12 Jan 2021

CTD Calibration

Explanatory notes on last two pages

Measurement 1

	T °C		C mS/cm	
	Comet	Dipsy	Comet	Dipsy
bath	19.7084	19.7754	2.13785	2.13447
20 PSU	19.7105 ref	19.7822	21.3816 (ref)	21.3495
	19.78629	19.80180	3.09249	3.05447
30 PSU	19.7977 ref	19.8042 (ref)	30.9327 (ref)	30.55587
	19.50327	19.5168	4.0667	4.05545
40 PSU	19.5040 ref	19.5196 (ref)	40.6000 ref	40.581g ref
	19.6886	19.6320	5.10877	5.09037
50 PSU	19.6877 ref	19.6345	51.1043	50.9538

Raw Reading required for cond. calibration

Comet	P_1	P_2	P_3	P_4
20	527299	4656.19142	261535	1814.743
30	527281.	5319.3	260732.6	1816.5
40	527274.11	5910.78	2637200	1811.56
50	527283.500	6497.6070	2617978	1814.56
Dipsy				
20	527612.1	5007.83	25733.5	1579.395
30	527620.5	5696.06	253508.0	1580. 5142.
40	527619.2	6359.63	256308.7	1575. 400
50	527624.3	6979.39	255 238.7	1577. 17021

CTD Calibration

Measurement 2

	T °C		C mS/cm	
	Comet	Dipsy	Comet	Dipsy
20	19.72094	19.8095	2.13162	2.12265
	19.7226 ref	19.8124	21.3183 ref	21.2365
30	19.7818	19.81304	3.07582	3.06631
	19.7835 ref	19.8183 ref	30.7654 ref	30.6842 ref
40	19.50353	19.51892	4.05507	4.0587
	19.5036 ref	19.5213	40.5642 ref	40.4738
50	19.67652	19.62663	5.09727	5.08213
	19.6763 ref		50.9906 ref	50.8493

Comet	P_1	P_2	P_3	P_4
20	527299.73	4653.01	261488.8	1814.98
30	527282.8	5308.34	260797.5	1816.69
40	527274.4	5911.88	263748.3	1811.07
50	527281	6491.70	261900.6	1814.66

Dipsy				
20	527611	4998.42	253427.0	1580.82
30	527618	5704.49	253385	1580.80
40	527620.50	6353.310	256380.5	1575.2
50	527622.5	6973.56	255292.9	1577.2

↑ T

Requirements

C : 4th decimal 46.000 ↑ $\pm 5\ 10^{-3}$ mS/cm

T : 19.000 $\pm 5\ 10^{-3}$ °C.

Temperature calibration.

	T °C	T_1 °C	T_2 °C	
Comet	11.92157	11.9225	11.9222	✓
Comet	1.1338.	1.1329		✓
Sippy.	12.0082	12.0085	12.0085	

↑ CTD measurement

↑ Reference sensor Seabird

Reference SBS sensor.

Notes

Calibration of Comet and Dippy's CTDs at SeaandSun on 12 Jan 2021 as preparation for Gulf of Lions experiment.

We chose to use baths 20, 30, 40 and 50 PSU and skipped 10 and 60. We also did a temperature check.

In each bath we took 2 readings. First reading the CTD is let into the bath and we wait for about 10 minutes until the reading gets stable. We read out C, T and P values and noted in top table on page 1 below are added the reference values, labelled (ref) Then the CTD output is changed to raw output and we record the values for P_1, P_2, P_3 and P_4. In fact only P_2 is used for conductivity calibration. Typical values are 5000 Hz or so.

Then a bit of fresh water is added to the bath lowering the conductivity slightly. Wait for about 5 minutes to get a second reading, entered into the tables on page 2.

After the saline baths the CTD is let into the bath of 11°C and 1°C. to check the temp. readings, which were found to be within

acceptable limits. This is recorded on page 3.

No further calibration required for temperature sensors.

New values were calculated with a simple script from the ctdsampler package, in the directory calibrations.

Lucas Merckelbach 18/1/21.