**2018-03-13 SZ**

And just to confirm:

I think you were blanking parameters where the data do not exist or are bad?

CDOM: Bad/no data for Casts 1, 2, 8, 42

RINKO: Bad/no data for Casts 41, 48, 53

SPAR: Bad/no data for Casts 1 to 10

ISUS: **GOOD data** for Casts 1, 2, 8, 13, 16, 17, 19, 28, 32, 41, 48, and 53.

Info for 2009-20 headers:

Standard seabird processing steps were used. Pressure, primary and secondary temperature, primary and secondary conductivity, oxygen and fluorescence have been calibrated. Spikes in primary temperature and primary conductivity have been interpolated over and where needed secondary values (when available) have replaced the primary values. Derived variables, salinity, potential temperature, sigma-theta and sound velocity, were recalculated. Transmission, CDOM fluorescence, altimetry, RINKO oxygen and temperature, and ISUS have not been calibrated.

For further information see: 2009-20\_CTD SBE911 Processing\_v2018-03-14.doc

CTD Pressure: The lab calibration was adjusted by applying +0.42dbar offset to the bias based on in-air surface readings of the CTD.

CTD Temperature: The post-cruise lab calibration was used after comparisons with dual sensor and post-cruise calibration information. Secondary temperature is preferred as performed better than the primary and should be used preferentially.

CTD Conductivity: The post-cruise lab calibration was adjusted after comparisons with dual sensor, expected deep water values and water sample data. There was a drift of 0.002mS/cm during the cruise. Over 8 groups, primary conductivity received offset of -0.0021 to +0.0003mS/cm. Secondary conductivity received an offset of -0.0047 to -0.0021 mS/cm.

CTD Oxygen: Oxygen data were collected with a SBE43 sensor installed with pumped flow in-line after the primary temperature and conductivity sensors. A lag of -5 seconds was applied to oxygen voltage in the Seabird processing step Align. Downcast CTD oxygen voltage and upcast temperature and salinity were used to calibrate CTD to water sample oxygen (upcast). The 53 casts were fit as one group using bottles deeper than 500m. Fitting method followed Seabirds Application Note 64-2 (“SBE 43 Dissolved Oxygen Sensor Calibration and Data Corrections using Winkler Titrations”). A drift between casts was corrected using a linear fit to the residuals. A remaining pressure dependent shape in the residual between water sample and CTD oxygen was removed by subtracting a mean curve. The mean curve was made by stitching together sections using spline interpolation after finding the sections by fitting data from discreet pressure ranges.

CTD Fluorometer: Data are from a Seapoint fluorometer with pumped flow in-line after the secondary temperature and conductivity sensors. Calibration with bottle data was performed using bottle chlorophyll values greater than 0.025mg/m3. The number of observations used were 115 out of 160 with a standard deviation of 0.04 mg/m3 in the residuals. Coefficients used: Slope:0.8975, Bias -0.0781. No alignment was applied.

CTD Transmissometer: Data are from a WETLabs CSTAR DR transmissometer. Data are unprocessed, using calibration coefficients from 15 May 2008 to convert from volts.

CTD CDOM Fluorometer: Data are from a WETLabs ECO CDOM FLCDRTD. They are unprocessed and given as raw voltage.

CTD Altimeter: Altimeter data are from a Datasonics PSA-916D and are unprocessed, using calibration from Mar 2005.

CTD Nitrate: Data are from an ISUS Nitrate sensor. Sensor used on casts 1, 2, 8, 13, 16, 17, 19, 28, 32, 41, 48, and 53. Data are unprocessed.

CTD Oxygen and Temperature from RINKO III Sensor: These data are unprocessed. Data are not available on Casts 41, 48 and 53.

CTD Surface Reference Photosynthetically Active Radiation (SPAR): Data collected using a Biospherical QSR-2200 starting on Cast 11. These data are nominal with applied calibration from 13Mar2007.