

CTD Processing Notes
Fr 08/93
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General.

This cruise was a further cruise in the Joint Global Ocean Flux Study (JGOFS) series into the Inorganic and Organic Carbon Cycles in Equatorial Waters. A total of 78 stations were carried out with ORV CTD 1 using the 24 bottle water sampler with 10 Litre Niskin Bottles. The Franklin's 10 Litre sample bottles were used in conjunction with those belonging to the project. The Fluorometer and Photosynthetic Active Radiation (Light) sensor were used with the 16 channel A/D digitizer interface.

Out of the 78 stations samples were not collected on 31 of those stations. The majority of the samples were taken in the upper 300 metres of the water column. For a 24 bottle cast to 2000 decibars, 18 bottles in the top 300 decibars of the water column and spread through the remaining 1700 decibars. In equatorial regions the gradients in salinity and interleaving of water bodies are particularly strong, as is internal wave activity, causing a high number of rejections.

Station List.

1. Test Station. Ignore dips 1 and 2. No water samples taken. (Fluorometer and PAR sensor)
2. Bottle test station. All 24 bottles fired at 700 decibars approximately. (Fluorometer). Ignore dip 3 and 4 as likely problem with stopping logging.
3. 2000 decibar cast. Position 14 failed leak test. Fluorometer maximum 90 decibars. (Fluorometer).
4. 300 decibar cast. Pos. 24 niskin closed with position 1. No water samples taken for hydrology. (Fluorometer and PAR sensor).
5. 300 decibars. Taken as light cast only. No hydrology samples. (Fluorometer and PAR sensor)
6. 2000 decibar cast. Thermometer at Pos. 24 malfunctioned. (Fluorometer). Ignore dips 3 and 4.
7. New DO sensor interface board fitted. 300 decibar cast. (Fluorometer and PAR sensor). Ignore dips 1 and 2.
8. 300 decibar cast. N/F reported at Pos. 15. Appeared not to have closed. Tap open on Pos. 3. (Fluorometer and PAR sensor).
9. Trace element cast (300 decibars). No thermometers and no hydrology samples. (Fluorometer).
10. 2000 decibar cast. NA reported at position 6, re-fired successfully reporting "Even". Thermometers at Pos. 24 not equilibrated. (Fluorometer). Ignore dips 3, 4, 5 and 6.
11. 300 decibars cast. No hydrology samples taken.

12. 300 decibar cast. 6 salt samples only. (Fluorometer and PAR sensor).
13. 300 decibar cast. Light cast only. No samples taken. (Fluorometer and PAR sensor)
14. 2000 decibar cast. Bottle at Pos. 24 appears to have fired with Pos. 1 at 2000 decibars. (Fluorometer). Position 12
15. 2000 decibar cast. No apparent problems. (Fluorometer). Dip 1 and 2 ignored.
16. 300 decibar cast. 18 samples - only 6 salts. (Fluorometer and PAR sensor).
17. 300 decibar cast. (Fluorometer and PAR sensor). DO from sample 10 re-sampled. Thermometers not read.
18. 300 decibars Productivity cast. Niskin at Position 3 leaking - lanyard caught. Not sampled. (Fluorometer and PAR sensor)
19. 2000 decibar cast. Niskin 12 leaking on return to surface. Niskin 24 appears to have closed with Niskin 1 (2000 decibars). (Fluorometer). Thermometers at Pos. 24 did not reverse. Thermos at Pos. 2 not read.
20. 300 decibars cast. 1 sample only from the surface. (Fluorometer and PAR sensor).
21. 300 decibar light cast. No samples taken. (Fluorometer and PAR sensor) Fluorometer lenses cleaned prior to this cast.
22. 2000 decibar cast. Pos. 24 appears to have closed at bottom of cast with Pos. 1. (Fluorometer).
23. 2000 decibar cast. Pos. 24 closed at bottom with Pos. 1. It was re-set on return to surface and closed just below the surface. (Fluorometer).
24. 2000 decibar cast. Trace metal cast. No samples taken for hydrology. (Fluorometer)
25. 300 decibar cast. Thermometer at Pos. 2 not equilibrated. Niskins at Pos. 6 and 12 leaking. (Fluorometer and PAR sensor).
26. 300 decibar cast. Rosette not set correctly. No samples taken. (Fluorometer and PAR sensor).
27. Repeat of Station 26. 300 decibar cast. (Fluorometer and PAR sensor).
28. 300 decibar cast. N/F reported at position 11. Appears to have fired. (Fluorometer and PAR sensor).
29. 300 decibar cast. Isotope cast for Dr. Philip Towler. No hydrology samples taken. (Fluorometer and PAR sensor). N/A reported at Pos. 6, fired again with successful "Even" response. N/F reported at Pos. 14 appeared to be successful.
30. 2000 decibar cast. (Fluorometer). No apparent problems.
31. 300 decibar cast. No samples taken for hydrology. (Fluorometer and PAR sensor).
32. Light meter cast to 300 decibars. No samples for hydrology taken. (Fluorometer and PAR sensor).
33. 2000 decibar cast. Leaky connector causes apparent light data, but light (PAR) sensor not fitted. Niskin at Pos. 2 had lanyard caught in

mouth, not sampled. (Fluorometer).

34. 2000 decibar cast. Large wire angle. (Fluorometer). No apparent problems.

35. 300 decibar cast. Niskin at Pos. 2 leaked - air bleed loose. Pos. 6 leaked - top end cap not seated correctly. Thermometers at Position 2 not set correctly. (Fluorometer and PAR sensor).

36. 300 decibar cast. (Fluorometer and PAR sensor) Ignore dips 3 and 4, testing on deck.

37. 300 decibar light meter / Fluorometer cast. (Fluorometer and PAR sensor). No samples taken.

38. 300 decibar cast. N/A reported on first attempt at Pos. 17, successful "Odd" on second attempt. (Fluorometer and PAR sensor). Niskin Pos. 2 leaking. Ignore dip 3.

39. 300 decibar cast. Internal Wave cast. (Fluorometer and PAR sensor). No samples taken for hydrology.

40. 300 decibar cast. Internal Wave cast. (Fluorometer and PAR sensor). No samples taken for hydrology.

41. 300 decibar cast. Internal Wave cast. (Fluorometer and PAR sensor). No samples taken for hydrology.

42. 300 decibar cast. Internal Wave cast. (Fluorometer and PAR sensor). No samples taken for hydrology.

43. 300 decibar cast. Internal Wave cast. (Fluorometer and PAR sensor). No samples taken for hydrology.

44. 300 decibar cast. Internal Wave cast. (Fluorometer and PAR sensor). 4 samples taken for salinity only.

45. 300 decibar cast. Internal Wave cast. (Fluorometer and PAR sensor). No samples taken for hydrology.

46. 300 decibar cast. Internal Wave cast. (Fluorometer and PAR sensor). No samples taken for hydrology.

47. 300 decibar cast. Internal Wave cast. (Fluorometer and PAR sensor). No samples taken for hydrology.

48. 300 decibar cast. Internal Wave cast. (Fluorometer and PAR sensor). No samples taken for hydrology.

49. 300 decibar cast. Internal Wave cast. (Fluorometer and PAR sensor). No samples taken for hydrology.

50. 300 decibar cast. Internal Wave cast. (Fluorometer and PAR sensor). 4 samples taken for salinity only.

51. 300 decibar cast. Light meter cast. No samples taken. (Fluorometer and PAR sensor)

52. 2000 decibar cast. N/F reported at Position 3 appeared to have fired correctly. Thermometer malfunction on Thermometer # SY9926 at Position 2. (Fluorometer)

53. 2000 decibar cast. Niskin at Position 14 fell off during cast. (Fluorometer)

54. Trace metal cast to 300 decibars. No samples for hydrology. (Fluorometer and PAR sensor)

55. Isotope cast to 300 decibars. No samples for hydrology taken. (Fluorometer and PAR sensor)
56. 300 decibar cast. 4 salinity samples. No apparent problems. (Fluorometer and PAR sensor)
57. Rosette not set up correctly. bottle position 1 did not close. Pos. 2 fired at 300 decibars, Pos. 3 and 4 fired at 250 decibars. Bottle firing out of synchronization by 2 positions. Rosette completed cast at position 20 instead of position 18.
58. 300 decibar cast. No apparent problems. (Fluorometer and PAR sensor).
59. 2000 decibar cast. Position 24 appears to have closed at 2000 decibars. It was reset and fired at surface. (Fluorometer)
60. 300 decibar cast. No samples for hydrology. No apparent problems. (Fluorometer and PAR sensor)
61. 2000 decibar cast. (Fluorometer).
62. 2000 decibar cast. (Fluorometer). Fluorometer changed over prior to this cast due to moisture between lenses.
63. 2000 decibar cast. (Fluorometer). No apparent problems.
64. 300 decibar cast. 6 samples for salts only out of 18 bottles used. (Fluorometer and PAR sensor). Had problems with CTD window freezing up. Had to start ctd_main again. Ignore dip 1 and 4.
65. 300 decibar cast. Niskin at Position 16 failed leak test. (Fluorometer and PAR sensor).
66. 2000 decibar cast. Lanyard caught in top of Niskin at Position 11. (Fluorometer)
67. 300 decibar cast for isotopes. No hydrology samples taken. (Fluorometer and PAR sensor). Ignore dip 3.
68. 300 decibar cast for Fluorometry only. No samples. (Fluorometer and PAR sensor).
69. 300 decibar cast. (Fluorometer and PAR sensor).
70. 300 decibar cast. (Fluorometer and PAR sensor). No samples taken for hydrology.
71. 300 decibars for trace metals. Hydrology samples take from Non trace metal positions. CTD brought on board to reset bottle 24 before re-firing due to lanyard caught in top. (Fluorometer and PAR sensor)
72. 300 decibar Test cast to find positions of Trace metal bottles. PAR / Light sensor gain increased prior to cast. (Fluorometer and PAR sensor)
73. 300 decibar cast. Aborted to check on rosette position. Ignore dip 3 and 4. Possible that two bottles fire at 250 decibars. (Fluorometer and PAR sensor). Thermometers at Pos. 2 did not have 5 minutes equilibration.
74. Fluorometer cast. No samples taken. (Fluorometer and PAR sensor).
75. 5 bottles taken at 85 decibars for Trace Metals. Cast depth to 300 decibars. (Fluorometer and PAR sensor).
76. 300 decibars cast. No hydrology samples taken. (Fluorometer and PAR sensor).

77. 300 decibar productivity cast. (Fluorometer and PAR sensor). No apparent problems.

78. 150 decibar cast for chlorophyll extractions. 12 bottles fired at 95 decibars. Two samples taken for salinity analyses.

Calibration Information.

Overall Conductivity SD = 0.00007 (equivalent to 0.0031 psu)
330 samples out of 533 used for calibration.

Temperature Coefficients

Temperature Bias = 0.99962

Temperature Offset = 0.0090oC

Conductivity (Cell Factors)

Offset Term Conductivity Term Stn. Dep. Term
Stations 1 6 pres. bounds 0.0 6500.0 edit = 2.8

-.96721757E-01 0.10056785E-02 0.75203910E-08, n
= 34 std. dev. = 0.45170E-02

Stations 7 22 pres. bounds 0.0 6500.0 edit = 2.8
-.99333763E-01 0.10055575E-02 0.64265758E-08, n

= 97 std. dev. = 0.41029E-02

Stations 23 78 pres. bounds 0.0 6500.0 edit = 2.8
-.97204274E-01 0.10056670E-02 0.10611348E-09, n

= 199 std. dev. = 0.33095E-02

Pressure Offset (Individual Stations)

station 001 offset = -3.80 station 002 offset = -3.20

station 003 offset = -3.60 station 004 offset = -3.70

station 005 offset = -3.60 station 006 offset = -3.50

station 007 offset = -3.40 station 008 offset = -3.60

station 009 offset = -3.50 station 010 offset = -3.50

station 011 offset = -3.70 station 012 offset = -3.70

station 013 offset = -3.50 station 014 offset = -3.20

station 015 offset = -3.70 station 016 offset = -3.60

station 017 offset = -3.70 station 018 offset = -4.00

station 019 offset = -3.90 station 020 offset = -3.80

station 021 offset = -4.00 station 022 offset = -3.40

station 023 offset = -3.90 station 024 offset = -3.70

station 025 offset = -3.60 station 026 offset = -3.80

station 027 offset = -3.10 station 028 offset = -3.90

station 029 offset = -3.90 station 030 offset = -3.70

station 031 offset = -3.70 station 032 offset = -3.70

station 033 offset = -3.20 station 034 offset = -3.90

station 035 offset = -3.60 station 036 offset = -3.90

station 037 offset = -3.80 station 038 offset = -3.60

station 039	offset = -3.50	station 040	offset = -3.50
station 041	offset = -3.50	station 042	offset = -3.50
station 043	offset = -3.60	station 044	offset = -3.50
station 045	offset = -3.70	station 046	offset = -3.40
station 047	offset = -3.60	station 048	offset = -3.50
station 049	offset = -3.80	station 050	offset = -3.40
station 051	offset = -3.80	station 052	offset = -3.20
station 053	offset = -3.70		