

International Nutrient Inter-Comparison: Newsletter #11

Keep up to date on the facts, plans and people involved with the International Nutrient Inter-Comparison voyage (INIV) scheduled for June 2023

INIV is finally in sight! With only four months to go INIV planning and communication is in full swing preparing for everyone's arrival. The important voyage dates are as follows:

May 31st-June 2nd: Voyage mobilization

June 3rd-4th: Onboard pre-voyage medical clearance

June 5th-18th: INIV

CSIRC

June 19th: Voyage demobilization

Covid-19 protocols could affect the dates of prevoyage medical and isolation rules. We will continue to communicate changes in this landscape as they develop.

Welcome

Welcome to the eleventh INIV newsletter. In this newsletter, we confirm the details of our voyage, announce the open call for applications for the Nutrient Symposium, and hope to spread the word about the shipboard training opportunity for suitable students or early career scientists.

Voyage Details

The voyage will be departing from, and arriving in Hobart, Tasmania on Australia's national research vessel RV Investigator. It will sail south of Tasmania to complete CTD deployments at approximately 11 stations along the SR03 transect line up to 55°S, 141°E and at the Southern Ocean Time Series (SOTS) as seen here on the updated map. Approximately one CTD cast is planned for every 24 hours targeting a similar daily shift schedule. The CTD will cover the full spatial water profile— which can be up to the

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maximum of 36 depths. One station will be dedicated as a precision CTD cast where all Niskin bottles are fired at three depths, the upper circumpolar deep water (UCDW), lower circumpolar deep water (LCDW) and the deep chlorophyll max (DCM) for reproducibility purposes. Dissolved oxygen and salinity will also be sampled by the CSIRO hydrochemistry team to calibrate CTD sensors. Nutrient measurement results from this voyage will also be compared with available historical data from both SR03 transect line and SOTS. Unified method of calculation for expanded measurement uncertainty will also be proposed abroad with all participants to determine statistical significance of the datasets.



Figure 1. Map of voyage plan: blue line and triangles represent the outbound voyage track and stations, and orange dotted line and triangles are the return voyage track and stations. During the voyage, several experimental exercises have been proposed to incorporate in daily operation for all on board participants. These include but are not limited to the determination of at-sea measurement uncertainty, at sea intercomparison of reference materials, at sea intercomparison of voyage samples, comparison of sampling techniques, assessing the contribution of in-house calibration standards to data comparability, and comparison of voyage data with historical data. Secondary objectives including use of Argo floats, XBTs, Triaxus and underway sampling will also be assessed as part of the piggy-back process and may be included time permitting.

Symposium Call for Applications

An Ocean Nutrient Symposium will take place in Hobart on June 20th, 2023, coinciding with the International Nutrient Intercomparison Voyage. This innovative event will be prior, during and after the voyage presented in a hybrid in-person and online format, allowing attendees access to novel hands-on experiences and discussions. The collaborative symposium will foster knowledge sharing, further develop laboratory best practices, and improve the comparability of global nutrient datasets utilised by oceanographers, climate scientists and biogeochemists. Discussions will cover new and emerging analytical, data processing and technical capabilities, including but not limited to methods and implementation of nanomolar nutrient analysis, robust data pipelines, miniaturisation, and development of experimental nonbias procedures to increase comparability of nutrient datasets. Abstracts submissions and registration open soon.



Call for Shipboard Training Opportunity

We are looking for an early-career scientist, technician, postgraduate student (PhD/MSc), or post-doctoral fellow involved in seawater nutrient analysis or oceanography to join us onboard the RV Investigator for INIV. The Ocean Training Partnership's shipboard training programme offers the opportunity for one fellow to receive training onboard RV Investigator and participate in pre-and postcruise activities in Hobart, Australia. The fellowship covers the round-trip from the home country to Hobart, the seafaring medical examination, required and accommodation and living allowance in Hobart. Applicants must be from a developing. Applications close March 12th. For more details and to apply follow this link -2023 Open Call for NF-POGO Visiting Fellowships for Shipboard Training

INIV Global Participation

We are excited to now confirm and welcome at least nineteen scientists representing fourteen organizations from across the globe so far confirmed for INIV this June (Figure 2). The journey to get to this stage has taken several years and we are grateful to have reached the point of a full complement of nutrient chemists. We plan to take over every lab bench aboard ship with at least 7 different instrument models across our participants.



Figure 2. INIV Participating countries and their organizations.

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Participant Bios



Harris Anderson

Role: Hydrochemist

Organisation: CSIRO

Days at sea: 67

Favourite voyage:

My first voyage has been my favourite so far, we steamed to the Auckland Islands in subantarctic New Zealand on the RV Polaris II (21m). We spent the time conducting geophysical and oceanographic research in the fjords around the major islands that make up the archipelago, and even went ashore to see Royal Albatross reuniting after their long journeys at sea.

What interests you most about INIV?

I have a background in marine geochemistry and have spent the last few years producing and analysing paleoceanographic datasets. The paleoceanographic interpretations I came to were informed by nutrient datasets like those we hope to produce and validate through INIV. I'm most excited about assessing the reproducibility of the datasets we produce and working with such a broad range of nutrient chemists.



Karel Bakker

Role: Chemical Analyst

Organisation: NIOZ Royal Netherlands Institute for Sea Research

Days at sea: Roughly 2,500 days!

Favourite voyage:

For the work, my most interesting cruises were those in the Weddell Sea, where I was challenged to give my best and learned the most. In the Weddell Sea you need a very high precision in the analysis of nutrients be able to construct a reliable hydrographic transect-plot. Nutrient concentrations differ by only 1.0 % over a depth range of more than 3000 m. The consistency of the analysis must be better than 0.5% between analytical runs to be of any use for hydrographic work in this area. I have joined several cruises in the Weddell Sea, my first one was in 1992 and my last in 2011, every cruise improving analytical practise in terms of gaining better precision across different analytical runs.

What interests you most about INIV?

It will be great to have the opportunity to work among experienced colleagues and produce nutrient data from the same CTD-bottles and investigate if and why there might be differences observed. During this voyage all aspects of how to obtain comparable data will show up in detail. From this cruise we can learn from each other and hopefully come up with a best practice producing consistent and traceable nutrient data.

Voyage Website

We have a website! Check it out for additional information about our voyage including voyage location, planning, getting involved, previous newsletters, FAQ and more: <u>https://wp.csiro.au/iniv</u>

Contact Us

Please feel free to reach out to the CSIRO Hydrochemistry team at any time during the planning process: julie.janssens@csiro.au



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For further information

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