Cruise: WS1118
Ship: R/V Walton Smith
Dates: December 12 – 15, 2011
Expocode: 33WA20111211
Chief Scientist: not applicable
Equipment: Surface samples collected.
Total number of stations:

Sample Collection

The discrete samples were collected by Kuan Huang and Lindsey Visser from a metering ball valve next to the underway pCO2 instrument and Niskin bottles. The underway pCO2 instrument was located in the bow thruster space next to the TSG and a short distance from the inlet pump. The sea water takes less than 10 seconds to travel from the inlet to the instruments. The TSG temperature is believed to be no more than 0.15 degrees C warmer than in-situ SST. The date and time listed in the data file are UTC when each sample bottle was collected.

DIC:
14 locations, 20 samples each 500-ml, 6 sets of duplicate samples
Sample_ID#: 21 - 40
PI: Dr. Rik Wanninkhof
Analyzed by: Esa Peltola

TAlk:
14 locations, 20 samples each 500-ml, 6 sets of duplicate samples
Sample_ID#: 21 - 40
PI: Dr. Rik Wanninkhof
Analyzed by: Dr. Leticia Barbero

Sample Analysis

DIC:
Analysis date: January 10 and 11, 2011
Coulometer used: AOML2
Blanks: 22.8 and 25.0 counts/min
CRM # used and assigned value (include both DIC and salinity): Batch 112, c: 2011.1 umol/kg,S: 33.305
CRM value measured: AOML 2: offset 5.2 umol/kg (2005.9 umol/kg), and offset 7.7 umol/kg (2003.4 umol/kg).
Average run time, minimum run time, maximum run time: 13 and 11 min, 12 and 10 min, 15 and 14 min
Reproducibility: (# samples and average difference): 6 sets of duplicate samples, average difference 5.2 umol/kg   Only two sets of duplicates were from the same niskin – not

involving Flow-through samples.

CRM, salinity and HgCl2 correction applied: Salinity correction was applied using TSG salinity

Remarks-

The volume correction was applied due to added HgCl2 (Measured DIC*1.00037).

The first CRM of each cell was used for a CRM correction.

TAlk:

The results posted are duplicate analyses from the same sample bottles used for DIC.

Analysis date: January 17 and 18, 2012.

Titration system used: Open cell

CRM # used and assigned value:

Meas CRM	cert CRM	batch
2174.99	2218.00	108
2180.27	2218.00	108
2174.50	2218.00	108
2174.92	2218.00	108

Reproducibility: (# samples and average difference): 6 sets of duplicate samples, average difference 14.42 umol/kg. Excluding three sets of duplicates sampled from underway line (bottles 35 and 40), underway and Niskin (bottles 38 and 28) and in an area of variability due to river output as indicated by very high TA (bottles 23 and 39), the average of the three remaining sets is 1.36 umol/kg ± 0.51 umol/kg. Only two sets of duplicates were from the same niskin – not involving Flow-through samples.

CRM correction applied. CRMs ran at start and end of the analyses were used for the CRM correction.

Remarks- There was a lot of floating matter on bottles number 23 and 39 that might have affected the alkalinity measurements.

Comments

The latitude, longitude, temperature and salinity reported with the DIC and TAlk measurements were taken from the raw TSG data file. The merging of the discrete measurements with the TSG data was done on the basis of date and time. The TSG values are provided for reference; no post-cruise assurance of accuracy has been done to this data. The salinity used for the alkalinity measurements is the one from the raw TSG file.

The Sample_ID is the sample bottle number for the discrete samples.

There was a bottle number 40, but not 45. The log sheet must have had an error.

The rubber band was off from the bottle number 25 and the cap of the bottle number 30 was secured with tape rather than a rubber band. The DIC instrument was stable: the gas

loop and CRM values did not change significantly through out the life span of each cell. Also both cells from separate days gave calibration values of similar magnitude.

UPDATE:
Between March and June of 2021, all of the data for the discrete samples was put into a uniform format. The supporting information was checked for accuracy, especially the expocode, date, time, and positions.