Bottle Sampling Depths

Parent Category: References (/references.html)
Category: Methods (/about-calcofi/methods.html)
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Bottle Sampling Depths, based on downcast profiles (http://calcofi.org/field-work/bottle-sampling.html)

The CalCOFI CTD-rosette is equipped with a Sea-Bird Electronic carousel water sampler (SBE 32 (http://www.seabird.com/products/spec_sheets/32data.htm)), a computer-driven, electro-magnetically-released latch system. The 24 ten-liter plastic (PVC) bottles, equipped with epoxy-coated springs & Viton (non-toxic) O-rings, connect to 24 individual triggers by lanyards which keep the bottle ends open. During the downcast, profiles of different sensor measurements vs depth are displayed real-time on a computer screen. Based on the chlorophyll maximum & mixed layer depths, bottles are closed at specific depths to isolate the seawater. The 10 meter bottle spacing shifts up or down (see table below) to resolve steep gradient features such as chlorophyll, oxygen, nitrite maxima and shallow salinity minimum. Salinity, oxygen and nutrients samples are analyzed at-sea for all depths sampled. Chlorophyll-a and phaeopigments samples from the top 200 meters, bottom depth permitting, are also extracted for 24hrs and analyzed at-sea. Most CTD-rosette casts sample 20 depths to a maximum of 515 meters, bottom depth permitting. Occasionally, additional bottle depths or multiple bottles are tripped at the same depth to provide extra water for ancillary projects or primary productivity incubations. Two basin stations, off Santa Monica & Santa Barbara, are sampled beyond 515m to within 10m of bottom. Wire-length permitting, a 3500m deep cast is performed at sta 90.90.

Typical bottle depth spacing based on downcast fluorescence & mixed layer profiles

	CTD Cast Type I	**CTD Cast Type II**	**Cast Type III**
Niskin/Carousel	Fluorescence Max	Fluorescence Max	Fluorescence Max
Position #	0 - 50meters	50 - 120meters	> 120meters
1	515	515	515
2	440	440	440
3	380	380	380
4	320	320	320
5	270	270	270
6	230	230	230
7	200	200	195
8	170	165	175
9	140	140	160
10	120	125	150
11	100	112	140
12	85	100	130
13	70	87	120
14	60	75	110
15	50	62	100
16	40	50	80
17	30	40	60
18	20	25	40
19	10	10	20
20	0	0	0

	10m bottle spacing	12m bottle spacing	10m bottle spacing
	0 - 70	50 - 125	100 - 160
1st Criteria:	Depth of Fluorescence Maximum during CTD Down Cast		
2nd Criteria:	Mixed Layer Depth		