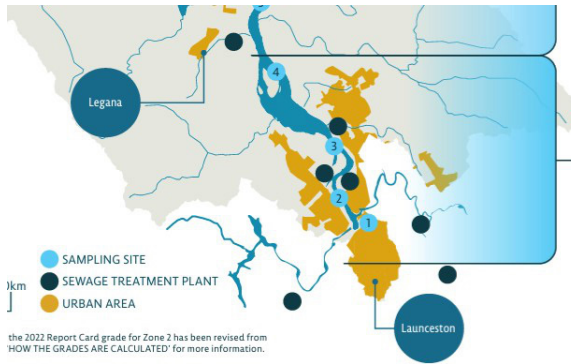
For product enquiries or to request a quote, contact the ALS Hydrographics team at hydrographics-STIV@alsglobal.com

Learn more about our wide range of solutions and services at alsglobal.com/hydrographics



Hydro-STIV is a registered trademark of Hydro Technology Institute Co., Ltd.

Launceston Water Quality

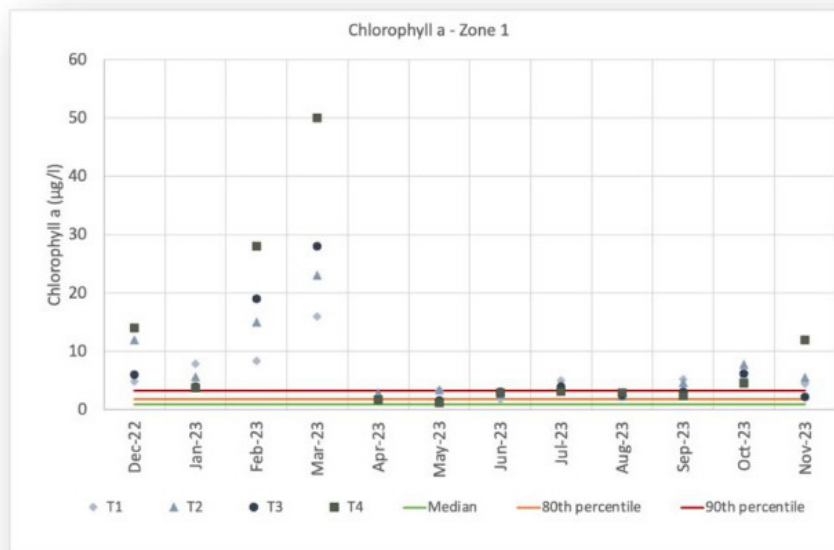


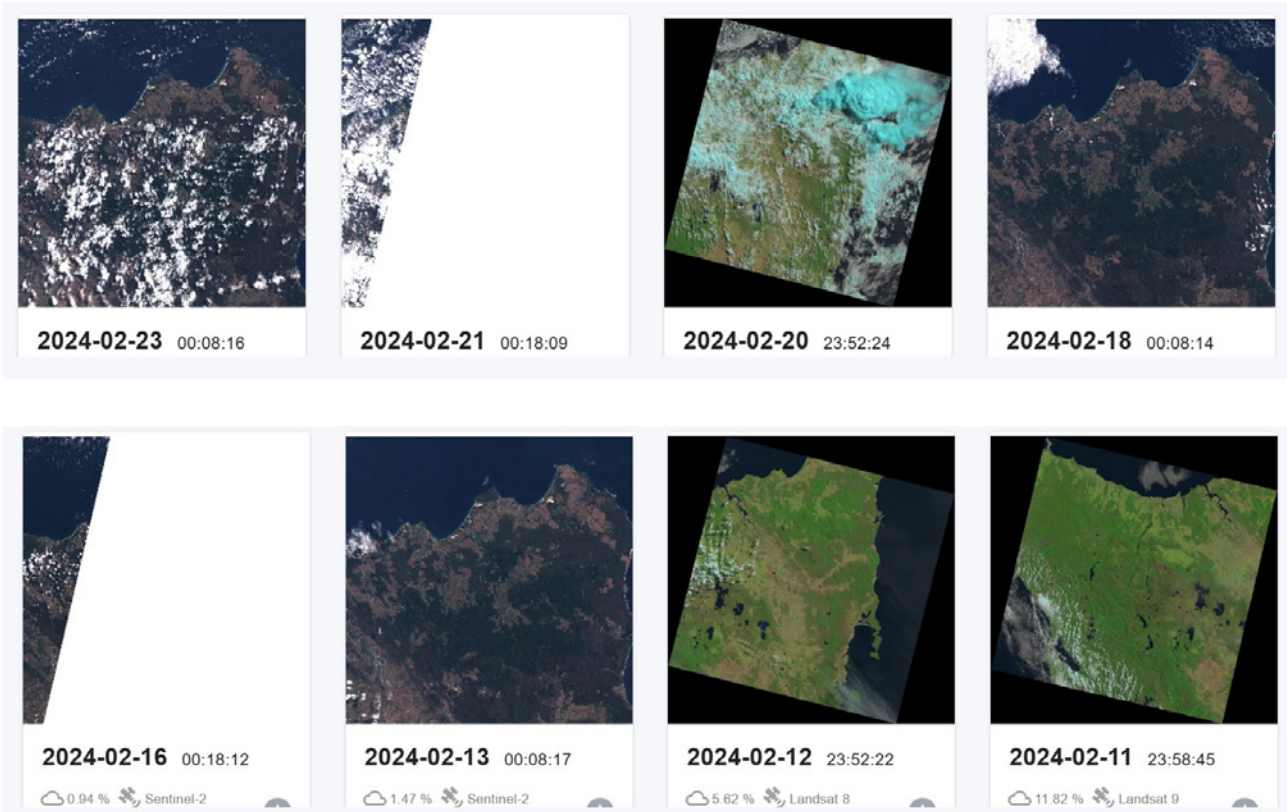
ZONE 1 D Launceston to Legana Poor ecosystem health (2022 grade: D)

Zone 1 has consistently received 'poor' grades in past reporting year continues to be predominately driven by high levels of total nitrogen, phosphorus, and elevated turbidity. Levels of chlorophyll-a have increased in the 2022 Report Card, while acidification continued to impact ecosystems in this zone. Dissolved metals concentrations were varied, with elevated aluminium and copper offset by large reductions in zinc. Dissolved copper increased throughout the zone.

3.5.3 Chlorophyll-a

The below figure shows observed values of surface chlorophyll-a (ChlA) over the reporting period in Zone 1 (see Figure 65). This figure shows sites in Zone 1 experience extremely high concentrations of ChlA in some months with peak observed concentrations being 16 to 50 times higher than the median. The highest ChlA concentrations are experienced in late summer and early autumn with other summer months exceeding the threshold for the 90th percentile and spring seeing a steady increase in concentration to above the 90th percentile.





← Back to region overview

Gridded EO products ^

Layer
Chlorophyll-a ▾

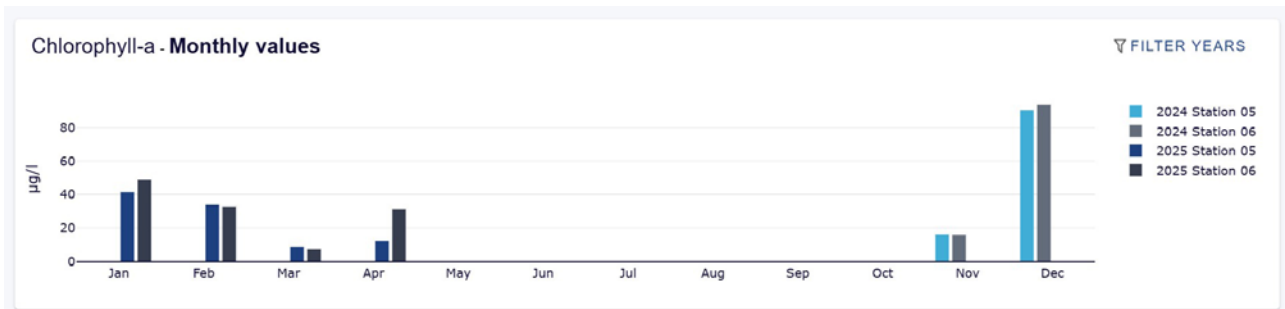
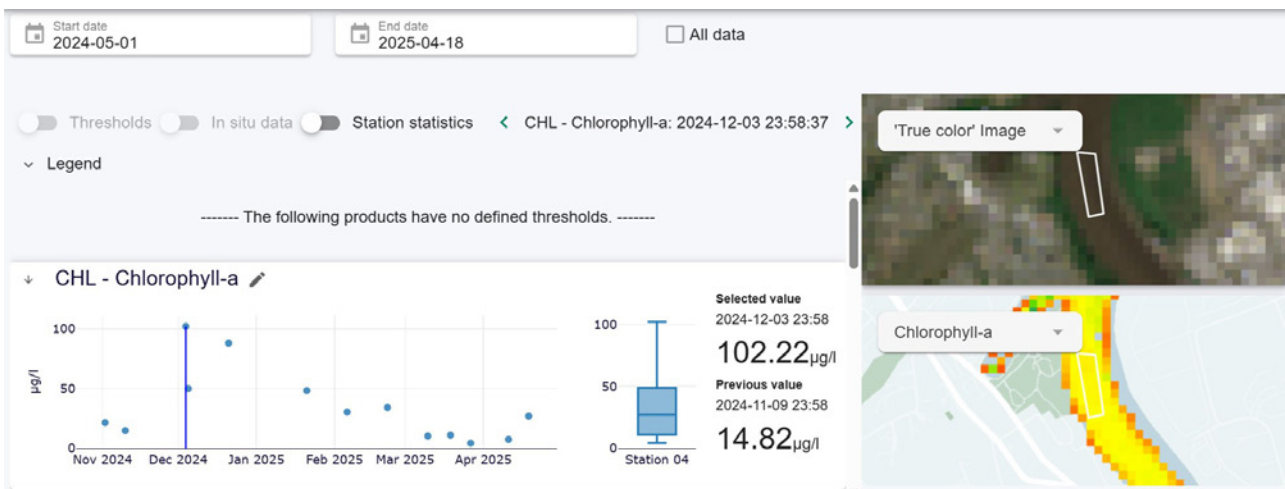
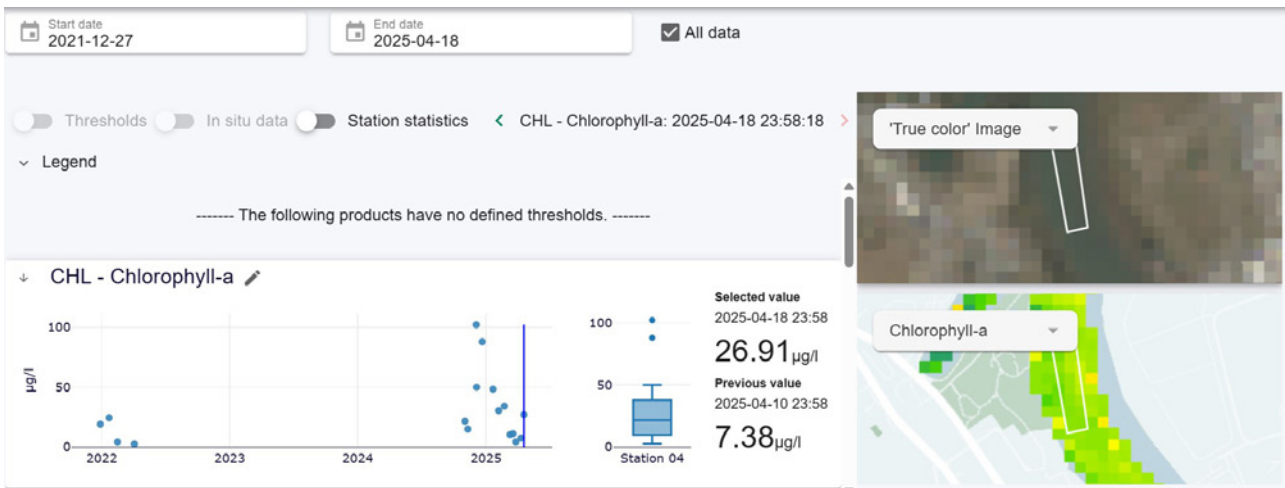
Temporal aggregation

Single scenes Daily

Monthly Custom

Date and time (UTC) of displayed layer
◀ 2025-04-18 23:58:18 ▶

In situ and model data >



Chlorophyll-a - Station 05

Min
4.06

Max
102.69

Median
19.39

Standard deviation
31.18

Number of alerts
0

Number of scenes
42

5 highest values

Date	Value [µg/l]	Date	Value [µg/l]
2024-12-03	102.69	2025-03-18	4.06
2024-12-20	90.49	2025-04-10	4.84
2024-12-04	65.11	2025-03-09	8.75
2025-01-20	41.41	2025-03-26	12.79
2025-02-05	35.75	2024-11-01	15.81

5 lowest values

Chlorophyll-a - Station 06

Min
4.36

Max
113.40

Median
35.79

Standard deviation
34.30

Number of alerts
0

Number of scenes
42

5 highest values

Date	Value [µg/l]	Date	Value [µg/l]
2024-12-20	113.4	2025-03-26	4.36
2024-12-03	93.63	2025-03-09	7.29
2025-03-18	79.49	2025-04-10	12.2
2024-12-04	73.84	2024-11-09	15.41
2025-04-18	50.24	2024-11-01	15.95

5 lowest values

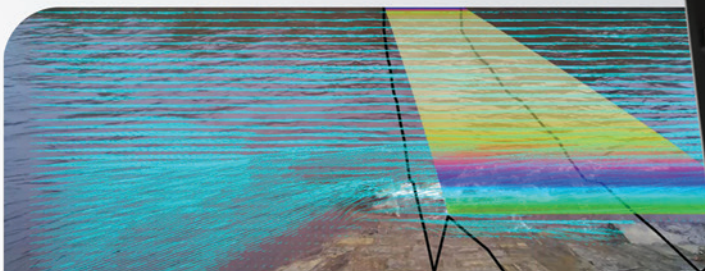


xylem

Introducing the
SonTek QC4

Releasing March 2026

Next-generation flood monitoring technology.
Australian designed and manufactured.



To find out more, contact: salesaus@xylem.com



