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Newsletter 01 May 2024

Kia ora koutou,

This is our first newsletter to provide an update and to let you know how you can get involved with the NIWA-led project to provide **High Frequency Water Quality Monitoring Guidance**. The aim of our two-year project is to support anyone wishing to deploy a water quality sensor in rivers, lakes and estuaries.

About the project

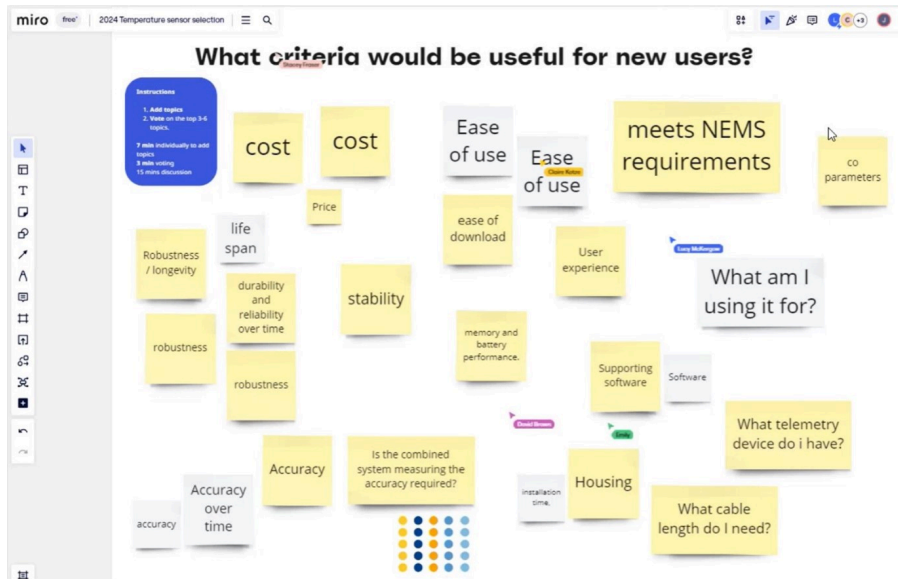
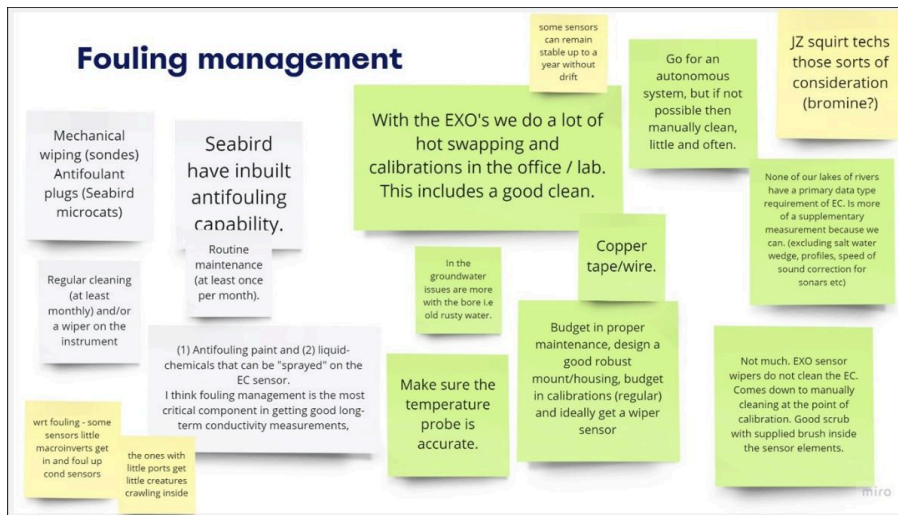
A workshop involving regional council staff held in 2022 revealed an urgent need to underpin high frequency water quality (HFWQ) monitoring activities with up-to-date information and guidance. A NIWA team is developing guidance on aspects of autonomous, HFWQ monitoring assisted by experienced practitioners from most regional councils around the country. The guidance focuses on when use of HFWQ sensors is appropriate; resourcing requirements; sensor selection; and automated detection of anomalies in output data. The use cases and resourcing guidance will support users when developing business cases and planning projects. The guidance will provide information regarding sensor reliability and performance. It will also demonstrate the use of tools for checking and editing data, as well as reducing time lags between measurement and decision making. The final guidance will be made available on the **EnviroLink** website for environmental practitioners, community groups and individuals who are planning to undertake HFWQ monitoring. To find out more about the project and how you can become involved and to sign up to receive our regular updates [Click Here](#)

Ngā mihi,
Project Leader
Lucy McKergow

Progress Update

Workshops...workshops...workshops!

The regional council workgroups and NIWA project team have completed five workshops since October 2023. At each of the workshops, regional council staff and other helpful experts shared an immense volume of knowledge.



Miro screenshots from the electrical conductivity and temperature workshops.

Nitrate Sensor Workshop

In the nitrate sensor workshop, fouling management was identified as a key data quality issue. One option available to sensor users is to use a third-party wiper, such as the ZebraTech wiper. The traditional wire loop ZebraTech wiper works well but for some applications a different brush design is required. One example shared in the workshop, was a custom designed ZebraTech wiper brush for a groundwater application. It is more compact than a regular wiper and has longer bristles to reduce debris catching in the brush.



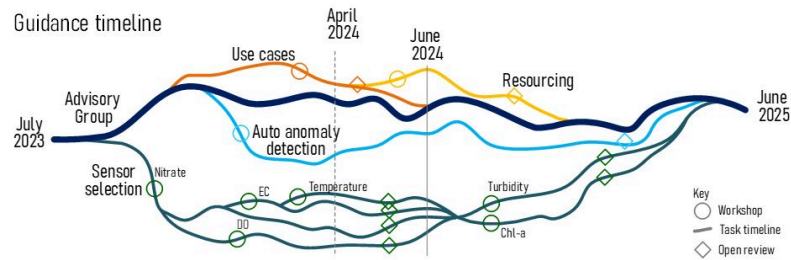
Traditional wire loop wiper brush from ZebraTech (photo: Evan Baddock, NIWA) versus a custom design (right, photo: Hamish Carrad, ECan).

NZHS Technical Workshop – Queenstown

A wet and chilly week in Tāhuna/Queenstown didn't deter attendees at the NZHS Technical Workshop from discussing sensors, data workflows or enjoying the field day on Kimiākau, the Shotover River. Amber Spackman Jones, an expert on hydrological data workflows and automated anomaly detection, was a keynote speaker at the Queenstown Workshop. Amber presented on several data workflow topics and gave a demo of her automated anomaly detection tool `pyhydroqc` in the Data Workshop. A summary of Amber's research is available at [Amber S. Jones | U.S. Geological Survey \(usgs.gov\)](#). Amber's successful first visit to Aotearoa was funded by Aquatic Informatics and the New Zealand Hydrological Society. The NIWA project team also presented on the Automated Anomaly Detection task (David Wood) and the findings of nitrate and low range turbidity sensor tests (Alex Vincent, Lucy McKergow). Rob Davies-Colley and Marty Flanagan also ran a research experiment comparing visual clarity methods during the Kimiākau/Shotover River field day. Over about a 3-hr period of changeable flow and clarity the average measured visual clarity was 13 cm (range 10-15 cm, $N = 18$), and the average *predicted* visual clarity from the in-situ C-star was about 14 cm. All Workshop presentations were recorded and will be available shortly on the NZ Hydrological Society website, hydrologynz.org.nz.

Draft Guidance Review

The NIWA project team are working with the workgroups to draft the guidance and will share the draft guidance for wider review during May 2024. For each guidance task the review window will be open for two weeks. To make review and collation of responses efficient, we intend to provide access to shared documents hosted on a NIWA SharePoint site.



Up to date project timeline with guidance review dates.

Recruiting - get involved!

Sensor Selection Tasks

We are recruiting regional council experts to assist with the two remaining Sensor Selection tasks (turbidity and chlorophyll via fluorescence). Task plans, which outline the task activities, timing for completion, and likely resource requirements, are available via the project Advisory Group which has representatives on the ED, SWIM, Lakes Forum and Coastal SIGs. If you have 3+ years' experience working with either turbidity or fluorescence sensors, please consider joining the workgroup (10-15 hours) or participating in the workshops (approx. 4 hours). To register your interest in these roles please contact your SIG reps or get in touch with the NIWA project team.



Photo Workshop

NIWA photographer Lana Young will provide a short Zoom photography workshop at **2pm on 18 June**. The session will be stacked with tips and tricks on how to take great photos which could be used in this project!

Please register by emailing Lucy.McKergow@niwa.co.nz and entering 'Photography workshop' in the title.



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