This document describes how we processed the CDOM absorption spectra from the Slow descent rate optical package (SLOW-DROP) for the EXPORTS 02 cruise (RRS Cook).

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Sensors:

The CDOM absorptions were measured using different ACS001

Delay:

Based of plotting graphs and comparing temperature sensitive wavelengths we determined that AC-S were, on average, 6.5second lagging compared to the temperature (and pressure) of the CTD (measured outside the water stream). This delay was applied to the AC-S data. We only use the a-side from the AC-S as it was less sensitive to bubbles and provided more stable values compared to the c-side.

Pressure:

We tarred the pressure at the surface (lowest pressure recorded as taken as offset).

Decent rates:

Varied from 7-11cm/s.

Spike removal:

A 5pt median filter was applied to remove spikes.

Binning:

We median-binned the data into 2m bins.

Calibration:

We calibrated the sensors daily on the package. We chose the calibration file within two day of each cast that, that, when applied to our data, resulted in spectra that were least different from an exponential function, over all the wavelength (least absolute difference). We added a function for salinity and temperature so those were corrected before the absolute difference was measured. We temperature and salinity corrected the data using Sullivan et al., 2006, AC-s specific values of salinity and temperature dependence.

Quality control:

1. We expected spectra to be exponential within uncertainty of ~0.005m-1. Spectra that were widely different were removed.

2. We compared a\_g(440) to c\_g(440) and bother were similar.

Uncertainty estimate:

We estimate the uncertainty in CDOM to be smaller than 0.005m-1 based on the manufacturer uncertainty (0.01m-1), our binning (typically ~80 scans binned per 2m), and the variability in successive calibrations (based on the above procedure).

--Generally we saw very little change (0.03-0.04m-1 at 400nm) as function of time and depth.