

CTD Measurements during 06AQANTXV/4

Instruments: Falmouth Scientific ICTD, Sn: 1360 and Sn: 1347

Falmouth Scientific Reference Grade
Platinum Resistance Thermometer
range : -2 - 32 deg C
accuracy : +/- 0.003 deg C
stability : +/- 0.0005 deg C/month
resolution : 0.0001 deg C

Falmouth Scientific Thermistor Sensor
range : -2 - 32 deg C
accuracy : +/- 0.010 deg C
stability : +/- 0.001 deg C / month
resolution : 0.0001 deg C

Falmouth Scientific Titanium Pressure Sensor
range : 0 - 7000 dbar
accuracy : +/- 2.1 dbar
stability : +/- 0.7 dbar/month
resolution : 0.08 dbar

Falmouth Scientific Inductive Conductivity Sensor
range : 0 - 65 mmho/cm
accuracy : +/- 0.003 mmho/cm
stability : +/- 0.0005 mmho/cm/month
resolution : 0.0002 mmho/cm

Each CTD has two Platinum Resistance Thermometer

Software : FSI Software for data acquisition
CTD postprocessing in analogy to Version 1.12

Time lag : 0.10 s

ICTD-SN 1347; Cal_date: AUG.98

Calibration: post-cruise no pre-cruise calibration used

#PT1

a1 = 0.00179275
a2 = 0.000367769
a3 = 5.98102E-06
a4 = -1.73705E-06
a5 = 3.92021E-08

#PT2

a1 = -0.00296646
a2 = 0.000105862
a3 = 1.00638E-05
a4 = -1.12480E-06
a5 = 2.20040E-08

temperature post-cruise calibration

the temperature data are used only from PT2

$T(\text{corrected}) = T(\text{reading}) + dT$

with $dT = a1 + a2*T + a3*T**2 + a4*T**3 + a5*T**4$

$ai : T(\text{calibrated}) - T(\text{reading})$

#PRES

a1 = 1.6215
a2 = 0.000766727
a3 = -2.36597E-07
a4 = -5.02071E-11
a5 = 8.88206E-15

#UNLOAD PRES

0.0

pressure post-cruise calibration
 $p(\text{corrected}) = p(\text{reading}) + dp$
with $dp = a1 + a2*p + a3*p**2 + a4*p**3 + a5*p**4$
ai : $p(\text{calibrated}) - p(\text{reading})$

ICTD-SN 1360; Cal_date: AUG.98
Calibration: post-cruise no pre-cruise calibration used

#PT1

a1 = 0.00448876
a2 = -4.55829E-05
a3 = 3.83954E-05
a4 = -2.45250E-06
a5 = 4.40105E-08

#PT2

a1 = -0.00332538
a2 = -0.000208227
a3 = 3.21668E-05
a4 = -1.67948E-06
a5 = 2.77787E-08

temperature post-cruise calibration
the temperature data are used only from PT2
 $T(\text{corrected}) = T(\text{reading}) + dT$
with $dT = a1 + a2*T + a3*T**2 + a4*T**3 + a5*T**4$
ai : $T(\text{calibrated}) - T(\text{reading})$

#PRES

a1 = -0.641264
a2 = -0.000848878
a3 = 3.51877E-07
a4 = -7.04156E-11
a5 = 4.47779E-15

#UNLOAD PRES

0.0

Pressure post-cruise calibration
 $p(\text{corrected}) = p(\text{reading}) + dp$
with $dp = a1 + a2*p + a3*p**2 + a4*p**3 + a5*p**4$
ai : $p(\text{calibrated}) - p(\text{reading})$

after calibration the platinum temperature is summed with the fast thermistor as follows:

$F(t) = F(t-dt)*W2 + Fi(t)*(1-W2)$ filtered fast thermistor
 $F'(t) = Fi(t) - F(t)$ high pass filtered fast temperature
 $T(t) = Ti(t) + F'(t)$ summed platinum and fast thermistor

with $W2 = \exp(-dt/TtauF)$ dt is the CTD observations intervall in seconds
dt = 48ms

TtauF is the Platinum thermometer time constant
in seconds relative to the fast thermistor

TtauF = 400 ms

Ti is the unfiltered platinum temperature = T(corrected)

Fi is the unfiltered fast thermistor

The CTD-temperature is IPTS-68

Correction of the CTD-conductivity data with the bottle-samples

COND(corrected) = COND(CTD) - COND(delta)
with COND(delta)= average(COND(CTD)-COND(WATERSAMPLE))

Station/Cast	COND(delta)
00101 to 00601	-0.0149
00703	-0.0138
00801 to 00901	-0.0136
01001	-0.0130
01102 to 01106	-0.0129
01201	-0.0131
01301	-0.0130
01401	-0.0133
01501 to 01502	-0.0129
01601	-0.0131
01701	-0.0132
01801	-0.0128
01901	-0.0134
02001 to 02002	-0.0135
02101	-0.0136
02201 to 02801	-0.0134
02901	-0.0138
03001 to 03101	-0.0140
03201	-0.0135
03301 to 03401	-0.0134
03501	-0.0135
03601	-0.0134
03701	-0.0130
03801	-0.0128
03901	-0.0127
04001	-0.0126
04101	-0.0129
04201	-0.0124
04301	-0.0121
04401	-0.0130
04501	-0.0127
04601	-0.0133
04701 to 04702	-0.0117
04801	-0.0116
04901	-0.0113
05001	-0.0115
05101	-0.0120
05201 to 05301	-0.0121
05401	-0.0119
05501	-0.0168
05601 to 05701	-0.0158
05801	-0.0145
05901	-0.0140
06001	-0.0137
06101	-0.0140
06201	-0.0141
06301	-0.0143
06501	-0.0141
06601	-0.0144
06701 to 06802	-0.0140
06901	-0.0139
07001 to 07101	-0.0142
07201 to 07301	-0.0144
07401	-0.0142
07501	-0.0144
07601	-0.0145
07701 to 07702	-0.0146
07802 to 07804	-0.0147

07901	-0.0149
08001	-0.0148
08101	-0.0150
08201	-0.0149
08301	-0.0151
08401	-0.0149
08501	-0.0150
08601	-0.0153
08701 to 08901	-0.0149
09001	-0.0147
09101	-0.0145
09201	-0.0143
09301	-0.0150
09401 to 09601	-0.0151
09701	-0.0153
09801	-0.0152
09902 to 09905	-0.0150
10001	-0.0151
10101	-0.0153
10201	-0.0150
10301	-0.0148
10401	-0.0150
10501 to 10601	-0.0151
10702 to 10704	-0.0150
10801	-0.0152
10901	-0.0150
11001	-0.0151
11101	-0.0150
11201	-0.0149
11301	-0.0150
11402 to 11404	-0.0148
11501	-0.0149
11601 to 11701	-0.0150
11801	-0.0148
11901	-0.0142
12001 to 12101	-0.0144
12201 to 12202	-0.0148
12301 to 12401	-0.0140
12501 to 12601	-0.0147
12701	-0.0148
12801	-0.0146
12901	-0.0144
13001	-0.0141
13101	-0.0144
13201	-0.0145
13301 to 13401	-0.0149
13501	-0.0154
13601	-0.0147

CTD Files column 5 : transmissiometer raw data
range between 0 and 5 Volt
these data are not controlled