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Precision statement for replicate samples drawn from a single Niskin bottle:

The pooled standard deviation for Salinity: Bottle for the range 32.5185 to 34.6584 was 0.0024,
k = 11 (1 outlier removed) where k is the number of pairs of duplicates.

The pooled standard deviation of pairs of samples (Sp) was calculated by:

$$Sp = \text{SQRT}\{\text{sum}(d^2)/2k\}$$

where k is the number of pairs and d is the difference between pairs.

Determination of outliers

Outliers are discarded on the basis of Chauvenet's criteria. The statistic is calculated by the difference between the outlier and the mean, divided by the stdev.

If this absolute value is greater than the critical value of the Chauvenet criterion for the given n, the datapoint can be discarded.

Duplicate samples from a single bottle

Event Number	Sample Number	Station	Pressure dbar	Salinity 1	Salinity 2	Rejected yes / no	Comment
12	63	P4	1250.6	34.4631	34.4737	yes	
24	139	P8	2000.4	34.5865	34.5905		
24	142	P8	999.1	34.3785	34.3771		
31	193	P12	3000.0	34.6450	34.6454		
31	199	P12	1001.6	34.4019	34.4033		
42	268	P16	3001.2	34.6533	34.6539		
42	273	P16	1000.5	34.3638	34.3700		
57	372	P20	2999.3	34.6562	34.6545		
57	377	P20	999.6	34.3656	34.3639		
70	497	P26	3000.1	34.6578	34.6584		
70	502	P26	999.8	34.3779	34.3790		
70	517	P26	5.1	32.5185	32.5262		

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Precision statement for samples drawn from the loop and a Niskin bottle closed at 5 m:

The pooled standard deviation for Salinity: Bottle for the range 31.2391 to 33.5110 was 0.0021, $k = 12$ (1 outlier removed) where k is the number of pairs of duplicates.

The pooled standard deviation of pairs of samples (S_p) was calculated by:

$$S_p = \text{SQRT}\{\text{sum}(d^2)/2k\}$$

where k is the number of pairs and d is the difference between pairs.

Determination of outliers

Outliers are discarded on the basis of Chauvenet's criteria. The statistic is calculated by the difference between the outlier and the mean, divided by the stdev.

If this absolute value is greater than the critical value of the Chauvenet criterion for the given n , the datapoint can be discarded.

Samples from a 5-m Niskin bottle and the loop

Event Number	Sample Number	Station	Pressure dbar	Salinity Niskin	Salinity Loop	Rejected yes / no	Comment
2	13	P1	4.7	31.2415	31.2391		
9	50	P3	5.0	31.9170	31.9173		
19	134	P5	4.9	32.0287	32.0296		
21	138	P7	5.7	32.2606	32.2857	Yes	Not good seal.
26	164	P9	4.4	32.0769	32.0727		
28	168	P11	5.3	32.4750	32.4754		
37	251	P13	4.8	32.2837	32.2816		
40	255	P15	4.9	32.4052	32.4031		
49	343	P17	4.6	32.4158	32.4166		
52	347	P19	5.2	32.4497	32.4518		
60	427	P21	5.4	32.4958	32.4987		
62	431	P23	5.5	32.4892	32.4846		
66	459	P35	5.5	32.5110	32.5052		