This is the final report of the “Methane and Nitrous Oxide Intercalibration Process” an EDventures funded project lead by Sam Wilson (UH) that resulted in the production of common gaseous standards for use by marine chemists when measuring dissolved nitrous oxide and methane.

Background to project: A strong comprehension of analytical precision and accuracy is essential to every scientific measurement. It is also important to conduct inter-laboratory comparisons to identify any discrepancies in the different analyses. The C-MORE EDventures program facilitated a key component to the inter-laboratory comparison of dissolved greenhouse gas measurements by funding the synthesis of common gas standards for nitrous oxide and methane. The forthcoming distribution to 14 analytical laboratories situated around the globe that routinely make measurements of dissolved nitrous oxide and methane in seawater will ensure that future measurements are both standardized and comparable. This work was carried out under the auspices of the Scientific Committee on Ocean Research (SCOR) Working Group #143.

A year’s worth of effort: There have been several logistical achievements since funding was awarded and prior to the synthesis of the standards. These include: (1) The funding provided by EDventures was matched by $12,000 from InGOS (an EU funded Integrating Activity project, targeted at improving and extending the European observation capacity for non-carbon dioxide greenhouse gases) and also $6000 from SCOR. This resulted in $30,000 available for synthesis of the gas standards. The 14 batches of standards produced each contain two gas standards a high and a low concentration to span the range of dissolved concentrations in the ocean. (2) The Memorandum of Understanding between RCUH and C-MORE was established to allow for the purchase of Trace Gas Air Standards from NOAA PMEL (3) the empty cylinders have been purchased from Air Liquide and delivered to NOAA PMEL for filling.

Nearing Completion of the project: An initial set of gas cylinders has arrived at the University of Hawaii for testing against our own standards (see photo below). In August 2015, the standards will be shipped to the other laboratory groups and the final phase of the inter-calibration process will commence.

In the right-hand photo are the three aluminum cylinders filled with methane and nitrous oxide in the laboratory. Identical cylinders will be shipped to laboratories globally so that seawater analysis of dissolved nitrous oxide and methane is comparable across the world’s oceans.