Cruise: SKO1509, SKO1604
Ship: Skogafoss
Expo Code: AGFO20150807, AGFO20160316
Dates: Sep. 3rd 2015– Mar. 30th, 2016
Chief Scientist: Dr. Denis Pierrot
Equipment: TSG-Underway
Total number of stations: 22
Location: Reykjavik, Iceland to Argentia

Samples were collected as part of the SOOP (Ships of Opportunity Program)

Sample Collection

The discrete samples were collected from the TSG underway (UW) system onboard the ship by Benjamin Rumeau. The date and time listed in the data file are UTC when each sample bottle was collected.

DIC:
22 locations, 22 samples each 500-ml, no duplicate samples.
Sample_ID#: 220000, etc.; Sample bottle number, no Niskin or cast number
PI: Dr. Rik Wanninkhof
Analyzed by: Charles Featherstone

pH:
22 locations, 22 samples each 500-ml, no duplicate samples.
Sample_ID#: 220000, etc.; Sample bottle number, no Niskin or cast number
PI: Dr. Rik Wanninkhof
Analyzed by: Charles Featherstone

TAlk:
22 locations, 22 samples each 500-ml, no duplicate samples.
Sample_ID#: 220000, etc.; Sample bottle number, no Niskin or cast number
PI: Dr. Rik Wanninkhof
Analyzed by: Leticia Barbero and Denis Pierrot

Sample Analysis

DIC:

Instrument ID	Date	Certified CRM (µmol/kg)	CRM Value (µmol/kg)	CRM Offset (µmol/kg)	Blank (Counts)	Avg. Sample Analysis Time
AOML 4	10/06/2015	2031.53	2025.74	5.79	35.0	16

Analysis date: 10/06/2015
Coulometer used: DICE–CM5015- AOML 4

Blanks: 35.0 counts/min
CRM # 1155 was used and with an assigned value of (includes both DIC and salinity):
Batch 144, c: 2031.53 µmol/kg, S: 33.571
CRM values measured: AOML 4: offset 5.79 µmol/kg (2025.74 µmol/kg).
Average run time, minimum run time, maximum run time: 16, 11 and 20 min.

Reproducibility: (# samples and average difference): No duplicate samples were collected.

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

Remarks

The volume correction was applied due to added $HgCl_2$ (Measured DIC*1.00037).
The first CRM of each cell was used for a CRM correction.

The DIC instrument was stable: CRM values did not change significantly throughout the life span of each cell.

The blank was raised from 24.4 to 35.0 before the analysis of the CRM.

pH:

Analysis date: 10/06/2015
Spectrophotometer used: HP Agilent 8453

Reproducibility: (# samples and average difference): No duplicates were collected.

Remarks

The equations of Liu et al, 2011 formulated using the purified m-cresol purple indicator was used to determine pH of the samples. pH samples were analyzed at 20^0C at Full Scale (pH 0-14).

Temperature for each sample was measured before analysis using a Hart Scientific Fluke 1523 reference thermometer.

Approximately 80 mL of sample was extracted from each DIC sample bottle by syringe before DIC analysis to determine the pH.

TAlk:

The results posted are duplicate analyses from the same sample bottles used for DIC and pH.
Analysis dates: 12/14/2015
Titration system used: Open cell
CRM batch: 129, S = 33.361, certified TA = 2237.32 µmol/kg

2 CRM samples were run daily on each cell, before and after the seawater samples. The TA for the water samples was corrected using the daily averaged ratios between the certified and measured values of the 2 CRMs run on each cell. The following table shows the CRM measurements for each day and cell.

Cell System	Date	Time	Bottle #	TA	|ΔCRM|
2	12/14/15	10:59:19	977	2214.23	
2	12/14/15	18:57:24	369	2210.83	3.40

Reproducibility: No duplicates were collected.

Remarks
Alkalinity system 2 behaved well during the analyses

Comments

The latitude, longitude, date, and time reported with the DIC, pH and TAlk measurements were taken from the sample field log. The field log values are provided for reference; no post-cruise assurance of accuracy has been done to this data.
Salinity was measured by Magnus Danielsen after the cruise.
Sample ID # is the sample bottle number. No station or niskin bottle numbers with underway sampling.

Sample bottle #18 had a broken neck and could not run the sample for DIC.

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. The Expocode for SKO1509 was corrected. Additionally, pH results were recalculated to 20 and 25 degrees Celsius.