**2018-03-27 SZ**

CDOM: Bad/no data for Casts 49

PAR: Only has data for Cast 1 and 2 and this needs updating with correct configuration file.

New files that have good PAR but all other channels are unprocessed are in:

N:\SHARE\DATA\Data Archive Process - 2017\2010-07\CTD 2018-03-28 PAR

ISUS: **GOOD data** for Casts 1, 2, 5 to 600dbar, 25. Please remove all other casts.

Info for 2010-07 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. Salinity was recalculated. Transmission, CDOM fluorescence, altimetry, and ISUS nitrate are not calibrated or have nominal calibrations as described below.

For further information see: 2010-07\_CTD SBE911 Processing.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 pre-cruise lab calibration was used after comparisons with dual sensor and post-cruise calibration information.

CTD Conductivity: The pre-cruise lab calibration was adjusted after comparisons with dual sensor, expected deep water values and water sample data.

Primary conductivity was adjusted from the pre-cruise lab calibration over 4 groups of casts to correct for initial offsets equivalent to -0.0025 to -0.0062 PSU in salinity:

Cast 1 to 41: y = 0.9997x + 0.0109

Casts 42 to 46: y = 0.9997x + 0.0112

Casts 47 to 56: y = 0.9997x + 0.0116

Casts 57 to 72: y = 0.9997x + 0.0147

Secondary conductivity was adjusted from the pre-cruise calibration in 2 groups of casts to correct for initial offsets equivalent to -0.0005 to -0.0015 PSU in salinity:

Casts 1 to 60: y = 0.9997x + 0.0098

Casts 61 to 72: y = 1.0000x + 0.0015

(SZ 27 Mar 2018: Have confirmed the pre-cruise calibration was used not post-cruise. Please use/move equations in documentation where needed. No need to be here, and ideally would replace with final accuracy information.)

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 -7 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). Fitting method followed Seabirds Application Note 64-2 (“SBE 43 Dissolved Oxygen Sensor Calibration and Data Corrections using Winkler Titrations”). A fit for casts 1 to 38 was applied to all casts with an additional offset of 0.02ml/l applied to casts 58 to 72. 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 fitting data from discreet pressure ranges and then stitching together the curves for each pressure range using spline interpolation.

(SZ 27 Mar 2018: again an accuracy statement would be good)

CTD Fluorometer: Data are from a Seapoint fluorometer with pumped flow in-line after the secondary temperature and conductivity sensors. An alignment of -3sec applied. Calibration with bottle data was performed using bottle chlorophyll values between 0.025 and 0.600 mg/m3 with a resulting adjustment of y = 0.0066 + 0.3815x where x was nominal chlorophyll value and n= 64 out of 76, STD of 0.01mg/m3.

CTD Transmissometer: Data are from a WETLabs CSTAR DR transmissometer. Data are unprocessed, using an in-air 2-point calibration from 21 Jun 2010. An alignment of -5sec applied.

CTD CDOM Fluorometer: Data are from a WETLabs ECO CDOM FLCDRTD. They are unprocessed and given as raw voltage. An alignment of -4sec was applied.

CTD Altimeter: Altimeter data are from a Datasonics PSA-916D and are unprocessed, using a calibration from 31 March 2005.

CTD Nitrate: Data are from an ISUS Nitrate sensor used on select stations. Data are available for casts 1, 2, 5 (downcast to 600dbar) and 25. Data are unprocessed.

CTD Photosynthetically Active Radiation (PAR): Data collected using a Biospherical QSP-2300, however only used on Cast 1 and 2. These data are unprocessed with calibration from 13Mar2007 applied.

CTD Surface Reference Photosynthetically Active Radiation (SPAR): Data collected using a Biospherical QSR-2200. These data are nominal with applied calibration from 13Mar2007. Sensor not regularly cleaned and may have had a temporary snow cover during casts.

Data Notes:

Cast 49 - Fluorescence CDOM data removed. Data value pegged at maximum voltage of 4.95V. Cause unknown.

For Chemistry File:

The rosette was not stopped during the upcast when the Niskin bottles were closed. To account for bottle flushing and timing offsets the CTD data associated with the Niskins were taken from -4.4seconds before the closure based on matching CTD and water sample salinities in the top 300m where the vertical gradient of salinity is high.