Data Management Plan

1. Types of Data Collected

Data will be collected from the Eastern Tropical North Pacific (ETNP) for the concentrations of iodine species in vertical water column profiles through the oxygen minimum zone from three localities, rates of iodate reduction in the upper and lower oxyclines and cores of the oxygen minimum zone (OMZ) from two localities, and rates of iodide oxidation in the upper and lower oxyclines of the OMZ from two localities. We will also be working with collaborators measuring nitrite oxidation rates from the OMZ oxyclines.

From the latitudinal transect as part of the Atlantic Meridional Transect (AMT), we will determine iodine speciation concentrations from photic (~10 m water depth) and sub-photic (~200 m) waters at every 10° latitude from 40° N to 40° S. In addition, we will determine iodide oxidation and iodate reduction rates for photic seawater from each of these localities and from sub-photic waters for four of these localities. Incubation controls will include filtered and unfiltered water and the determination of the role of superoxide through the addition of superoxide dismutase (SOD) to incubation waters.

2. Availability of Data Collected

Data from the AMT and ETNP cruises will be archived with BCO-DMO (Biological and Chemical Oceanography Data Management Office) to ensure that all data are freely and publicly available in perpetuity.

Data will also be made available to colleagues through publications in high-ranking journals and through presentation at major conferences.

Participation in the AMT requires the logging of all data into the British Oceanographic Data Center (BDOC) and as part of the UK-based Oceans 2025 program. We will comply with this requirement.

As stated on the AMT website (www.amt-uk.org):
The Oceans 2025 data policy has been designed to make the data from the AMT cruises since 2007 available to the Oceans 2025 community one year after a cruise and then, after two years, to the wider scientific community. The aim being to make maximum use of this valuable data resource. The British Oceanographic Data Center (BODC) has been integrating the data that resulted from the physical, chemical and biological measurements made during the first phase of AMT to answer the key AMT objectives:
- How does the structure, function, and flow of food within planktonic ecosystems vary in space and time?
- How do physical processes affect the supply of nutrients, including dissolved organic matters, to the planktonic ecosystem?

- How do ocean-atmosphere exchanges and sunlight affect the formation and breakdown of organic matter?
- During the second phase of AMT work expanded to cross-disciplinary studies of ocean plankton ecology and biogeochemistry, and link to atmospheric processes.

2. Data Quality

Standards and blanks will be used for quality control of all isotopic measurements. The isotopic ratio and ^{129}I and ^{127}I concentration of the ^{129}I spike purchased from Eckert and Ziegler©, as discussed in the budget justification, will be determined via isotope dilution with standards of known ^{127}I concentrations. These include geologic standards (e.g., JCP-1), iodine ICP-MS standards (Inorganic Ventures©), and gravimetric solutions made from potassium iodide, potassium iodate powders, and an in-house seawater standard already measured regularly WHOI. The concentrations of ^{129}I and ^{127}I of seawater incubation samples with the added spike will be determined similarly. The WHOI plasma facility already has a ^{129}I solution from Eckert and Ziegler© purchased previously, which was used as part of the method calibration and for determination of the preliminary results, and which will continue to be analyzed routinely to assess long-term reproducibility.

During ion-exchange chromatography, each batch of samples (typically n=24) will include two MQ blank solutions and a seawater sample from Martha's Vineyard Sound spiked with an ^{129}I-spiked seawater solution already measured routinely at WHOI. The blanks and spiked seawater will be measured for isotope ratios of iodate and iodide alongside the unknown samples on the MC-ICP-MS in order to determine blank (^{127}I) contributions to samples and to assess long-term reproducibility. Importantly, given extreme low abundance of ^{129}I in the natural environment, it represents an unlikely natural contaminant and the natural seawater ^{129}I concentration will be below detection for our MC-ICP-MS method.