~~PG Glenn~~
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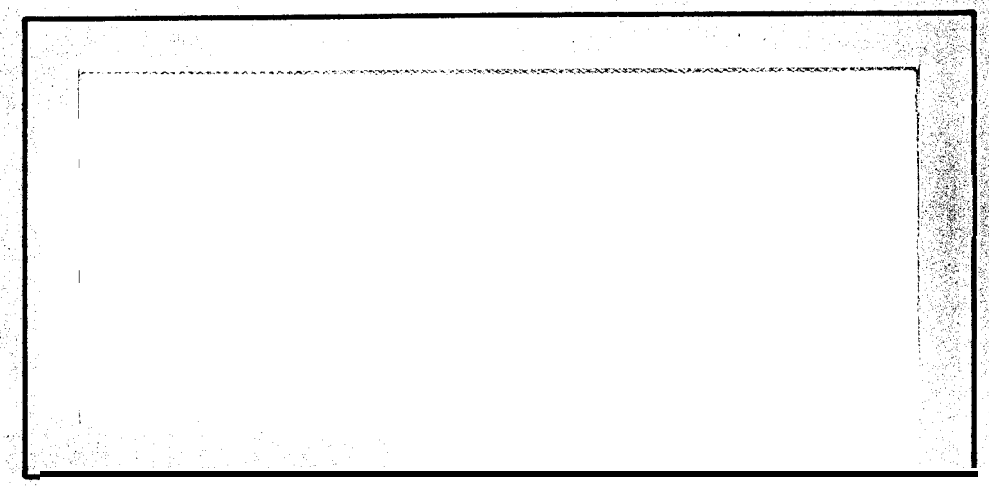

SCIENCE APPLICATIONS, INC.

# SUMMARY CRUISE REPORT'
# R/V SUNCOASTER
# March 7-22, 1983

June 9, 1983

Submitted to: Minerals Management Service
Code LE-4
Post Office Box 7944
Metairie, LA 70010

Submitted by: Science Applications, Inc.
4900 Mater's Edge Drive, Suite 255
Raleigh, North Carolina 27606

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## Introduction

Between 7 March and 22 March 1983, the first of two planned eastern Gulf of Mexico regional hydrographic cruises was conducted using the R/V SUNCOASTER. This report provides a summary and overview of activities and conditions which occurred in conjunction with that cruise.

During the cruise period, the spatial distribution of water masses was quite changeable. Clearly the Loop Current (see Figure 1) extended fairly far northward; however, it also extended toward the west so (the Loop Current eastern boundary was approximately parallel adjacent to the continental slope) only on the southern portion of the west Florida shelf. The general Loop Current boundary as defined by a surface thermal front was quite dynamic with the formation and migration of waves and perturbations of several different spatial/temporal scales. Part of the cruise procedures involved adjusting sampling stations to accommodate these relatively high frequency changes in the Loop Current geometry. This required "tailoring" activities on almost a daily basis. The basis for decisions regarding sampling plans was satellite thermal imagery and sea-surface temperature maps such as those shown in Figures 1, 2, and 3. This important information was obtained routinely from Dr. Fred Vukovich (RTI), Figure 1; Rick Berasatto (NWS/Slidell), Figure 2; and Dr. Steven Baig (NOAA/NESS/Miami), Figure 3. The latter two surface temperature representations were also available to personnel on board the vessel.

During the cruise, severe weather became a signification factor influencing decisions relative to sample and CTD cast locations. During the cruise period, a series of fronts moved through the study area approximately every two to three days. Weather conditions associated with these frontal passages caused interruption of sampling activities several times. These are the same frontal systems bringing high waves and severe weather to California and extensive flooding along the Gulf coast.

## Sampling Pattern

The final sampling pattern for this cruise is shown in Figure 4. Note that this shows only cruise tracks which included CTD and XBT casts. Due to weather considerable additional time was spent steaming or in-port at Logger Head Key and St. Petersburg (Figure 5). A detailed description of cruise activities is provided in the Cruise Log in Appendix A. A summary of sampling activities is presented in Table 1; a summary of sample stations is presented in Table 2. A summary of samples taken is shown in Table 3.

The originally scheduled cruise track is shown on Figure 1; however, as mentioned previously, this track was to be modified to accommodate existing conditions. Note that the planned and actual cruise track included sampling along the transect on which subsurface currents/temperatures are being measured. During hydrographic sampling on this transect a major frontal perturbation was present, thus we should have a simultaneous “snap-shot” of hydrographic and kinematic conditions through that feature.

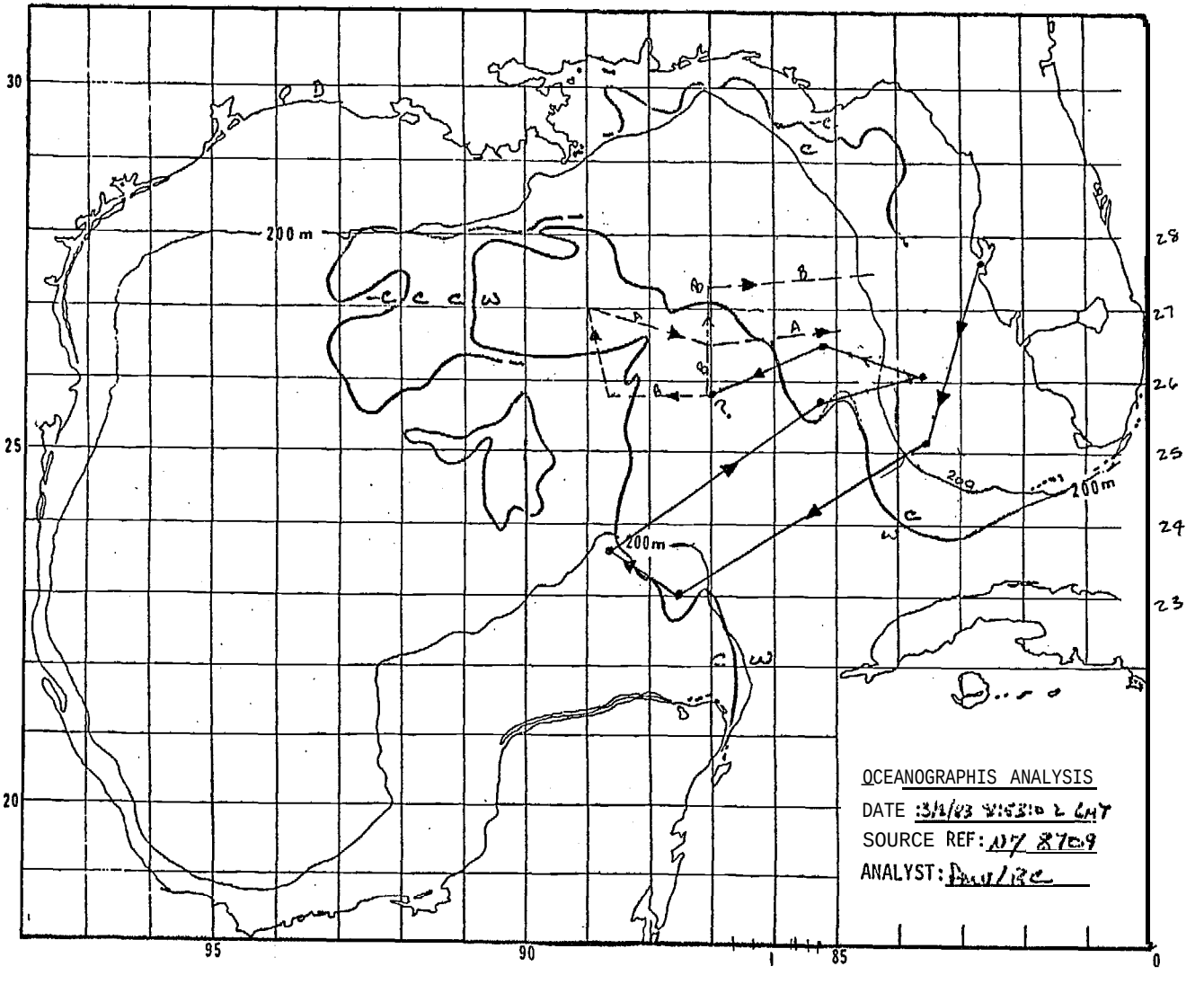


Figure 1. Loop Current boundaries (curved-solid line) and cruise track as envisioned at the beginning of the cruise. This map was made from thermal imagery provided by Dr. F. Vukovich of this program.

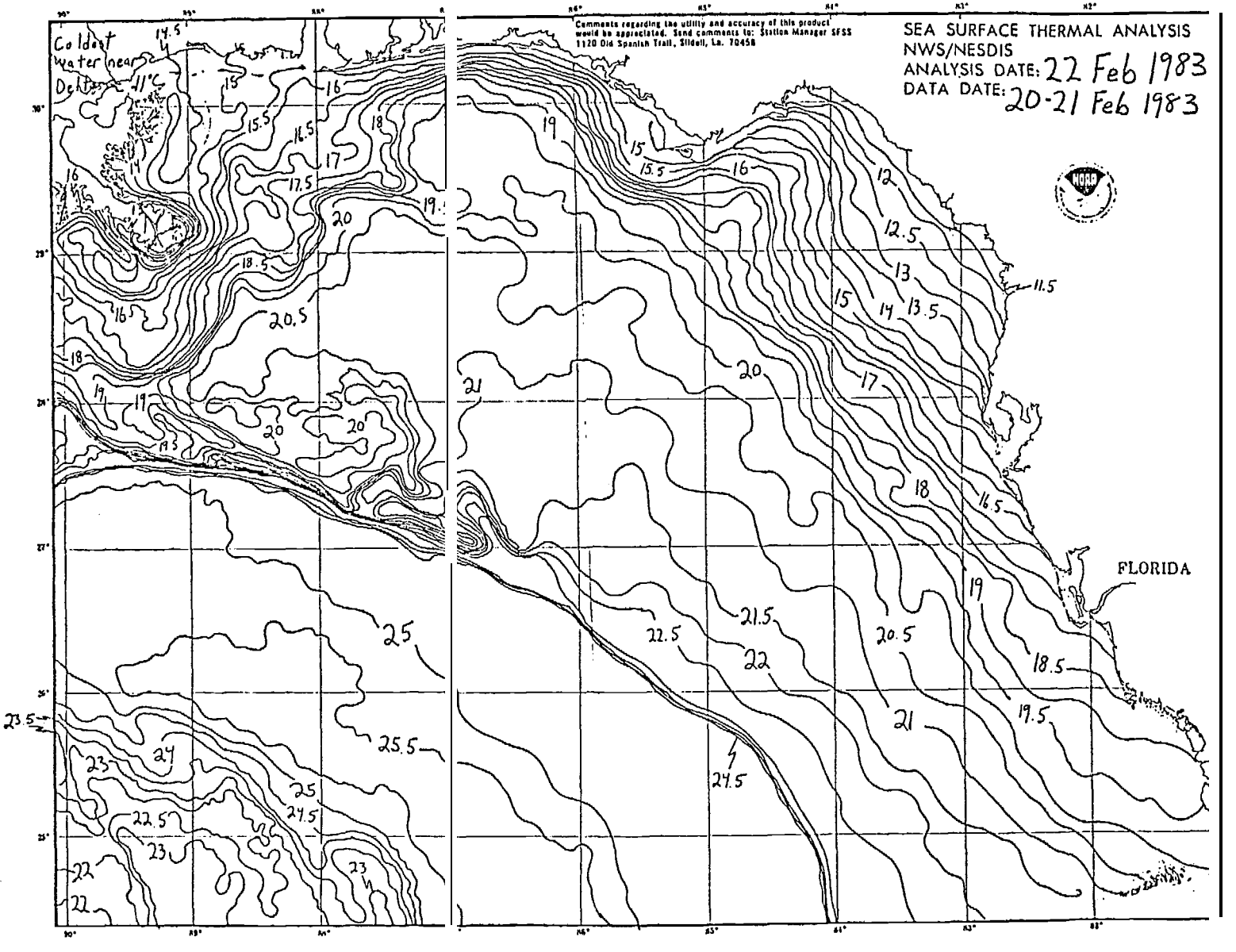


Figure 2. Sea-surface temperature map. This is created and provided twice weekly by R. Berasatto, NOAA/NWS/Slidell.

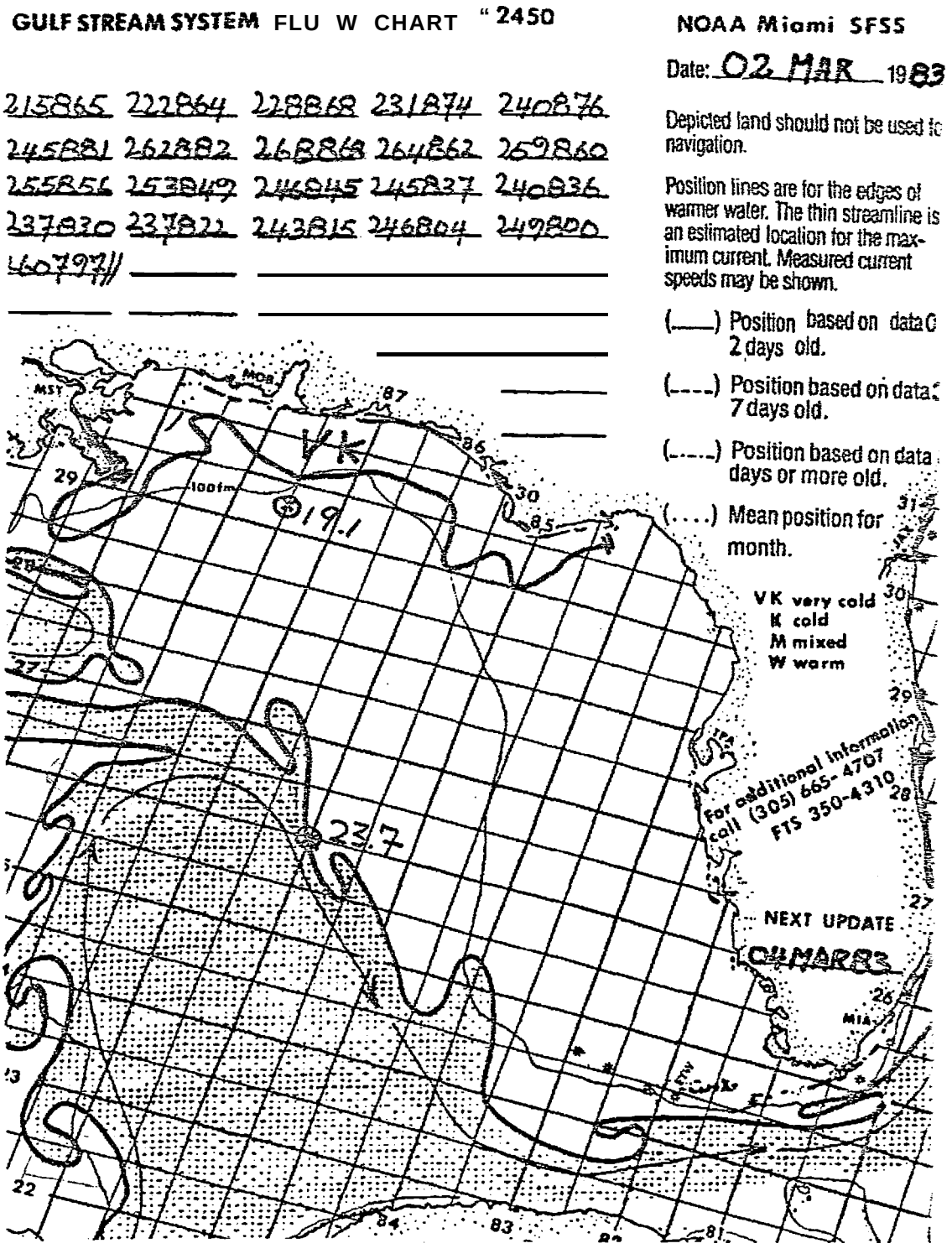


Figure 3. Sea-surface frontal map. The patterned area within the solid line indicates regions of appreciably warmer water. This data product is created and made available by Dr. Steven Baig, NOAA/NESS/Miami.

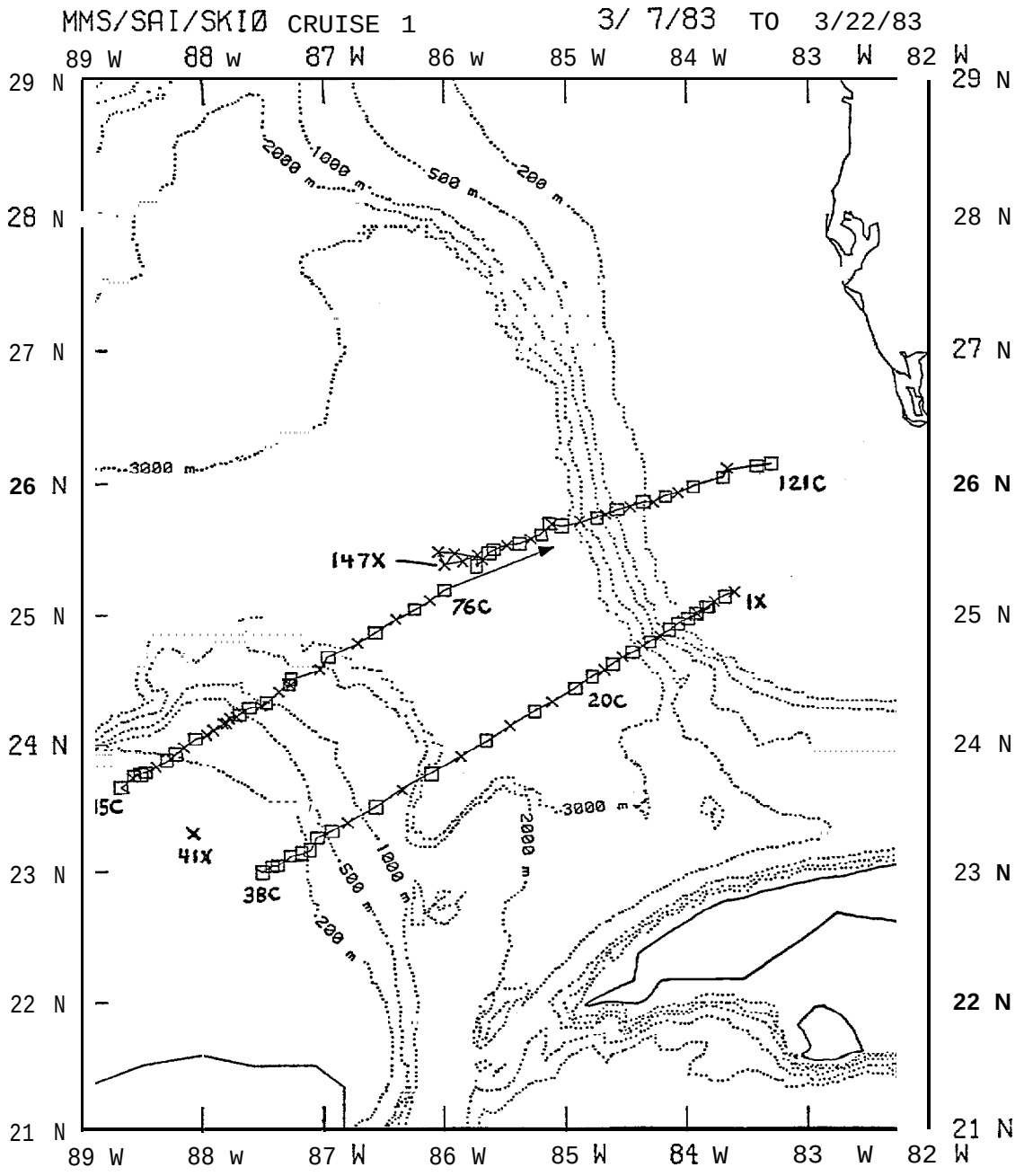


Figure 4. Map of study area showing XBT and CTD stations for R/V SUNCOASTER hydrographic cruise (7-22 March 1983).

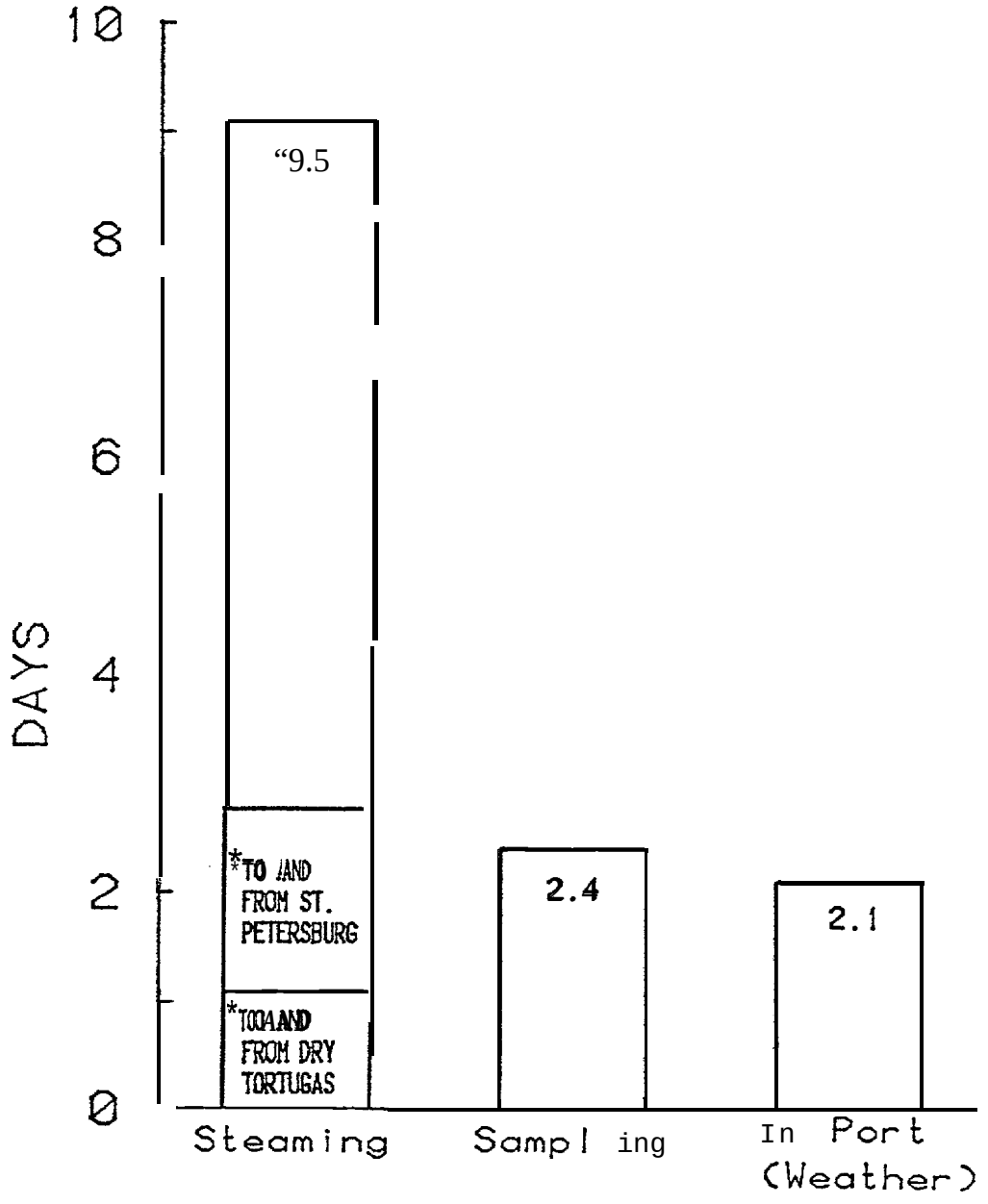


Figure 5. Bar graph detailing time spent steaming, sampling, and in port due to weather during the R/V SUNCOASTER cruise (7-22 March 1983). The asterisk refers to interruptions in the cruise due to weather.

ACTUAL SCHEDULE
MMS/SAI/SKIO
MARCH 1983
R/V SUNCOASTER CRUISE

| | ( EST) | CTD/XBT Section Time | Time Between CTD/XBT Sections |
|---|---|---|---|
| Leave St. Petersburg : | 1215 Tuesday 8 March | | 19 hours |
| Arrive Station 1X(Leg I) : | 0655 Wednesday 9 March | 30 hours | |
| Leave Station 20C(Leg I) : | 1300 Thursday 10 March | | |
| Arrive Loggerhead Key : | 0200 Friday 11 March | | *56 hours |
| Leave Loggerhead Key : | 0600 Saturday 12 March | | |
| Arrive Station 21C(Leg I): | 2100 Saturday 12 March | 35 1/4 hrs | |
| Leave Station 38C(Leg I) : | 0815 Monday 14 March | | |
| Arrive Station 45C (Leg II) : | 1600 Monday 14 March | | 7 3/4 hours |
| Leave Station 76C (Leg II) | 2300 Wednesday 16 March | 55 hours | |
| Arrive St. Petersburg : | 0130 Friday 18 March | | **63 1/3 hours |
| Leave St. Petersburg : | 2345 Friday 18 March | | |
| Arrive Station 121C (Leg III) : | 1215 Saturday 19 March | 38 3/4 hours | |
| Leave Station 147X (Leg 111) | 0300 Monday 21 March | | **32 hours |
| Arrive St. Petersburg : | 1100 Tuesday 22 March | | |
| | | 159 hours | 178 hours |

TOTAL HOURS : 337 HOURS
TOOAL DAYS: 14 DAYS

*No sampling was done during this time period. We steamed (13 hours) to the Dry Tortugas because of the weather and then returned to Leg I.

**Surface temperature mapping was done for 21½ hours during the run to St. Petersburg (Stations 77TS through 120TS). We had planned to steam in the mooring section (Leg I I I ) doing CTD/XBT casts. Instead, because of the weather, we cut diagonally across the planned 1 ine as we steamed for port and then returned to do Leg I II.

***Surface temperature mapping was done for 15 hours during the run to St. Petersburg (Stations 151TS through 181TS). We had pl anneal to drop XBT's along a more northerly return to St. Petersburg, but the weather caused us to steam back much of the way doing the same line we had run out.

Table 1. Summary of time spent on indicated activities.

STATION SUMMARY
R/V SUNCOASTER CRUISE
7-22 March 1983

| Section | Date (EsT) | Station Numbers |
|---|---|---|
| I | 9-10 March | 1X, 2C, 3X, 4C, 5X, 6C, 7C, 8C, 9C, 10C, 11C, 12X, 13C, 14X, 15C, 16X, 17C, 18X, 19C, 20C |
| I | 12-14 March | 21C, 22X, 23C, 24X, 25C, 26X, 27C, 28X, 29C, 30X, 31C, 32C, 33C, 34C, 35C, 36C, 37C, 38C |
| *II | 14-16 March | 45C, 46X, 47C, 48C, 49C, 50X, 51C, 52C, 53X, 54X, 55X, 56X, 57X, 58X, 59C, 60X, 61X, 62C, 64C, 65X, 66C, 67X, 68C, 69X, 70C, 71X, 72C, 73X, 74C, 75X, 76C |
| *III | 19-21 March | 121C, 122C, 123X, 124C, 125C, 126X, 127C, 128X, 129C, 130X, 131C, 132X, 133C, 134X, 135C, 136X, 137C, 138C, 139X, 140C, 141X, 142C, 143C, 144C, 145X, 146X, 147X, 148X, 149X |

*Between Sections I and II, surface temperature data were collected at hourly intervals: Stations 39TS-44TS and 41X.

**Before and after Section III surface temperature data were collected at half hour intervals while steaming to and from Tampa/St.. Petersburg. Stations 77TS - 120TS and 151TS - 181TS.

Table 2. Summary stations according to sampling time and section number.

SUMMARY OF
SAMPLING SUMMARY
R/V SUNCOASTER CRUISE
7-22 March 1983

| Section | CTD | XBT | Nuts | $O_2$ | Chlorophyll | Salinity |
|---|---|---|---|---|---|---|
| I (1X-20C) | 13 | 7 | 94 | 94 | 47 | 22 |
| I (21C-38C) | 13 | 5 | 106 | 106 | 48 | 27 |
| II (41X-76C) | 15 | 18 | 127 | 128 | 55 | 21 |
| III (121C-149X) | 15 | 14 | 142 | 142 | 57 | 20 |
| Totals | 56 | 44 | 469 | 470 | 207 | 90 |

Table 3. Summary of samples taken during cruise (nuts = nutrients).

## Weather

Because weather had such an impact on this cruise, it is relevant to provide a summary of conditions observed. Table 4 is a listing of meteorological conditions (wind, pressure, and air and water temperatures) as well as sea state estimates. Tables 5 and 6 provide a summary of applicable WMO sea-state and weather codes. In addition, Table 7 provides an example of weather/sea-state predictions as received from the Institute for Storm Research in Houston, Texas. These latter weather estimates were obtained periodically throughout the cruise when it became apparent that activities might be substantially influenced by adverse weather conditions.

## Data Analysis

At present, data and samples taken during this cruise are being evaluated and prepared by Skidaway Institute of Oceanography. (A detai 1 ed summary of samples taken at each station is shown in Appendix B). Sample results should be available in the very near future. At that time, data analysis and associated graphics production will be done by Science Applications, Inc. These results and any additionally needed analyses will be provided to the relevant program participants.

WEATHER LOG
R/V SUNCOASTER CRUISE
7-22 March 1983

| Station | Time (EST) | Day (March) | Wind Speed (Knots) | Wind Direction (Degrees) | Waves *Sea State (Code) | Waves Direction (Degrees) | Barometric Pressure (Inches) | Temperature Air (°C) | Temperature Water (°C) | WMO 4501 Weather (Code) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1X | 0655 | 9 | 15 | 340 | 3 | 335 | ---- | --- | 22.0 | X0 |
| 2C | 0828 | 9 | 15 | 340 | 3 | 335 | ----- | --- | 22.0 | X0 |
| 3x | 0943 | 9 | 15 | 340 | 3 | 335 | ----- | --- | 23.0 | X0 |
| 4C | 1012 | 9 | 15 | 340 | 3 | 335 | ----- | --- | 24.1 | Xo |
| 5x | 1114 | 9 | 15 | 340 | 3 | 335 | 30.32 | --- | 25.0 | Xo |
| 6C | 1141 | 9 | 15 | 360 | 3 | 010 | 30.30 | --- | 25.3 | X0 |
| 7C | 1405 | 9 | 15 | 360 | 3 | 010 | 30.30 | --- | 23.4 | -- |
| 8C | 1450 | 9 | 15 | 360 | 3 | 010 | 30.31 | --- | 24.5 | -- |
| 9C | 1542 | 9 | -- | --- | - | --- | ----- | --- | 25.1 | -- |
| 10C | 1748 | 9 | 7 | 350 | 3 | 360 | 30.31 | 23.3 | 25.4 | X0 |
| 11C | 1856 | 9 | 13 | 350 | 3 | 360 | 30.24 | 21.7 | 25.5 | X0 |
| 12X | 2021 | 9 | 13 | 350 | 3 | 360 | 30.28 | 21.1 | 25.4 | X0 |
| 13C | 2052 | 9 | 9 | 350 | 3 | 360 | 30.30 | 21.1 | 25.6 | X0 |
| 14X | 2354 | 9 | -- | --- | 3 | 360 | 30.32 | 21.1 | 25.5 | Xo |
| 15C | 0030 | 10 | 13 | 2713 | 3 | 320 | 30.32 | 20.6 | 25.7 | Xo |
| 16X | 0315 | 10 | 13 | 270 | 3 | 320 | 30.32 . | 20.0 | 25.6 | X0 |
| 17C | 0451 | 10 | 7 | 265 | 3 | 320 | 30.32 | 20.0 | 25.7 | X0 |
| 18X | 0626 | 10 | -- | --- | | --- | ----- | --- | 25.6 | -- |
| 19C | 0713 | 10 | 15 | 270 | - | 270 | 30.28 | 20.6 | 25.5 | x6 |
| 20C | 1059 | 10 | 21 | 270 | 4 | 270 | 30.28 | --- | 25.6 | xl |
| En route to Ory | | | | | | | | | | |
| Tortugas | 1515 | 10 | 26 | 310 | 5 | 320 | 30.20 | --- | --- | xl |
| En route to Dry | | | | | | | | | | |
| Tortugas | 2150 | 10 | 37 | 320 | 5 | 320 | 30.32 | --- | --- | Xo |
| Dry | | | | | | | | | | |
| Tortugas | 0200 | 11 | 33 | 320 | | 320 | 30.32 | --- | --- | xl |
| Ory | | | | | | | | | | |
| Tortugas | 0745 | 11 | 28 | 330 | | 330 | 30.34 | --- | --- | xl |
| Ory | | | | | | | | | | |
| Tortugas | 1200 | 11 | 33 | 330 | | 330 | 30.30 | --- | -- - | xl |
| Ory | | | | | | | | | | |
| Tortugas | 1805 | 11 | 20 | 330 | | 330 | 30.30 | --- | --- | xl |
| Oepart Ory | | | | | | | | | | |
| Tortugas | 0600 | 12 | 20 | 340 | | 330 | 30.44 | --- | --- | xl |
| En Route to Station | | | | | | | | | | |
| 21C | 1200 | 12 | 17 | 330 | 4 | 330 | 30.44 | --- | --- | xl |
| 21C | 2100 | 12 | 11 | 345 | 2 | 340 | 30.42 | 18.9 | 25.3 | X0 |
| 22X | 0015 | 13 | 8 | 345 | 2 | 340 | 30.41 | 18.9 | 25.2 | -- |
| 23C | 0120 | 13 | 7 | 140 | 2 | 140 | 30.38 | 18.9 | 24.9 | -- |
| 24X | 0450 | 13 | 4 | 290 | 1 | 260 | 30.32 | 20.6 | 24.8 | X1 |
| 25C | 0627 | 13 | 4 | 020 | 1 | 360 | 30.38 | 19.4 | 24.7 | X2 |
| 26X | 0940 | 13 | 4 | 020 | 1 | 360 | 30.39 | 21.7 | 25.0 | X2 |
| 27C | 1124 | 13 | 3 | 030 | 1 | 360 | 30.36 | 22.8 | 25.0 | X2 |
| 28X | 1434 | 13 | 4 | 100 | 1 | 330 | 30.30 | 22.8 | 25.4 | X2 |
| 29C | 1641 | 13 | 8 | 120 | 1 | 040 | 30.26 | 23.3 | 25.4 | X2 |
| 30X | 1959 | 13 | 10 | 120 | 1 | 150 | 30.26 | 22.8 | 25.7 | X2 |
| 31C | 2055 | 13 | 14 | 180 | 1 | 180 | 30.28 | 22.8 | 26.1 | X2 |
| 32C | 2247 | 13 | 14 | 180 | 1 | 180 | 30.29 | 22.8 | 26.0 | X2 |
| 33C | 0030 | 14 | 16 | 180 | 1 | 180 | 30.28 | 22.8 | 26.0 | X2 |
| 34C | 0240 | 14 | 12 | 180 | 2 | 180 | 30.26 | 23.3 | 25.8 | X2 |
| 35C | 0356 | 14 | 12 | 270 | 2 | 270 | 30.22 | 22.2 | 25.8 | X2 |
| 36C | 0528 | 14 | 9 | 180 | - | 180 | 30.22 | 21.7 | 25,8 | X2 |
| 37C | 0654 | 14 | 9 | 180 | 2 | 180 | 30.27 | 22.2 | 25.5 | X2 |
| 38C | 0756 | 14 | 7 | 180 | 2 | 180 | 30.28 | 22.8 | 25.4 | X2 |
| 39TS | 1007 | 14 | 13 | 180 | 2 | 180 | 30.28 | 22.8 | 24.0 | X2 |
| 40TS | 1100 | 14 | 9 | 190 | 2 | 190 | 30.26 | 23.9 | 24.2 | X2 |
| 41X | 1203 | 14 | 13 | 190 | 2 | 190 | 30.24 | 24.4 | 24.2 | X2 |
| 42TS | 1301 | 14 | 7 | 190 | 2 | 190 | 30.24 | 24.4 | 23.7 | X2 |
| 43TS | 1404 | 14 | 7 | 190 | 2 | 190 | 30.24 | 24.4 | 23.3 | X2 |
| 44TS | 1500 | 14 | 7 | 200 | 2 | 200 | 30.17 | 24.4 | 23.0 | X2 |

Table 4 Meteorological and sea-state summary for each sampling station and selected times.

WEATHER LOG
R/V SUNCOASTER CRUISE
7-22 March 1983

| Station | Time (EST) | Day (March) | Wind Speed (Knots) | Wind Direction (Degrees) | Waves *Sea State (Code) | Waves Direction (Degrees) | Barometric Pressure (Inches) | Temperature Air (°C) | Temperature Water (°C) | WMO 4501 Weather (Code) |
|---|---|---|---|---|---|---|---|---|---|---|
| 45C | 1600 | 14 | 22 | 170 | 3 | 155 | 30.16 | 23.3 | 22.5 | X2 |
| 46X | 1720 | 14 | 22 | 170 | 3 | 155 | 30.14 | 21.1 | 23.0 | X5 |
| 47C | 1735 | 14 | 22 | 140 | 3 | 140 | 30.12 | 20.0 | 22.9 | X5 |
| 48C | 1822 | 14 | 15 | 140 | 3 | 140 | 30.14 | 21.1 | 23.0 | X2 |
| 49C | 1922 | 14 | 12 | 140 | 3 | 140 | 30.14 | 21.1 | 23.0 | X2 |
| 50X | 2032 | 14 | 9 | 140 | 3 | 140 | 30.12 | 21.7 | 22.9 | X2 |
| 51C | 2118 | 14 | 17 | 180 | 3 | 180 | 30.12 | 22.2 | 23.2 | X2 |
| 52C | 2237 | 14 | 17 | 180 | 3 | 180 | 30.12 | 22.2 | 23.6 | X2 |
| 53X | 2347 | 14 | -- | --- | 4 | --- | --- | --- | 23.6 | -- |
| 54X | 0255 | 15 | 22 | 220 | 5 | 180 | 30.06 | 21.1 | 23.8 | X5 |
| 55X | 0420 | 15 | 35 | 200 | 6 | 200 | 30.02 | 21.1 | 24.2 | X5 |
| 56X | 0505 | 15 | 30 | 200 | 6 | 200 | 30.04 | 21.1 | 24.2 | X6 |
| 59X | 0633 | 15 | 17 | 210 | 6 | 200 | 30.01 | 21.1 | 24.8 | X3 |
| 57X | 0824 | 15 | 15 | 220 | 5 | 180 | 30.04 | 22.8 | 23.9 | X1 |
| 61C | 0959 | 15 | 20 | 240 | 5 | 225 | 29.98 | --- | 25.1 | X1 |
| 60X | 1148 | 15 | 26 | 250 | 5 | 250 | 29.98 | --- | 24.9 | X1 |
| 58X | 1305 | 15 | 26 | 250 | 5 | 250 | 29.98 | --- | 23.7 | X1 |
| 62C | 1437 | 15 | 28 | 240 | 4 | 250 | 29.99 | 23.3 | 25.4 | X1 |
| 63X | 1648 | 15 | 24 | 240 | 4 | 250 | 29.92 | 23.3 | --- | X1 |
| 64C | 1736 | 15 | 24 | 240 | 4 | 240 | 29.92 | 23.3 | 25.9 | X1 |
| 65X | 1949 | 15 | 22 | 240 | 4 | 240 | 29.94 | 23.3 | 25.9 | X1 |
| 66C | 2035 | 15 | 22 | 240 | 4 | 240 | --- | 23.9 | 25.7 | X1 |
| 67X | 2337 | 15 | -- | --- | - | --- | --- | --- | 25.3 | -1 |
| 68C | 0021 | 16 | 13 | 240 | 4 | 240 | 30.00 | 23.3 | 25.2 | X- |
| 69X | 0403 | 16 | 13 | 210 | 3 | 220 | 29.94 | 22.8 | 25.0 | X0 |
| 70C | 0533 | 16 | 15 | 100 | 3 | 220 | 29.91 | 22.8 | 25.1 | X0 |
| 71X | 0901 | 16 | 22 | 120 | 3 | 120 | 29.84 | 24.4 | 25.2 | X0 |
| 72C | 1013 | 16 | 26 | 150 | 4 | 150 | 29.82 | --- | 25.1 | X2 |
| 73X | 1540 | 16 | 20 | 180 | 5 | 190 | 29.68 | --- | 25.2 | -2 |
| 74C | 1712 | 16 | 20 | 230 | 5 | 190 | 29.66 | --- | 25.0 | ×- |
| 75X | 2027 | 16 | 22 | 240 | 6 | 240 | 29.76 | --- | 25.0 | %1 |
| 76C | 2128 | 16 | 35 | 260 | 5 | 240 | 29.82 | --- | 25.2 | ×1 |
| 77TS | 0030 | 17 | 26 | 270 | 4 | 270 | 29.76 | 20.6 | 23.0 | $6 |
| 78TS | 0100 | 17 | 24 | 270 | 4 | 270 | 29.76 | 20.0 | 22.5 | -- |
| 79TS | 0130 | 17 | 24 | 270 | 4 | 270 | 29.74 | 19.4 | 21.9 | X9 |
| 80TS | 0200 | 17 | 24 | 275 | 5 | 275 | 29.74 | 19.4 | 21.3 | X9 |
| 81TS | 0230 | 17 | 26 | 275 | 5 | 275 | 29.72 | 19.4 | 21.5 | X9 |
| 82TS | 0300 | 17 | 41 | 275 | 6 | 275 | 29.70 | 19.4 | 21.4 | X9 |
| 83TS | 0330 | 17 | 33 | 275 | 6 | 270 | 29.70 | 19.4 | 20.8 | X9 |
| 84TS | 0400 | 17 | 33 | 250 | 6 | 270 | 29.68 | 19.4 | 21.2 | X9 |
| 85TS | 0430 | 17 | 33 | 254 | 6 | 270 | 29.68 | 18.9 | 21.2 | X9 |
| 86TS | 0500 | 17 | 33 | 250 | 6 | 270 | 29.72 | 18.9 | 21.2 | X9 |
| 87TS | 0530 | 17 | 24 | 250 | 6 | 270 | 29.70 | 18.9 | 21.3 | X9 |
| 88TS | 0600 | 17 | 24 | 250 | 6 | 270 | 29.70 | 19.4 | 21.4 | X9 |
| 89TS | 0635 | 17 | -- | --- | - | --- | --- | --- | 21.5 | -- |
| 90TS | 0700 | 17 | 26 | 290 | 6 | 270 | 29.70 | --- | 21.5 | X9 |
| 91TS | 0730 | 17 | -- | --- | - | --- | --- | 19.4 | 21.6 | -- |
| 92TS | 0800 | 17 | 26 | 300 | 6 | 270 | 29.70 | --- | 21.8 | ×9 |
| 93TS | 0830 | 17 | -- | --- | - | --- | --- | --- | 21.9 | -- |
| 94TS | 0900 | 17 | 22 | 270 | 6 | 270 | 29.70 | 20.0 | 21.9 | ×2 |
| 95TS | 0930 | 17 | -- | --- | - | --- | --- | --- | 21.8 | -- |
| 96TS | 1000 | 17 | 22 | 290 | 5 | 270 | 29.72 | 19.4 | 21.8 | X8 |
| 97TS | 1030 | 17 | -- | --- | - | --- | --- | --- | 21.8 | -- |
| 98TS | 1100 | 17 | 22 | 290 | 5 | 270 | 29.72 | 21.1 | 22.0 | ×8 |
| 99TS | 1130 | 17 | -- | --- | - | --- | --- | --- | 22.2 | -- |
| 100TS | 1215 | 17 | 24 | 240 | 5 | 270 | 29.67 | 22.8 | 21.8 | X2 |
| 102TS | 1300 | 17 | 24 | 240 | 5 | 270 | 29.64 | 22.8 | 22.2 | X2 |
| 103TS | 1330 | 17 | 24 | 240 | 5 | 270 | 29.64 | 22.8 | 21.7 | X2 |
| 104TS | 1400 | 17 | 26 | 240 | 5 | 270 | 29.64 | 22.2 | 21.2 | X2 |
| 105TS | 1430 | 17 | 26 | 240 | 5 | 270 | 29.60 | 22.2 | 20.8 | X2 |
| 106TS | 1500 | 17 | 24 | 240 | 5 | 270 | 29.60 | 21.1 | 20.6 | X2 |
| 107TS | 1530 | 17 | 24 | 240 | 5 | 270 | 29.58 | 21.1 | 20.3 | X2 |
| 109TS | 1630 | 17 | 26 | 240 | 5 | 270 | 29.55 | 21.1 | 19.8 | X2 |
| 110Ts | 1700 | 17 | 26 | 240 | 6 | 270 | 29.58 | 21.1 | 20.1 | X2 |
| 111TS | 1730 | 17 | 26 | 240 | 6 | 270 | 29.60 | 21.1 | 19.9 | X2 |

Table 4. (Continued)

WEATHER LOG
R/V SUNCOASTER CRUISE
7-22 March 1983

| Station | Time (EST) | Day (March) | Wind Speed (Knots) | Wind Direction (Degrees) | Waves *Sea State (Code) | Waves Direction (Degrees) | Barometric Pressure (Inches) | Temperature Air (°C) | Temperature Water (°C) | WMO 4501 Weather (Code) |
|---|---|---|---|---|---|---|---|---|---|---|
| 112TS | 1800 | 17 | 26 | 240 | 6 | 270 | 29.60 | 21.1 | 19.7 | x2 |
| 113TS | 1830 | 17 | 26 | 240 | 6 | 270 | 29.60 | 21.1 | 19.6 | x2 |
| 114TS | 1900 | 17 | 33 | 240 | 6 | 270 | 29.64 | 20.0 | 19.2 | -- |
| 115TS | 1930 | 17 | 24 | 280 | 5 | 240 | 29.67 | --- | 18.9 | X2 |
| 116TS | 2000 | 17 | 28 | 280 | 5 | 240 | 29.70 | --- | --- | X2 |
| 117TS | 2030 | 17 | 27 | 280 | 5 | 240 | 29.73 | --- | 18.5 | X2 |
| 118TS | 2100 | 17 | 22 | 280 | 5 | 240 | 29.75 | --- | --- | X2 |
| 119TS | 2130 | 17 | 24 | 280 | 5 | 240 | 29.78 | --- | 18.4 | .- |
| 120TS | 2200 | 17 | 20 | 280 | 4 | 240 | 29.80 | --- | 18.4 | X2 |
| St. Petersburg | 1200 | 18 | 28 | 225 | - | --- | --- | --- | --- | -- |
| 121C | 1215 | 19 | 10 | 210 | 1 | 220 | 30.26 | --- | 19.7 | X2 |
| 122C | 1353 | 19 | 10 | 210 | 1 | 220 | 30.26 | --- | 19.9 | X2 |
| 123X | 1545 | 19 | 10 | 21(3 | 1 | 200 | 30.24 | --- | 20.6 | X2 |
| 124C | 1615 | 19 | 10 | 200 | 2 | 180 | 30.22 | --- | 20.6 | X2 |
| 125C | 1811 | 19 | 9 | 200 | 2 | 190 | 30.18 | --- | 20.9 | X2 |
| 126X | 1950 | 19 | 9 | 200 | 2 | 170 | 30.22 | --- | 21.6 | X2 |
| 127C | 2043 | 19 | 13 | 180 | 2 | 180 | 30.24 | 22.2 | 21.7 | Xo |
| 128X | 2210 | 19 | 13 | 180 | 2 | 180 | 30.24 | 22.2 | 22.1 | XO |
| 129C | 2244 | 19 | 13 | 180 | 2 | 180 | 30.22 | 22.2 | 22.6 | XO |
| 130X | 0007 | 20 | 13 | 180 | 2 | 180 | 30.18 | 22.2 | 22.6 | Xo |
| 131C | 0043 | 20 | 13 | 180 | 2 | 180 | 30.18 | 22.2 | 22.6 | Xo |
| 132X | 0204 | 20 | 12 | 180 | 2 | 180 | 30.18 | 22.2 | 22.2 | XO |
| 133C | 0235 | 20 | 15 | 200 | 2 | 200 | 30.16 | 22.2 | 23.3 | XO |
| 134X | 0452 | 20 | 15 | 200 | 2 | 200 | 30.16 | --- | 23.9 | Xo |
| 135C | 0546 | 20 | -- | --- | - | --- | --- | --- | 23.5 | -- |
| 136X | 0757 | 20 | -- | --- | - | --- | ..- | --- | 21.8 | -- |
| 137C | 0806 | 20 | 18 | 140 | 3 | 140 | 30.14 | --- | 21.4 | -- |
| 138C | 1006 | 20 | 22 | 120 | 3 | 120 | 30.10 | 23.3 | 21.7 | X1 |
| 139X | 1205 | 20 | 22 | 170 | 4 | 150 | 30.08 | 23.3 | 21.7 | xl |
| 140C | 1255 | 20 | 22 | 170 | 4 | 150 | 30.08 | 23.3 | 21.3 | X2 |
| 141X | 1528 | 20 | 14 | 180 | 4 | 180 | 30.06 | 23.3 | 22.6 | X2 |
| 142C | 1629 | 20 | 11 | 180 | 4 | 180 | 30.02 | --- | 21.2 | xl |
| 143C | 1846 | 20 | 11 | 190 | 4 | 190 | 30.02 | 23.3 | 23.7 | xl |
| 144C | 2116 | 20 | 28 | 270 | 4 | 240 | 30.02 | 22.2 | 25.0 | X9 |
| 145X | 0020 | 21 | 26 | 210 | 5 | 320 | 30.02 | 21.1 | 25.1 | -- |
| 146X | 0130 | 21 | 26 | 210 | 5 | 320 | 30.12 | --- | 25.1 | X4 |
| 147X | 0300 | 21 | 26 | 210 | 5 | 320 | 30.12 | --- | 25.2 | X4 |
| 148X | 0445 | 21 | 26 | 210 | 5 | 320 | 30.13 | --- | 25.1 | X4 |
| 149X | 0552 | 21 | 26 | 210 | 5 | 320 | 30.18 | --- | 25.4 | X4 |
| 150X | 0728 | 21 | 24 | 345 | 5 | 310 | 30.18 | 22.2 | 24.3 | xl |
| 151TS | 0800 | 21 | 24 | 345 | 5 | 310 | 30.18 | 22.2 | 22.8 | xl |
| 152TS | 0830 | 21 | 24 | 345 | 5 | 310 | 30.20 | 22.8 | 21.2 | xl |
| 153TS | 0900 | 21 | 24 | 345 | 5 | 310 | 30.22 | 22.8 | 20.9 | xl |
| 154TS | 0930 | 21 | 26 | 345 | 5 | 310 | 30.22 | --- | 21.4 | xl |
| 155TS | 1000 | 21 | 26 | 345 | 5 | 350 | 30.22 | --- | 21.3 | xl |
| 156TS | 1030 | 21 | 31 | 350 | 5 | 350 | 30.24 | --- | 21.3 | X1 |
| 157TS | 1100 | 21 | 29 | 350 | 5 | 350 | 30.26 | --- | 21.5 | X1 |
| 158TS | 1130 | 21 | 26 | 350 | 5 | 350 | 30.26 | --- | 22.3 | Xo |
| 159TS | 1200 | 21 | 26 | 350 | 5 | 350 | 30.26 | --- | 22.9 | Xo |
| 160TS | 1230 | 21 | 26 | 350 | 5 | 350 | 30.26 | --- | 22.3 | Xo |
| 161TS | 1300 | 21 | 22 | 350 | 5 | 350 | 30.22 | --- | 22.9 | Xo |
| 162TS | 1330 | 21 | 22 | 360 | 5 | 350 | 30.24 | --- | 23.3 | Xo |
| 163TS | 1410 | 21 | 24 | 360 | 5 | 350 | 30.22 | --- | 23.2 | xl |
| 164TS | 1430 | 21 | 24 | 360 | 5 | 350 | 30.22 | --- | 22.9 | xl |
| 165TS | 1500 | 21 | 24 | 360 | 5 | 350 | 30.22 | --- | 22.6 | xl |
| 166TS | 1530 | 21 | 24 | 360 | 5 | 350 | 30.22 | --- | 22.5 | xl |
| 167TS | 1600 | 21 | 24 | 360 | 5 | 350 | 30.21 | --- | 22.2 | xl |
| 168TS | 1630 | 21 | 24 | 360 | 5 | 350 | 30.22 | --- | 21.9 | xl |
| 169TS | 1700 | 21 | 24 | 360 | 5 | 350 | 30.22 | --- | 21.8 | xl |
| 170TS | 1730 | 21 | 24 | 360 | 5 | 350 | 30.22 | --- | 21.6 | X1 |
| 171TS | 1800 | 21 | 24 | 360 | 5 | 350 | 30.23 | --- | 21.5 | xl |
| 172TS | 1830 | 21 | 24 | 360 | 5 | 350 | 30.26 | --- | 21.1 | xl |
| 173TS | 1900 | 21 | 24 | 360 | 5 | 360 | 30.28 | --- | 21.0 | X1 |
| 174TS | 1930 | 21 | 24 | 360 | 4 | 360 | 30.34 | --- | 20.6 | X1 |
| 175TS | 2000 | 21 | 26 | 360 | 4 | 360 | 30.36 | --- | ZO.3 | xl |
| 176TS | 2030 | 21 | 26 | 360 | 4 | 360 | 30.38 | 20.0 | 20.2 | xl |
| 177TS | 2100 | 21 | 24 | 360 | 4 | 360 | 30.38 | 20.0 | 19.9 | xl |
| 178TS | 2130 | 21 | 26 | 360 | 4 | 360 | 30.40 | 20.0 | 19.8 | xl |
| 179TS | 2200 | 21 | 26 | 360 | 4 | 360 | 30.40 | 20.0 | 19.5 | xl |
| 180TS | 2230 | 21 | 26 | 360 | 4 | 360 | 30.40 | 20.0 | 19.5 | X1 |
| 181TS | 2300 | 21 | 26 | 360 | 4 | 360 | 30.40 | 20.0 | 19.5 | xl |

'HMO Code 3700

Table 4. (Continued )

Sea State

WMO Code 3700

| Description | Height* Feet** | Code |
|---|---|---|
| Calm-glassy | 0 | 0 |
| Calm-rippled | 0 - 1/3 | 1 |
| Smooth-wavelet | 1/3 - 1 2/3 | 2 |
| Slight | 1 2/3 - 4 | 3 |
| Moderate | 4 - 8 | 4 |
| Rough | 8 - 13 | 5 |
| Very rough | 13 - 20 | 6 |
| High | 20 - 30 | 7 |
| Very high | 30 - 45 | 8 |
| Phenomenal | > 45 | 9 |

*The average wave height as obtained from the larger well-formed waves of the wave system being observed.

**The exact bounding height is to be assigned for the lower code figure, e.g. a height of 13 feet is coded as 5.

Table 5. World Meteorological Organization (WMO) sea-state codes and associated wave height (in feet).

Present Weather

WMO Code 4501

| Code | |
|---|---|
| 0 | Clear (no cloud at any level) |
| 1 | Partly cloudy (scattered or broken) |
| 2 | Continuous layer(s) of cloud(s) |
| 3 | Sandstorm, duststorm, or blowing snow |
| 4 | Fog, thick dust or haze |
| 5 | Drizzle |
| 6 | Rain |
| 7 | Snow, or rain and snow mixed |
| 8 | Shower(s) |
| 9 | Thunderstorm(s) |

Table 6. World Meteorological Organization (WMO) codes for local weather conditions.

VAN

SCIENCE APPLICATIONS INC.
FORECAST FOR 24-26.5 N 84-88 W
TUESDAY 15 MARCH 1983 1130 CST
ATTN: VAN WADDELL
MSG NO. 03003 - 83905

| TIME | WIND | | MCS | SWELL | | WAVE |
|---|---|---|---|---|---|---|
| CST | DIR | KTS | FT | DIR | FT/SEC | FT/SEC |
| TUE 15 MAR 83 | | | | | | |
| 1400 | SW | 15-20 | 6 | NIL | | 4/5 |
| 2000 | SSW | 15-20 | 6 | NIL | | 4/5 |
| WED 16 MAR 83 | | | | | | |
| 0200 | S | 20-25 | 8 | NIL | | 6/6 |
| 0800 | SSE | 25-30 | 10 | NIL | | 8/6 |
| 1400 | SSE | 25-30 | 12 | SSW | 2/6 | 8/6 |
| 2000 | S | 25-30 | 14 | S | 3/6 | 9/6 |
| THU 17 MAR 83 | | | | | | |
| 0200 | S | 25-30 | 14 | SSE | 4/7 | 9/6 |
| 0800 | S | 25-30 | 14 | SSE | 4/7 | 9/6 |
| 1400 | SW | 25-35 | 15 | S | 5/7 | 9/6 |
| 2000 | WSW | 25-35 | 14 | S | 4/7 | 9/6 |

5 DAY EXTENDED OUTLOOK

| DAY | WIND | MCS | WAVE |
|---|---|---|---|
| FRI 3/18 | W 20 | 9 | 6/6 |
| SAT 3/19 | W 15 | 5 | 3/4 |

REMARKS: A WEAK LOW PRESSURE SYSTEM, PRESENTLY CENTERED 120 MILES SOUTHEAST OF THE MISSISSIPPI DELTA, WILL CONTINUE TO WEAKEN AS IT MOVES EAST-NORTHEASTWARD. THIS WILL CAUSE A TEMPORARY DECREASE IN THE WINDS AND SEAS THAT WERE EXPERIENCED LATE LAST NIGHT AND EARLIER THIS MORNING. SKIES WILL GENERALLY BE CLEAR FOR THE REMAINDER OF TODAY.

A MUCH STRONGER LOW PRESSURE SYSTEM IS CURRENTLY DEVELOPING OVER TEXAS. THE CENTER OF THIS STORM SYSTEM WILL MOVE EASTWARD ALONG THE GULF COAST CAUSING WINDS TO INCREASE RAPIDLY WEDNESDAY MORNING. THIS INCREASED SOUTHERLY WIND WILL CONTINUE THROUGH THURSDAY MORNING IN ADVANCE OF THE PASSAGE OF AN ASSOCIATED COLD FRONT BETWEEN 0800 AND 1400 CST. AS THIS STORM SYSTEM TRACKS UP THE ATLANTIC COAST FRIDAY, HIGH PRESSURE WILL BEGIN TO BUILD OVER THE GULF OF MEXICO WITH WINDS GRADUALLY DECREASING. THE NEXT FRONTAL SYSTEM WILL BE ENTERING THE GULF OF MEXICO ON MONDAY.

END FROM
INSTITUTE FOR STORM RESEARCH

PRINTED AT 1037 CST 03/15/83

Table 7. Example of commercially obtained weather/sea-state predictions for active sampling area. This proved fairly accurate and useful in attempting longer range (several day) planning. Note: MCS = maximum combined sea; wave = significant locally generated wave height.

# APPENDIX A

# CRUISE SUMMARY

CRUISE SUMMARY
R/V SUNCOASTER
(SC-83-02)
7-22 March 1983

| | ( EST) | |
|---|---|---|
| Monday 7 March | 0800 | • Begin loading and tying down equipment. |
| | 1800 | • All equipment loaded and tied down (waiting on hookup and checkout of slip rings). |
| | 2200 | • Slip rings okay. |
| | | • FIO calls off departure until 1200 hours next day because of weather (gives us one extra day). |
| Tuesday 8 March | 1215 | • Depart St. Petersburg, Fla. with: |
| | | o Jim Singer (SAI-Chief Scientist) |
| | | • Bill Chandler (Skidaway) |
| | | • Jerry Miller (Skidaway) |
| | | • Amy Edwards (Skidaway) |
| | | • Wayne Stochaj (Skidaway) |
| | | • Fred Fairfield (U. R. I.) |
| | | • Noëlle Lewis (U.R.I. ) |
| | | • Kate Schweitzer (U.R.I. ) |
| | | • Craig Boyd (Indep.) |
| | 1300 | • Discover conductor cable had been crushed by A-Frame during departure preparations (no signals to CTD). |
| | 1400 | • Repair wire. |
| Wednesday 9 March | 0655 | • Arrive first station on Leg I (Stations IX-38 C). |
| | | • Winds: 17 mph @ 340 degrees Seas: 2-3 feet. |
| Thursday 10 March | 1300 | • Breakoff from section at Station 20C because of severe weather--elect to heave to and ride out storm. |
| | | • winds: 30 mph @ 270 degrees. |
| | | • seas: 8-13 feet. |
| | 1315 | • Captain considers riding out the storm unsafe and begins steaming with the seas towards the Dry Tortugas. |
| Friday 11 March | 0200 | • Anchored off Loggerhead Key at Dry Tortugas (winds 35-40 mph @ 320 degrees), |
| | 0800 | • Winds 30 mph @ 330 degrees. |
| | 1200 | • Winds 35-40 mph @ 330 degrees Offshore seas reported at 15 to 16 feet, |
| | 1700 | • Get favorable weather report for next day. |
| | 1800 | • Winds 20-25 mph @ 330 degrees. |

Cruise Log Continued

| | | | |
|---|---|---|---|
| Saturday 12 March | 0600 | • | Depart Dry Tortugas<br>Winds 20-25 mph @ 340 degrees. |
| | 1200 | • | Winds: 20 mph @ 330 degrees<br>Seas: 4-8 feet. |
| | 2105 | • | Resume hydrographic line with Station 20C(21C). (Notice that ship is only able to maintain 8.5 knots.). |
| | | • | Winds: 10-14 mph @ 345 degrees<br>Seas: 1-2 feet, |
| Sunday 13 March | 1300 | • | Winds: 10 mph @ 180 degrees<br>Seas: 1-2 feet, |
| Monday 14 March | 0815 | e | Complete Leg I (with Station 38C) and begin Steaming NW for Leg II. |
| | 1600 | e | Begin Leg 11 (Stations 45C-76C). |
| Tuesday 15 March | 0115 | • | Suspend CTD operations because of weather after twice attempting a CTD Cast at Station 54. |
| | | e | Winds: 25 mph @ 220 degrees<br>Seas: 8 feet and confused. |
| | 0250 | • | Plan to drop XBT's until weather improves. |
| | 1030 | e | Resume CTD Casts at Station 61 as cross Loop Current front (very marginal conditions for casts). |
| | | • | Winds: 20-25 mph @ 240 degrees<br>Seas: 8 feet. |
| | 1330 | • | Receive instructions to jog north at 86°W and then run along the mooring line (Leg III). |
| | 1435 | • | Do CTD Cast at Station 62C (though winds higher, Sea State not as severe as winds and current not opposing one another). |
| | | • | Winds: 30-35 mph @ 240 degrees<br>Seas: 5-6 feet. |
| | 1735 | e | Discontinue surface T/S profiling as pump required by ship to maintain toilets and drinking water (fresh water pump had burned out). |
| Wednesday 16 March | 0830 | e | Completed Station 70C (winds/seas now shifting to a more easterly direction)<br>Winds: 20 mph @ 140 degrees<br>Seas: 2-4 feet. |
| | 2200 | • | Terminate last station (76C) on Leg 11 at 350 meters as unable to maintain CTD clear of the ship. |
| | | • | Winds: 35-45 mph @ 260 degrees<br>Seas: 8 feet, |

Cruise Log Continued

| | | | |
|---|---|---|---|
| Wednesday 16 March | 2300 | ● | Captain advises that a severe storm which had been forecast was materializing and that we must steam for shelter (30-36 hours). |
| Thursday 17 March | 0000 | ● | Notify Van Waddell of change in cruise plans and arrange for further communication at 1000 hours. |
| | 0015 | ● | Seawater pump repaired. |
| | 0030 | ● | Begin half-hourly station logging of thermal salinograph data while steaming towards Tampa. |
| | 1230 | ● | Receive weather forecast for Friday.<br>Winds: WNW @ 20 mph<br>Seas: 5 ft swell with 5 ft waves. |
| | 1630 | ● | FIO makes final decision for ship to return to St. Petersburg. |
| Friday 18 March | 0130 | o | Arrive at FIO. |
| | 0800 | 0 | Ship's crew making various repairs, refueling, and restocking. |
| | 0900 | ● | Make arrangements to find a replacement crew member for Kate Schweitzer who had been unable to eat. |
| | 1200 | ● | Offshore weather:<br>● Winds: 25-30 mph @ 225 degrees<br>● Seas: 10-12 feet, |
| | 1600 | o | Weather expected to improve; plan departure for 2100 hours. |
| | 1630 | ● | Jeff Hanson (Student) agrees to replace Kate on cruise. |
| | 2100 | ● | Repairs/refueling/re-stocking completed. |
| | 2130 | ● | Ship ready to get underway but missing four(4) members to scientific party. |
| | 2345 | ● | Scientific party on board; depart St. Petersburg. |
| Saturday 19 March | 1220 | ● | Begin Section III (Stations 121C-147X). |
| Sunday 20 March | 2200 | o | Terminate CTD Cast 144 C at 500 m as unable to keep CTD clear of the ship. |
| | 2230 | ● | Plan to complete section with XBT's and steam in along a fourth line to the north, also dropping XBT's. |
| Monday 21 March | 0030 | ● | Re-do Station 144 C as an XBT to get deeper structure. |
| | 0305 | ● | Complete Section III at Station 147 X and begin steaming north. |
| | 0450 | ● | Turn towards Tampa as realize will be unable to make it north against current/seas. |

Cruise Log Continued

| | | |
|---|---|---|
| Monday 21 March | 0450 | • Estimated ETA for Tampa is 1400 on 22 March. |
| | | • Running thermal salinograph on way in. |
| | 0800 | • Winds: 20-25 mph @ 340 degrees. |
| | | • Tug reports 5.75 knot SSW drift in Loop Current at 25°39'N, 86° 01′ W. |
| Tuesday 22 March | 1100 | • Arrive FIO. |
| | 1430 | • Ship unloaded. |

# APPENDIX B

## SAMPLES/OBSERVATIONS TAKEN AT EACH STATION

SAMPLING SUMMARY
R/V SUNCOASTER CRUISE
Section I
(Stations IX-38C)
9-10 and 12-14 March 1983

| CTD Casts | *XBT Casts | Nutrients | Oxygens | Chlorophylls | Salinity |
|---|---|---|---|---|---|
| - | lx | 0 | 0 | 0 | 0 |
| 2C | - | 3 | 3 | 3 | 1 |
| - | 3X | 0 | 0 | 0 | 0 |
| 4C | - | 3 | 3 | 3 | 1 |
| - | 5X | 0 | 0 | 0 | 0 |
| 6C | | 4 | 4 | 4 | 1 |
| 7C | | 3 | 3 | 3 | 1 |
| 8C | | 4 | 4 | 4 | 1 |
| 9C | | 4 | 4 | 4 | 0 |
| 10C | | 4 | 4 | 4 | 1 |
| 11C | - | 7 | 7 | 4 | 3 |
| - | 12X | 0 | 0 | 0 | 0 |
| 13C | | 13 | 13 | 4 | 2 |
| - | 14X | 0 | 0 | 0 | 0 |
| 15C | - | 13 | 13 | 4 | 2 |
| - | 16X | 0 | 0 | 0 | 0 |
| 17C | - | 13 | 13 | 4 | 3 |
| - | 18X | 0 | 0 | 0 | 0 |
| 19C | 19Xq(1 Bad T-5) | 12 | 12 | 4 | 3 |
| | NO DATA | | | | |
| 20C | | 11 | 11 | 2 | 3 |
| 21C | - | 13 | 13 | 4 | 3 |
| - | 22X | 0 | 0 | 0 | 0 |
| 23C | - | 13 | 13 | 4 | 2 |
| - | 24X (1 Bad T-5) | 0 | 0 | 0 | 0 |
| 25C | | 13 | 13 | 4 | 4 |
| - | 26X | 0 | 0 | 0 | 0 |
| 27C | - | 13 | 13 | 4 | 3 |
| - | 28X | 0 | 0 | 0 | 0 |
| 29C | | 13 | 13 | 4 | 3 |
| - | 30X | 0 | 0 | 0 | 0 |
| 31C | | 9 | 9 | 4 | 1 |
| 32C | | 9 | 9 | 4 | 2 |
| 33C | | 7 | 7 | 4 | 2 |
| 34C | | 4 | 4 | 4 | 2 |
| 35C | | 3 | 3 | 3 | 2 |
| 36C | | 3 | 3 | 3 | 1 |
| 37C | | 3 | 3 | 3 | 1 |
| 38C | | 3 | 3 | 3 | 1 |

*All bad XBT casts were repeated except where 'NO DATA' is indicated.

SAMPLING SUMMARY
R/V SUNCOASTER CRUISE
Section II
(Stations 45 C-76C)
14-16 March 1983

| CTD Casts | *XBT Casts | Nutrients | Oxygens | Chlorophylls | Salinity |
|---|---|---|---|---|---|
| - | **41X | 0 | 0 | 0 | 0 |
| 45C | - | 3 | 3 | 3 | 1 |
| - | 46X | 0 | 0 | 0 | 0 |
| 47C | | 4 | 4 | 4 | 1 |
| 48C | | 5 | 5 | 4 | 1 |
| 49C | - | 0 | 0 | 0 | 0 |
| - | 50X | 0 | 0 | 0 | 0 |
| 51C | | 6 | 6 | 4 | 1 |
| 52C | - | 6 | 6 | 4 | 1 |
| | 53X | 0 | 0 | 0 | 0 |
| | 54X (1 Bad T-6) | 0 | 0 | 0 | 0 |
| | 55x | 0 | 0 | 0 | 0 |
| | 56X | 0 | 0 | 0 | 0 |
| | 57X (1 Bad T-6) | 0 | 0 | 0 | 0 |
| | 58X | 0 | 0 | 0 | 0 |
| 59C | - | 9 | 9 | 4 | 1 |
| | 60X | 0 | 0 | 0 | 0 |
| - | 61X | 0 | 0 | 0 | 0 |
| 62C | - | 10 | 10 | 4 | 1 |
| | 63X (2 Bad T-5) NO DATA | 0 | 0 | 0 | 0 |
| 64C | | 13 | 13 | 4 | 3 |
| | 65X | 0 | 0 | 0 | 0 |
| 66C | | 13 | 13 | 4 | 2 |
| | 67X | 0 | 0 | 0 | 0 |
| 68C | - | 13 | 13 | 4 | 2 |
| - | 69X | 0 | 0 | 0 | 0 |
| 70C | - | 13 | 13 | 4 | 3 |
| - | 71X (1 Bad T-5) | 0 | 0 | 0 | 0 |
| 72C | - | 13 | 13 | 4 | 2 |
| - | 73X (1 Bad T-5) | 0 | 0 | 0 | 0 |
| 74C | | 12 | 13 | 4 | 2 |
| - | 75x | 0 | 0 | 0 | 0 |
| 76C | | 7 | 7 | 4 | 0 |

*All bad XBT casts were repeated except where 'NO DATA' is indicated.
**Station actually between Sections I and II.

SAMPLING SUMMARY
R/V SUNCOASTER CRUISE
Section III
(Stations 121 C-147X)
19-21 March 1983

| CTD Casts | *XBT Casts | Nutrients | Oxygens | Chlorophylls | Salinity |
|---|---|---|---|---|---|
| 121C | | 3 | 3 | 3 | 1 |
| 122C | | 3 | 3 | 3 | 1 |
| | 123X (Bathy Systems) | 0 | 0 | 0 | 0 |
| 124C | - | 3 | 3 | 3 | 1 |
| 125C | - | 4 | 4 | 4 | 1 |
| - | 126X | 0 | 0 | 0 | 0 |
| 127C | - | 5 | 5 | 4 | 1 |
| | 128X | 0 | 0 | 0 | 0 |
| 129C | - | 5 | 5 | 4 | 1 |
| | 130X | 0 | 0 | 0 | 0 |
| lilt | - | 8 | 8 | 4 | 1 |
| | 132X | 0 | 0 | 0 | 0 |
| 133C | - | 12 | 12 | 4 | 1 |
| | 134X | 0 | 0 | 0 | 0 |
| 135C | | 13 | 13 | 4 | 2 |
| | 136X (Bathy Systems) | 0 | 0 | 0 | 0 |
| 137C | | 13 | 13 | 4 | 2 |
| 138C | - | 13 | 13 | 4 | 2 |
| - | 139X | 0 | 0 | 0 | 0 |
| 140C | - | 13 | 13 | 4 | 2 |
| | 141X (1 BadT-5) | 13 | 13 | 0 | 1 |
| 142C | | 13 | 13 | 4 | 1 |
| 143C | | 13 | 13 | 4 | 1 |
| 144C | - | 8 | 8 | 4 | 1 |
| | 145X | 0 | 0 | 0 | 0 |
| | 146X (1 Bad T-5) NO DATA | 0 | 0 | 0 | 0 |
| | 147X | 0 | 0 | 0 | 0 |
| | 148X | 0 | 0 | 0 | 0 |
| | 149X (1 Bad T-5) | 0 | 0 | 0 | 0 |
| | 150X (1 Bad T-5) NO DATA | 0 | 0 | 0 | 0 |

*All bad XBT casts were repeated except where 'NO DATA' is indicated.