

CTD data from KM0410 (KM0410_CTD.xls).

There are 18 worksheets, 15 for CTD tows (T04Cxx) and 3 for CTD vertical casts (V04Cxx). They use our standard nomenclature where T=tow and C=cast, 04=year, C=our third cruise of the year, and xx=sequential operation number, separate for tows and casts. Each excel sheet has 14 rows giving data from a SeaBird 911+ CTD package. The CTD data itself (not additional sensors) was corrected using calibrations of the T and C sensors by SeaBird. An ordered list of the parameters is given below, with explanation where not obvious.

- A. Pressure
- B. Depth
- C. Temperature (in-situ)
- D. Conductivity
- E. Salinity
- F. Theta (potential temperature)
- G. Potential Density (referenced to the sea surface, ie, sigma zero)
- H. LSS-358 (v1=analog voltage channel 1. Voltage range on all analog channels is 0-5V. Voltage from Wet Labs light back-scattering sensor S/N 358. Voltage is equivalent to Nephelometric Turbidity Units, a standard dimensionless turbidity index. Higher V equals more turbidity.)
- I. Dissolved O₂ (Standard SeaBird sensor, uncalibrated)
- J. Redox potential (Output from a sensor developed by Ko-ichi Nakamura. The instrument reports Eh over a -0.5 to +0.5 V range, which is scaled to 0-5V to match the SeaBird output requirement.)
- K. LSS-1791 (Voltage from a Seapoint light back-scattering sensor S/N 1791. A redundant measurement, approximately equivalent to data from LSS-358.)
- L. Depth of CTD above bottom from acoustic altimeter, data limited to <100 m above bottom.
- M. System time in excel secs.
- N. CTD scan number. We sampled at 24 Hz, recorded at 1Hz, and averaged the data into 5 sec intervals.
- O. Latitude of the CTD package calculated from depth and wireout. Positional data supplied only for the tows, locations of vertical casts are available from the metadata.
- P. Longitude of the CTD package calculated from depth and wireout. Positional data supplied only for the tows, locations of vertical casts are available from the metadata.

MAPR data from KM0410 (DSL01maprs.xls, DSL02maprs.xls, and DSL03maprs.xls)

Each DSL tow is a separate workbook giving optical (NTU) and depth (from pressure sensors) data from the suite of Miniature Autonomous Plume Recorders deployed above and below the vehicle on that tow. Each workbook lists Latitude and Longitude from the DSL vehicle, DSL depth (m) (DSL02 and 03 only), time in

decimal year days (10 sec sampling interval), and depth (m) and dNTU for each MAPR (Mxx). "dNTU" is the same optical data collected on the CTD casts (here a Seapoint LSS), with the "d" indicating we have subtracted the NTU value of local ambient water. Hence "dNTU" is the optical anomaly attributable to hydrothermal plume particulate matter. Empty cells in the dNTU columns indicate "noise" (from random large scatterers in the water column or occasions where biological "goop" has temporarily obscured the light-scattering sensor) removed from the data record.