

QA/QC Log: Gulf Jackson, 2003

Key to Log:

File Name: Name of excel files containing the data for that month. File names have two or three parts: 1) the two-letter site abbreviation (GJ, HB, BA, etc.), 2) the year and month (ie. -0201), and 3) the nature of the file (“-raw” contains the raw, unaltered data; “-QAQC” contains the quality controlled data set as well as all corrections; the file name that ends with the year and month is the quality controlled file containing only the corrected and finalized data—this is the file sent to the archive)

Deployments: Number of different sondes that recorded data during the month and the periods of dates/times of each deployment.

Condition of Sonde: The post-deployment condition of each sonde deployed during the month. This includes information on fouling, equipment failures and whether post-deployment checks were performed.

Removed Data: Tabulation of all data points removed from a given month. “Trimming on ends of data sets” is a record of all data points removed from either the beginning or the end of the different files in order to create a seamless monthly record (most points removed here were data not recorded in the water, but rather, were point recorded prior to deployment or following retrieval); “Removal of bad data” is a record of data deemed to be of low quality (for example, data out of range of instrument, instrument or probe failures, etc... See Word file “QAQCGuidelines.doc” for criteria used). Table columns give the parameter values deleted, the reason for the deletion (see abbreviations) and the dates and times of points deleted.

Corrected data: This is a record of all data points that were corrected. This includes corrections due to instrument drift, fouling, incorrect instrument calibration, etc. Included are probe readings in the standard pre- and post-deployment and excel formulae used to calculate corrected values. Inability to correct data due to lack of proper post-deployment check procedures or substandard sonde condition (eg. heavily fouled) may also be noted here.

Missing data: This is a record of all missing data points not due to the QA/QC process (ie. not accounted for in “Removal of bad data”). A common cause for this missing data is a lag time between the retrieval of one sonde and the deployment of the second sonde or failure of the instrument to log data at a given time.

Problems and Anomalies: This is a record of troublesome trends or data points not removed from data set, but that could prove a problem in interpretation. Examples include sudden jumps in the data when sondes are changed out (reflecting drift in retrieved sonde or a lack of standardization between the two sondes). Notes regarding reliability of data (whether or not it is or may be faulty) may also be found here. **ALWAYS read this section before interpreting data.**

Abbreviations:

IF	=	Instrument Failure: Data logger returned values of -6999
PF	=	Probe Failure: Probe measuring individual parameter apparently malfunctioned.
ADL	=	Above Detection Limit: data logger returned a data point that is above the detection limit of the probe
BDL	=	Below Detection Limit: data logger returned a data point that is above the detection limit of the probe
SND	=	Sonde Not Deployed: evidence indicates that sonde was not in the water on-site when data was recorded
FOUL	=	Fouled: evidence indicates sonde was not functioning properly due to severe fouling
EXP	=	Exposed: Sonde was exposed to air due to low water level or some disturbance.
NMD	=	Next month's data: trimmed data belonged to next month
PMD	=	Previous month's data: trimmed data belonged to previous month

General Notes on Reliability of Data:

- 1) In general, measurements of temperature and depth are very reliable unless otherwise noted in “Problems and Anomalies”.
- 2) Salinity is typically reliable, but this data can be compromised by bad calibrations and fouling. These effects are most obvious as sudden discontinuities in the trend when sondes are changed. If the discontinuity that occurs with a sonde change is more than +/- 2 ppt in magnitude, the discontinuity is noted as a faulty trend.
- 3) Measurements of dissolved oxygen are often not reliable. Typically, oxygen measurements taken soon after a sonde is deployed are reliable, but reliability decreases during the deployment period due to instrument drift and fouling. The most unreliable oxygen data is that collected near the time the sonde is retrieved. ALWAYS read “Problems and Anomalies” before interpreting dissolved oxygen! Dissolved oxygen discontinuities of +/- 25% or more coincident with sonde changes are noted as faulty if they do not fall within the actual rate of change occurring before and after the sonde change.
- 4) The reliability of turbidity measurements is much like that of oxygen. Turbidity measurements are best early and worst late in the deployment period.
- 5) The reliability of chlorophyll measurements is unknown. We do not currently know what the measurements mean in a biological context. Confirmation studies are underway.
- 6) If the word "**faulty**" appears regarding a trend or data period, the data should be considered highly unreliable. Do not use this data (if it wasn't deleted altogether) for anything but a general guideline to potential conditions. This designation is only used regarding data known to be of very poor quality.
- 7) If the phrase "**may be faulty**" appears regarding a trend or data period, the data may not be reliable. Typically, the data appears to be of reasonably good quality and probably does reflect the real trends in environmental condition, but very strict interpretation is not recommended.
- 8) If a proper post-deployment check was not performed, reliability of all data for that deployment period must be considered suspect.

JANUARY--2003

Files: Data: GJ-0301-raw, GJ-0301-QAQC, GJ-0301

Deployments: (4); 12/23-1/6, 1/6-1/21, 1/21-1/31, 1/31-2/21

Condition of Sondes: 12/23-1/6 (almost complete instrument failure), 1/6-1/21 (complete instrument failure), 1/21-1/31 (ok), 1/31-2/21 (moderate fouling)

Removed Data:

Parameter(s)	Problem	Data Points
All	IF	all but 29 points during 1/1-1/6
Turbidity	PF	12/23-12/31
Chlorophyll	PF	12/23-12/31
All	IF	all but 2 points during 1/6-1/21

Corrected Data:

12/23-1/6

Specific Conductivity:

standard 1.413, probe 1.86

Formula: $= -((1.86 - 1.413) / (\$B\$1754 - \$B\$1089)) * (B1498 - \$B\$1089) + E1498$

Salinity $= (0.7062 * Q1498) - 2.6624$

Oxygen:

standard 100, probe 623.5

NOT CORRECTED—probe failure during post-deployment check

Turbidity:

standard 0, probe -1.8; standard 100, probe 128.3

NOT CORRECTED—probe failure

Chlorophyll:

standard 0.0, probe 716.2

NOT CORRECTED —probe failure during post-deployment check

1/6-1/21

**No Corrections applied due to complete instrument failure

1/21-1/31

Specific Conductivity:

standard 10, probe 10.5

Formula: $= -((10.5 - 10) / (\$B\$1468 - \$B\$991)) * (B991 - \$B\$991) + E991$

Salinity $= (0.6895 * Q991) - 2.0345$

Oxygen:

standard 100, probe 101.9

Formula: $= -((101.9 - 100) / (\$B\$1468 - \$B\$991)) * (B991 - \$B\$991) + G991$

Conversion for O2 concentration: $= 8.62 - (0.127 * D991) - (0.07161 * R991) + (0.0922 * O991)$

Turbidity:

standard 0, probe 1.8; standard 100, probe 106.9

Formula: $= (((((100/105.1) - 1) * (J991)) - (1.8)) * ((B991 - \$B\$991) / (\$B\$1468 - \$B\$991))) + J991$

Chlorophyll:

standard 0.0, probe -0.2

Formula: $= -((-0.2 - 0) / (\$B\$1468 - \$B\$991)) * (B991 - \$B\$991) + K991$

1/31-2/21

Specific Conductivity:

standard 10, probe 8.1

Formula: $= -((8.1 - 10) / (\$B\$2480 - \$B\$1469)) * (B1470 - \$B\$1469) + E1470$

Salinity $= (0.6977 * Q1469) - 2.2349$

Oxygen:

standard 100, probe 949

Formula: $= -((94 - 100) / (\$B\$2480 - \$B\$1469)) * (B1469 - \$B\$1469) + G1469$

Conversion for O2 concentration: $= 7.63 - (0.106 * D1469) - (0.0579 * R1469) + (0.0874 * O1469)$

Turbidity:

standard 0, probe 17.7; standard 100, probe 110

Formula: $= (((((100 / 92.3) - 1) * (J1469)) - (17.7)) * ((B1469 - \$B\$1469) / (\$B\$2480 - \$B\$1469))) + J1469$

Chlorophyll:

standard 0.0, probe 4.8

Formula: $= -((4.8 - 0) / (\$B\$2480 - \$B\$1469)) * (B1469 - \$B\$1469) + K1469$

Problems and Anomalies:

Oxygen 12/23-1/6: During the post-deployment check the oxygen probe read 623% in 100% standard suggesting a probe failure during the check procedure (field notes indicate the DO membrane was not intact at time of check). Oxygen readings during this deployment period did not appear anomalous relative to oxygen readings from other parts of the month. The original data were retained but **may be faulty** due to instrument drift or biofouling.

Turbidity 12/23-1/6: The turbidity probe was not functioning properly during the post-deployment check (the wiper was parking over the optics). During the deployment period, the probe read increasingly more negative values (as low as -20NTU). Even after applying a correction, most of this data was still below the acceptable level (-8NTU). This turbidity data was deemed **faulty** and was deleted.

Chlorophyll 12/23-1/6: Not correctable due to probe failure during post-deployment check (probe read 716 in 0.0 standard). The readings during the deployment period were consistent with a probe functioning properly, suggesting the probe only failed during the post-deployment check. The wiper was parking over the optics during the post-deployment check, so that was the likely culprit; there was no evidence to suggest the same happened during the deployment period. The original data were retained, but **may be faulty** due to drift or biofouling. There was also one point during this period (1/4 2300) that was above the detection limit of the probe; it was deemed **faulty** and was deleted.

Turbidity 1/31-2/21: Application of the correction factor resulted in a lot of negative numbers toward the end of the deployment period. The negatives tend to be about halfway between zero and the intercept of the correction equation (-17.7). This suggests there was an effect that needed correcting, but that the post-deployment check overstated the severity of the correction. The corrected data were retained, but may be too low.

Chlorophyll 1/31-2/21: Application of the correction factor resulted in a lot of negative numbers toward the middle of the deployment period. This suggests that the cause of the Chlorophyll probe reading 4.3 in a 0.0 standard happened rather suddenly toward the middle of the deployment period and did not happen gradually as assumed by the correction equation. The corrected data is retained but **may be faulty** for at least a portion of this period.

Oxygen 1/31 1600: Oxygen spiked to 197% from ~110%. This point was likely **faulty** but was retained due to lack of evidence for probe failure.

FEBRUARY-2003

Files: Data: GJ-0302-raw, GJ-0302-QAQC, GJ-0302

Deployments: (2); 1/31-2/21, 2/21-3/21

Condition of Sondes: 1/31-2/21 (occasional instrument failure; moderate fouling), 2/21-3/21 (occasional instrument failure; severely fouled)

Removed Data:

Parameter(s)	Problem	Data Points
All	IF	27 points during 2/1-2/21

Corrected Data:

1/31-2/21

**This time period was continuous with January and was corrected as for that month (see above)

2/21-3/21

Specific Conductivity:

standard 10, probe 5.05

Formula: $= -((5.05 - 10) / (\$B\$2330 - \$B\$993)) * (B993 - \$B\$993) + E993$

Salinity $= (0.7103 * Q993) - 2.8031$

Oxygen:

standard 100, probe 33.0

NOT CORRECTED—reading below acceptable limit (see below)

Turbidity:

standard 0, probe 40.9; standard 100, probe 1039.4

NOT CORRECTED—probe too heavily fouled (see below)

Chlorophyll:

standard 0.0, probe

Formula: $= -((0.4 - 0) / (\$B\$2330 - \$B\$993)) * (B993 - \$B\$993) + K993$

Problems and Anomalies:

Salinity 2/21 1500-1530: When the sondes were changed on 2/21, salinity went from 24.5ppt to 30.5ppt. This discontinuity is **faulty** and not correctable.

Oxygen 2/21 1500-1530: When the sondes were changed on 2/21, oxygen went from 96% to 117%. This discontinuity is **faulty** and not correctable.

Oxygen and Turbidity 2/21-3/21: When retrieved on 3/21, the sonde was severely fouled. Oxygen had been declining and turbidity had been increasing prior to retrieval, both indicating the effects of this fouling on probe performance. The oxygen probe read 33% in a 100% standard so it is not correctable. Turbidity read 1039NTU in a 100NTU standard also preventing correction. The suspected portion of the record was deemed **faulty** and was deleted, but was entirely within the month of March (oxygen: 3/7 1900-3/21 1130; turbidity: 3/14 430- 3/21 1130). The remaining portions of the original data were retained but **may be faulty** due to drift or biofouling.

MARCH--2003

Files: Data: GJ-0303-raw, GJ-0303-QAQC, GJ-0303

Deployments: (2); 2/21-3/21, 3/21-4/3

Condition of Sondes: 2/21-3/21 (occasional instrument failure; severely fouled), 3/21-4/3 (instrument failure extensive; moderately fouled)

Removed Data:

Parameter(s)	Problem	Data Points
All	IF	19 points during 3/1-3/21
Oxygen	FOUL	3/7 1900-3/21 1130
Turbidity	FOUL	3/14 430- 3/21 1130
All	IF	all but 205 points during 3/21-3/31

Corrected Data:

2/21-3/21

**This time period was continuous with January and was corrected as for that month (see above)

3/21-4/3

Specific Conductivity:

standard 10, probe 9.35

Formula: $= -((9.35 - 10) / (\$B\$1614 - \$B\$986)) * (B986 - \$B\$986) + E986$

Salinity $= (0.6619 * Q986) - 1.1132$

Oxygen:

standard 100, probe 61.1

NOT CORRECTED—reading below acceptable limit (see below)

Turbidity:

standard 0, probe 13.4; standard 123, probe 121.1

Formula: $= (((((123/107.7) - 1) * (J986)) - (13.4)) * ((B986 - \$B\$986) / (\$B\$1614 - \$B\$986))) + J986$

Chlorophyll:

standard 0.0, probe 3.3

Formula: $= -((3.3 - 0) / (\$B\$1614 - \$B\$986)) * (B986 - \$B\$986) + K986$

Problems and Anomalies:

Oxygen and Turbidity 2/21-3/21: When retrieved on 3/21, the sonde was severely fouled. Oxygen had been declining and turbidity had been increasing prior to retrieval, both indicating the effects of fouling on probe performance. The oxygen probe read 33% in a 100% standard so it is not correctable.

Turbidity read 1039NTU in a 100NTU standard also preventing correction. The suspected portion of the record was deemed **faulty** and was deleted (oxygen: 3/7 1900-3/21 1130; turbidity: 3/14 430- 3/21 1130). The remaining portions of the original data were retained but **may be faulty** due to drift or biofouling.

Salinity 3/21 1130-1200: When the sondes were changed on 3/21, salinity went from 24.6ppt to 27.4ppt. This discontinuity is **faulty** and not correctable.

Oxygen 3/21-4/3: During post-deployment check, probe was moderately fouled and read 61.1% in a 100% standard. These data were not correctable and the original data were retained. These data are likely **faulty** due to biofouling and should be used as a rough guideline only.

APRIL--2003

Files: Data: GJ-0304-raw, GJ-0304-QAQC, GJ-0304

Deployments: (4); 3/21-4/3, 4/3-4/15, 4/15-4/24, 4/24-5/5

Condition of Sondes: 3/21-4/3 (repeated instrument failure; moderate probe fouling), 4/3-4/15 (light fouling), 4/15-4/24 (light fouling), 4/24-5/5 (heavy fouling)

Removed Data:

Parameter(s)	Problem	Data Points
all	IF	44 points between 4/1 and 4/3
oxygen	PF	4/3-4/15
oxygen	FOUL	4/21-4/24

Corrected Data:

3/21-4/3

**This time period was continuous with March and was corrected as for that month (see above)

4/3-4/15

Specific Conductivity:

standard 10, probe 9.805

Formula: $=(-((9.805-10)/(\$B\$704-\$B\$128))*(B128-\$B\$128))+E128$

Salinity $=0.4697*(Q128^{1.0827})$

Oxygen:

pre-deployment O2: 135.0

post-deployment O2: none

**Not correctable.

Turbidity:

standard 0, probe-0.1; standard 123, probe 118.8

Formula: $=((((123/118.9)-1)*(K128))-(-0.1))*((B128-\$B\$128)/(\$B\$704-\$B\$128))+K128$

Chlorophyll:

standard 0.0, probe 1.6

Formula: $=(-((1.6-0)/(\$B\$704-\$B\$128))*(B128-\$B\$128))+L128$

4/15-4/24

Specific Conductivity:

standard 10, probe 10.2

Formula: $=(-((10.2-10)/(\$B\$1129-\$B\$705))*(B705-\$B\$705))+E705$

Salinity $=0.4427*(Q705^{1.099})$

Oxygen:

**Not correctable

Turbidity:

standard 0, probe 0.2; standard 100, probe 121.1

Formula: $=((((123/119)-1)*(K705))-(-0.2))*((B705-\$B\$705)/(\$B\$1129-\$B\$705))+K705$

Chlorophyll:

standard 0.0, probe .7

Formula: $=(-((1.6-0)/(\$B\$1129-\$B\$705))*(B705-\$B\$705))+L705$

4/24-5/5

Specific Conductivity:

standard 10, probe 7.31

**Not correctable. Fouled.

Oxygen:

pre-deployment O2: 102.25

post-deployment O2: 53.5

**Not correctable.

Turbidity:

standard 0, probe 12; standard 123, probe 129.6

Formula: $=((((123/117.6)-1)*(J2))-(12))*((B2-\$B\$2)/(\$B\$529-\$B\$2))+J2$

Chlorophyll:

standard 0.0, probe 5.9

Formula: $=(-((5.9-0)/(\$B\$529-\$B\$2))*(B2-\$B\$2))+K2$

Problems and Anomalies:

Oxygen 3/21-4/3: During post-deployment check, probe was moderately fouled and read 61.1% in a 100% standard. These data were not correctable and the original data were retained. These data are likely **faulty** due to biofouling and should be used as a rough guideline only.

Salinity 4/3: Discontinuity. Salinity suddenly increased from 23.3ppt to 27.8ppt coincident with the changing of the sondes on 4/3. This discontinuity is **faulty**.

Oxygen 4/3-4/15: When sonde was deployed, it read 135% in 100% standard. Over the deployment period oxygen readings slowly decreased with very little tidal variation. Readings suddenly dropped ~25% on 4/10. During post-deployment check probe read 71.9% in 100% standard. Probe likely malfunctioned during deployment period. These data were deemed **faulty** and were deleted.

Oxygen 4/15-4/24: Following deployment the oxygen probe read 49.0% in a 100% standard. The probes had suffered heavy fouling. This indicates that biofouling caused this probe to not read correctly. The suspect portion of the record was deemed **faulty** and was deleted. The remainder of the record was not correctable for instrument drift or fouling, so the original values were retained. Interpret with caution.

MAY--2003

Files: Data: GJ-0305-raw, GJ-0305-QAQC, GJ-0305

Deployments: (5); 4/24-5/5, 5/5-5/12, 5/12-5/20, 5/20-5/30, 5/30-6/9

Condition of Sondes: 4/24-5/5 (very heavy probe fouling), 5/5-5/12 (very heavy probe fouling), 5/12-5/20 (very heavy probe fouling), 5/20-5/30 (heavy probe fouling), 5/30-6/9 (very heavy probe fouling)

Removed Data:

Parameter(s)	Problem	Data Points
oxygen	FOUL	5/2 145-5/5; 5/10 416-5/12 846; 5/16 1946-5/20 1346; 5/28 416-530 1016
salinity	FOUL	5/2 145-5/5

Corrected Data:

4/24-5/5

Specific Conductivity:

standard 10, probe 7.31

**Not correctable. Fouled.

Oxygen:

pre-deployment O2: 102.25

post-deployment O2: 53.5

**Not correctable.

Turbidity:

standard 0, probe 12; standard 123, probe 129.6

Formula: $=((((123/117.6)-1)*(J2))-(12))*((B2-\$B\$2)/(\$B\$529-\$B\$2))+J2$

Chlorophyll:

standard 0.0, probe 5.9

Formula: $=(-(5.9-0)/(\$B\$529-\$B\$2))*((B2-\$B\$2))+K2$

5/5-5/12

Specific Conductivity:

standard 10, probe 10.2

Formula: $=(-(10.2-10)/(\$B\$861-\$B\$531))*((B531-\$B\$531))+D531$

Salinity $=(0.6987*Q531)-2.5109$

Oxygen:

pre-deployment O2: 95.84

post-deployment O2: 47.77

**Not correctable.

Turbidity:

standard 0, probe 2.1; standard 123, probe 125.4

Formula: $=((((123/123.3)-1)*(J531))-(2.1))*((B531-\$B\$531)/(\$B\$861-\$B\$531))+J531$

Chlorophyll:

standard 0.0, probe 0.6

Formula: $=(-(0.6-0)/(\$B\$861-\$B\$531))*((B531-\$B\$531))+K531$

5/12-5/20

Specific Conductivity:

standard 10, probe 9.3

Formula: $=(-(9.3-10)/(\$B\$1255-\$B\$862))*((B862-\$B\$862))+D862$

Salinity $=(0.6842*Q862)-1.9931$

Oxygen:

pre-deployment O2: 107.8

post-deployment O2: 41.23

**Not correctable.

Turbidity:

standard 0, probe 2.4; standard 123, probe 119.6

Formula: $=((((123/117.2)-1)*(J862))-(2.4))*((B862-\$B\$862)/(\$B\$1255-\$B\$862))+J862$

Chlorophyll:

standard 0.0, probe 2.4

Formula: $=(-(1.5-0)/(\$B\$1255-\$B\$862))*(B862-\$B\$862))+K862$

5/20-5/30

Specific Conductivity:

standard 10, probe 9.2

Formula: $=(-(9.2-10)/(\$B\$1728-\$B\$1256))*(B1256-\$B\$1256))+D1256$

Salinity $= (0.6943*Q1256)-2.2831$

Oxygen:

pre-deployment O2: 98.33

post-deployment O2: 29.83

**Not correctable.

Turbidity:

standard 0, probe 8.8; standard 100, probe 180.5

Formula: $=((((123/171.7)-1)*(J1256))-(8.8))*((B1256-\$B\$1256)/(\$B\$1728-\$B\$1256))+J1256$

Chlorophyll:

standard 0.0, probe 2.7

Formula: $=(-(2.7-0)/(\$B\$1728-\$B\$1256))*(B1256-\$B\$1256))+K1256$

5/30-6/9

Specific Conductivity:

standard 10, probe 10.1

Formula: $=(-(10.1-10)/(\$B\$482-\$B\$2))*(B2-\$B\$2))+D2$

Salinity $= (0.6784*Q2)-1.7787$

Oxygen:

pre-deployment O2: 103.67

post-deployment O2: 73.08

**Not correctable

Turbidity:

standard 0, probe 30.1; standard 100, probe 190.6

Formula: $=((((123/160.5)-1)*(J2))-(30.1))*((B2-\$B\$2)/(\$B\$482-\$B\$2))+J2$

Chlorophyll:

standard 0.0, probe 1.0

Formula: $=(-(1-0)/(\$B\$482-\$B\$2))*(B2-\$B\$2))+K2$

Problems and Anomalies:

Salinity 5/2 145-5/5: Salinity slowly decreased over this time and then when the sondes were changed on 5/5 it increased from 10ppt to 20ppt. The probes had suffered heavy fouling. This indicates that biofouling caused this probe to not read correctly. The suspect portion of the record was deemed **faulty** and was deleted. The remainder of the record was not correctable for instrument drift or fouling, so the original values were retained. Interpret with caution.

Oxygen 5/2 145-5/5: Following deployment the oxygen probe read 53.5% in a 100% standard. The probes had suffered heavy fouling. This indicates that biofouling caused this probe to not read correctly. The suspect portion of the record was deemed **faulty** and was deleted. The remainder of the record was not correctable for instrument drift or fouling, so the original values were retained. Interpret with caution.

Oxygen 5/10 416-5/12 846: Following deployment the oxygen probe read 47.8% in a 100% standard. The probes had suffered heavy fouling. This indicates that biofouling caused this probe to not read correctly. The

suspect portion of the record was deemed **faulty** and was deleted. The remainder of the record was not correctable for instrument drift or fouling, so the original values were retained. Interpret with caution.

Oxygen 5/16 1946-5/20 1346: Following deployment the oxygen probe read 41.2% in a 100% standard. The probes had suffered heavy fouling. This indicates that biofouling caused this probe to not read correctly. The suspect portion of the record was deemed **faulty** and was deleted. The remainder of the record was not correctable for instrument drift or fouling, so the original values were retained. Interpret with caution.

Oxygen 5/28 416-5/30 1016: Following deployment the oxygen probe read 29.8% in a 100% standard. The probes had suffered heavy fouling. This indicates that biofouling caused this probe to not read correctly. The suspect portion of the record was deemed **faulty** and was deleted. The remainder of the record was not correctable for instrument drift or fouling, so the original values were retained. Interpret with caution.

JUNE--2003

Files: Data: GJ-0306-raw, GJ-0306-QAQC, GJ-0306

Deployments: (4); 5/30-6/9, 6/9-6/17, 6/17-6/26, 6/26-7/3

Condition of Sondes: 5/30-6/9 (very heavy probe fouling), 6/9-6/17 (instrument failed—no data), 6/17-6/26 (ok), 6/26-7/3 (light probe fouling)

Removed Data:

Parameter(s)	Problem	Data Points
oxygen	PF	6/24 916-6/26 1346

Corrected Data:

5/30-6/9

Specific Conductivity:

standard 10, probe 10.1

Formula: $= -((10.1 - 10)/(\$B\$482 - \$B\$2)) * (B2 - \$B\$2) + D2$

Salinity $= (0.6784 * Q2) - 1.7787$

Oxygen:

pre-deployment O2: 103.67

post-deployment O2: 73.08

**Not correctable

Turbidity:

standard 0, probe 30.1; standard 100, probe 190.6

Formula: $= (((((123/160.5) - 1) * (J2)) - (30.1)) * ((B2 - \$B\$2)/(\$B\$482 - \$B\$2))) + J2$

Chlorophyll:

standard 0.0, probe 1.0

Formula: $= -((1 - 0)/(\$B\$482 - \$B\$2)) * (B2 - \$B\$2) + K2$

6/9-6/17

**No data

6/17-6/26

Specific Conductivity:

standard 10, probe 9.9

Formula: $= -((9.9 - 10)/(\$B\$1303 - \$B\$861)) * (B861 - \$B\$861) + D861$

Salinity $= (0.6997 * Q861) - 2.5228$

Oxygen:

** Not correctable. Probe failure.

Turbidity:

standard 0, probe 2.6; standard 100, probe 131.4

Formula: $= (((((123/128.8) - 1) * (J861)) - (2.6)) * ((B861 - \$B\$861)/(\$B\$1303 - \$B\$861))) + J861$

Chlorophyll:

standard 0.0, probe 2.6

Formula: $= -((2.6 - 0)/(\$B\$1303 - \$B\$861)) * (B861 - \$B\$861) + K861$

6/26-7/3

Specific Conductivity:

standard 9.62, probe 10

Formula: $= -((9.62 - 10)/(\$B\$334 - \$B\$2)) * (B2 - \$B\$2) + D2$

Salinity $= (0.6996 * Q2) - 2.5644$

Oxygen:

pre-deployment O2: 96.32

post-deployment O2: 91.56

Formula: $=(-(91.56-96.32)/(\$B\$334-\$B\$2))*(\text{B2}-\$B\$2)+\text{F2}+(100-96.32)$

Conversion for O2 concentration: $=3.55-(0.0982*\text{C2})-(0.0302*\text{R2})+(0.0676*\text{O2})$

Turbidity:

standard 0, probe 8.9; standard 123, probe 109.4

Formula: $=((((123/100.5)-1)*(\text{J2}))-8.9)*((\text{B2}-\$B\$2)/(\$B\$334-\$B\$2))+\text{J2}$

Chlorophyll:

standard 0.0, probe 1.0

Formula: $=(-(1-0)/(\$B\$334-\$B\$2))*(\text{B2}-\$B\$2)+\text{K2}$

Problems and Anomalies:

Oxygen 5/30-6/9: Post-deployment, oxygen was reading 73.08% in the 100% standard. This is below the correctable limit (~85%). The original data were retained but is **faulty** (particularly toward the end of the deployment period) due to moderate probe fouling. Interpret with caution.

All parameters 6/9-6/17: No data. The data in the sonde were not retrievable.

Oxygen 6/17-6/26. DO charge dropped below the acceptable range of the instrument (<25) on 6/24. The data between 6/24 and 6/26 were deemed **faulty** and were deleted. The remaining portion of the record (6/9-6/24) was retained but **may be faulty** due to fouling or instrument drift; interpret with caution.

JULY-2003

Files: Data: GJ-0307-raw, GJ-0307-QAQC, GJ-0307

Deployments: (5); 6/26-7/3, 7/3-7/10, 7/10-7/18, 7/18-7/28, 7/28-8/6

Condition of Sondes: 6/26-7/3 (light probe fouling), 7/3-7/10 (light probe fouling), 7/10-7/18 (light probe fouling), 7/18-7/28 (moderate probe fouling), 7/28-8/6 (light probe fouling)

Removed Data:

Parameter(s)	Problem	Data Points
oxygen	PF	7/6 1941-7/10
oxygen	PF	7/10-7/18

Corrected Data:

6/26-7/3

Specific Conductivity:

standard 9.62, probe 10

Formula: $= -((9.62 - 10) / (\$B\$334 - \$B\$2)) * (B2 - \$B\$2) + D2$

Salinity $= (0.6996 * Q2) - 2.5644$

Oxygen:

pre-deployment O2: 96.32

post-deployment O2: 91.56

Formula: $= -((91.56 - 96.32) / (\$B\$334 - \$B\$2)) * (B2 - \$B\$2) + F2 + (100 - 96.32)$

Conversion for O2 concentration: $= 3.55 - (0.0982 * C2) - (0.0302 * R2) + (0.0676 * O2)$

Turbidity:

standard 0, probe 8.9; standard 123, probe 109.4

Formula: $= (((((123 / 100.5) - 1) * (J2)) - (8.9)) * ((B2 - \$B\$2) / (\$B\$334 - \$B\$2))) + J2$

Chlorophyll:

standard 0.0, probe 1.0

Formula: $= -((1 - 0) / (\$B\$334 - \$B\$2)) * (B2 - \$B\$2) + K2$

7/3-7/10

Specific Conductivity:

standard 12.88, probe 13.01

Formula: $= -((13.01 - 12.88) / (\$B\$673 - \$B\$335)) * (B335 - \$B\$335) + D335$

Salinity $= (0.7012 * Q335) - 2.6374$

Oxygen:

**Not correctable. Probe failure.

Turbidity:

standard 0, probe -6.9; standard 123, probe 66.3

Formula: $= (((((123 / 73.2) - 1) * (J335)) - (-6.9)) * ((B335 - \$B\$335) / (\$B\$673 - \$B\$335))) + J335$

Chlorophyll:

standard 0.0, probe 3.8

Formula: $= -((3.8 - 0) / (\$B\$673 - \$B\$335)) * (B335 - \$B\$335) + K335$

7/10-7/18

Specific Conductivity:

standard 12.88, probe 13.14

Formula: $= -((13.14 - 12.88) / (\$B\$1050 - \$B\$674)) * (B674 - \$B\$674) + D674$

Salinity $= (0.711 * Q674) - 3.0298$

Oxygen:

**Not correctable. Probe failure.

Turbidity:

standard 0, probe 8.0; standard 123, probe 116.4

Formula: $=((((123/108.4)-1)*(J674))-(8))*((B674-\$B\$674)/(\$B\$1050-\$B\$674))+J674$

Chlorophyll:

standard 0.0, probe 1.1

Formula: $=(-(1.1-0)/(\$B\$1050-\$B\$674))*(B674-\$B\$674)+K674$

7/18-7/28

Specific Conductivity:

standard 12.88, probe 12.62

Formula: $=(-(12.62-12.88)/(\$B\$1538-\$B\$1051))*(B1051-\$B\$1051)+D1051$

Salinity $= (0.6996*Q1051)-2.5644$

Oxygen:

pre-deployment O2: 103.4

post-deployment O2: 73.35

**Not correctable.

Turbidity:

standard 0, probe 11; standard 100, probe 63.9

Formula: $=((((123/52.9)-1)*(J1051))-(11))*((B1051-\$B\$1051)/(\$B\$1538-\$B\$1051))+J1051$

Chlorophyll:

standard 0.0, probe 1.2

Formula: $=(-(1.2-0)/(\$B\$1538-\$B\$1051))*(B1051-\$B\$1051)+K1051$

7/28-8/6

Specific Conductivity:

standard 12.88, probe 13.1

Formula: $=(-(13.3-12.88)/(\$B\$431-\$B\$2))*(B2-\$B\$2)+D2$

Salinity $= (0.7101*Q2)-2.9889$

Oxygen:

pre-deployment O2: 99.72

post-deployment O2: 102.88

Formula: $=(-(102.88-99.72)/(\$B\$431-\$B\$2))*(B2-\$B\$2)+F2 + (100-99.72)$

Conversion for O2 concentration: $= 3.46 - (0.0903*C2) - (0.0277*R2) + (0.0651*O2)$

Turbidity:

standard 0, probe 7.2; standard 123, probe 128.5

Formula: $=((((123/121.3)-1)*(J2))-(7.2))*((B2-\$B\$2)/(\$B\$431-\$B\$2))+J2$

Chlorophyll:

standard 0.0, probe 0.5

Formula: $=(-(0.5-0)/(\$B\$431-\$B\$2))*(B2-\$B\$2)+K2$

Problems and Anomalies:

Oxygen 7/6-7/10: DO charge started behaving erratically on 7/6 including dropping repeatedly below the acceptable range of the instrument (<25). These data were deemed **faulty** and were deleted. The remaining portion of the record (7/3-7/6) was retained but **may be faulty** due to fouling or instrument drift; interpret with caution.

Salinity 7/10: Discontinuity. Salinity increased from 22.3 to 25 when sondes were changed. This discontinuity is **faulty**.

Oxygen 7/10-7/18: DO charge was above the acceptable range of the instrument for the entire deployment period. This data was **faulty** and was deleted.

Oxygen 7/18-7/28: Post-deployment, oxygen was reading 73.35% in the 100% standard. This is below the correctable limit (~85%). The original data were retained but is **faulty** (particularly toward the end of the deployment period) due to moderate probe fouling. Interpret with caution.

AUGUST--2003

Files: Data: GJ-0308-raw, GJ-0308-QAQC, GJ-0308

Deployments: (4); 7/28-8/6, 8/6-8/15, 8/15-8/27, 8/27-9/11

Condition of Sondes: 7/28-8/6 (very light probe fouling), 8/6-8/15 (light probe fouling), 8/15-8/27 (very light probe fouling), 8/27-9/11 (light probe fouling)

Removed Data:

Parameter(s)	Problem	Data Points
oxygen	PF	7/28-8/6
temperature, salinity & oxygen	IF	8/27-9/11

Corrected Data:

7/28-8/6

Specific Conductivity:

standard 12.88, probe 13.1

Formula: $= -((13.3 - 12.88) / (\$B\$431 - \$B\$2)) * (B2 - \$B\$2) + D2$

Salinity $= (0.7101 * Q2) - 2.9889$

Oxygen:

pre-deployment O2: 99.72

post-deployment O2: 102.88

Formula: $= -((102.88 - 99.72) / (\$B\$431 - \$B\$2)) * (B2 - \$B\$2) + F2 + (100 - 99.72)$

Conversion for O2 concentration: $= 3.46 - (0.0903 * C2) - (0.0277 * R2) + (0.0651 * O2)$

Turbidity:

standard 0, probe 7.2; standard 123, probe 128.5

Formula: $= (((((123 / 121.3) - 1) * (J2)) - (7.2)) * ((B2 - \$B\$2) / (\$B\$431 - \$B\$2))) + J2$

Chlorophyll:

standard 0.0, probe 0.5

Formula: $= -((0.5 - 0) / (\$B\$431 - \$B\$2)) * (B2 - \$B\$2) + K2$

8/6-8/15

Specific Conductivity:

standard 12.88, probe 12.85

Formula: $= -((12.85 - 12.88) / (\$B\$865 - \$B\$432)) * (B432 - \$B\$432) + D432$

Salinity $= (0.6928 * Q432) - 2.302$

Oxygen:

**No correction possible. Probe malfunction.

Turbidity:

standard 0, probe -9.5; standard 123, probe 123.5

Formula: $= (((((123 / 133) - 1) * (J432)) - (-9.5)) * ((B432 - \$B\$432) / (\$B\$865 - \$B\$432))) + J432$

Chlorophyll:

standard 0.0, probe 0.1

Formula: $= -((0.1 - 0) / (\$B\$865 - \$B\$432)) * (B432 - \$B\$432) + K432$

8/15-8/27

Specific Conductivity:

standard 12.88, probe 13

Formula: $= -((13 - 12.88) / (\$B\$1436 - \$B\$866)) * (B866 - \$B\$866) + D866$

Salinity $= (0.6927 * Q866) - 2.313$

Oxygen:

pre-deployment O2: 105.68

post-deployment O2: 83.95

Formula: $= -((83.95 - 105.68) / (\$B\$1436 - \$B\$866)) * (B866 - \$B\$866) + F866 + (100 - 105.68)$

Conversion for O2 concentration: $= 3.48 - (0.0926 * C866) - (0.0316 * R866) + (0.0669 * O866)$

Turbidity:

standard 0, probe -.3; standard 100, probe 35.2

Formula: $= (((((123/35.5) - 1) * (J866)) - (-0.3)) * ((B866 - \$B\$866) / (\$B\$1436 - \$B\$866))) + J866$

Chlorophyll:

standard 0.0, probe -.2

Formula: $= (-((-0.2 - 0) / (\$B\$1436 - \$B\$866)) * (B866 - \$B\$866)) + K866$

8/27-9/11

Specific Conductivity:

**Temperature sensor malfunction. No correction possible.

Oxygen:

**Temperature sensor malfunction. No correction possible.

Turbidity:

standard 0, probe 8.6; standard 123, probe 175.6

Formula: $= (((((123/167) - 1) * (J2)) - (8.6)) * ((B2 - \$B\$2) / (\$B\$728 - \$B\$2))) + J2$

Chlorophyll:

standard 0.0, probe 1.4

Formula: $= (-((1.4 - 0) / (\$B\$728 - \$B\$2)) * (B2 - \$B\$2)) + K2$

Problems and Anomalies:

Oxygen 8/6-8/15: Sonde was deployed with DO charge of 100 which is above acceptable limit (75). All oxygen values were **faulty** and were deleted.

Salinity 8/15 1414: Discontinuity. Salinity increased from 23.3ppt to 25.7ppt when sondes were changed on 8/15. This discontinuity is **faulty**.

Temperature, Salinity, Oxygen 8/27-9/11: The temperature probe was reading incorrectly (6-9°C too high), so all salinity and oxygen measures were compromised. All temperature, salinity and oxygen measures were deemed **faulty** and uncorrectable and so were deleted.

SEPTEMBER--2003

Files: Data: GJ-0309-raw, GJ-0309-QAQC, GJ-0309

Deployments: (4); 8/27-9/11, 9/11-9/18, 9/18-9/26, 9/26-10/10

Condition of Sondes: 8/27-9/11 (light fouling; O2 membrane gone), 9/11-9/18 (Bad DO probe), 9/18-9/26 (ok), 9/26-10/10 (ok)

Removed Data:

Parameter(s)	Problem	Data Points
Temperature Salinity, Oxygen	IF	8/27-9/11
Oxygen	PF	9/11-9/18

Corrected Data:

8/27-9/11

Specific Conductivity:

**Temperature sensor malfunction. No correction possible.

Oxygen:

**Temperature sensor malfunction. No correction possible.

Turbidity:

standard 0, probe 8.6; standard 123, probe 175.6

Formula: $=((((123/167)-1)*(J2))-(8.6))*((B2-\$B\$2)/(\$B\$728-\$B\$2)))+J2$

Chlorophyll:

standard 0.0, probe 1.4

Formula: $=(-((1.4-0)/(\$B\$728-\$B\$2))* (B2-\$B\$2))+K2$

9/11-9/18

Specific Conductivity:

standard 1.413, probe 2.030

Formula: $=(-((2.03-1.413)/(\$B\$1061-\$B\$729))* (B729-\$B\$729))+D729$

Salinity $=(0.7141*Q729)-3.117$

Oxygen:

**Probe malfunction. No correction possible

Turbidity:

standard 0, probe -1.5; standard 123, probe 113.8

Formula: $=((((123/115.3)-1)*(J729))-(-1.5))*((B729-\$B\$729)/(\$B\$1061-\$B\$729)))+J729$

Chlorophyll:

standard 0.0, probe 0.3

Formula: $=(-((0.3-0)/(\$B\$1061-\$B\$729))* (B729-\$B\$729))+K729$

9/18-9/26

Specific Conductivity:

standard 12.88, probe 13

Formula: $=(-((13-12.88)/(\$B\$1448-\$B\$1062))* (B1062-\$B\$1062))+D1062$

Salinity $=(0.7135*Q1062)-3.0869$

Oxygen:

pre-deployment O2: 104.95

post-deployment O2: 96.67

Formula: $=(-((96.67-104.95)/(\$B\$1448-\$B\$1062))* (B1062-\$B\$1062))+F1062 +(100-104.95)$

Conversion for O2 concentration: $=3.66-(0.101*C1062)-(0.0293*R1062)+(0.067*O1062)$

Turbidity:

standard 0, probe 5.4; standard 123, probe 137

Formula: $=((((123/106.96)-1)*(J1062))-(5.4))*((B1062-\$B\$1062)/(\$B\$1448-\$B\$1062)))+J1062$

Chlorophyll:

standard 0.0, probe -0.2

Formula: $=(-((3.4-0)/(\$B\$1448-\$B\$1062))* (B1062-\$B\$1062))+K1062$

9/26-10/10

Specific Conductivity:

standard 12.88, probe 14.5

Formula: $=(-((14.5-12.88)/(\$B\$2116-\$B\$1450))* (B1450-\$B\$1450))+D1450$

Salinity $= (0.7076*Q1450)-2.7738$

Oxygen:

pre-deployment O2: 122.6

post-deployment O2: 116.5

Formula: $=(-((116.5-122.6)/(\$B\$2116-\$B\$1450))* (B1450-\$B\$1450))+F1450 + (100-122.6)$

Conversion for O2 concentration: $=4.29-(0.121*C1450)-(0.0436*R1450)+(0.0701*O1450)$

Turbidity:

standard 0, probe 0.5; standard 123, probe 137

Formula: $=((((123/136.5)-1)*(J1450))-(0.5))*((B1450-\$B\$1450)/(\$B\$2116-\$B\$1450)))+J1450$

Chlorophyll:

standard 0.0, probe -.2

Formula: $=(-((-0.2-0)/(\$B\$2116-\$B\$1450))* (B1450-\$B\$1450))+K1450$

Problems and Anomalies:

Temperature, Salinity, Oxygen 8/27-9/11: The temperature probe was reading incorrectly (6-9°C too high), so all salinity and oxygen measures were compromised. All temperature, salinity and oxygen measures were deemed **faulty** and uncorrectable and so were deleted.

Oxygen 9/11-9/18: DO change (80-98) was above acceptable limit (75) for entire deployment period. These measurements were **faulty** and were deleted.

OCTOBER--2003

Files: Data: GJ-0310-raw, GJ-0310-QAQC, GJ-0310

Deployments: ();

Condition of Sondes:

Removed Data:

Parameter(s)	Problem	Data Points

Corrected Data:

Specific Conductivity:

standard, probe

Formula:

Salinity

Oxygen:

pre-deployment O2:

post-deployment O2:

standard 100, probe ; O2 correction =

Formula:

Conversion for O2 concentration:

Turbidity:

standard 0, probe; standard 100, probe

Formula:

Chlorophyll:

standard 0.0, probe

Formula:

Missing Data:

Problems and Anomalies:

NOVEMBER--2003

Files: Data: GJ-0311-raw, GJ-0311-QAQC, GJ-0311

Deployments: ();

Condition of Sondes:

Removed Data:

Parameter(s)	Problem	Data Points

Corrected Data:

Specific Conductivity:

standard, probe

Formula:

Salinity

Oxygen:

pre-deployment O2:

post-deployment O2:

standard 100, probe ; O2 correction =

Formula:

Conversion for O2 concentration:

Turbidity:

standard 0, probe; standard 100, probe

Formula:

Chlorophyll:

standard 0.0, probe

Formula:

Missing Data:

Problems and Anomalies:

DECEMBER--2003

Files: Data: GJ-0312-raw, GJ-0312-QAQC, GJ-0312

Deployments: ();

Condition of Sondes:

Removed Data:

Parameter(s)	Problem	Data Points

Corrected Data:

Specific Conductivity:

standard, probe

Formula:

Salinity

Oxygen:

pre-deployment O2:

post-deployment O2:

standard 100, probe ; O2 correction =

Formula:

Conversion for O2 concentration:

Turbidity:

standard 0, probe; standard 100, probe

Formula:

Chlorophyll:

standard 0.0, probe

Formula:

Missing Data:

Problems and Anomalies: