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SCIENCE SITREP JUNE 91

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P A L M E R S T A T I O N A N T A R C T I C A

SCIENCE SITREP - PALMER STATION - JUNE 1991

S-014 ENERGETICS OF THE ADULTS AND LARVAE OF THE ANTARCTIC KRILL, EUPHAUSIA SUPERBA. L. B. Quetin and R. M. Ross, University of California at Santa Barbara.

All remaining members of S-014 departed Palmer Station on 8 Jun 91 the R/V POLAR DUKE. No report is available.

S-034 EARLY LIFE HISTORY OF ANTARCTIC FISHES. R. Radtke, University of Hawaii.
Ichthyoplankton Survey

All remaining members of S-034 departed Palmer Station on 8 Jun 91 on the R/V POLAR DUKE. No report is available.

S-036 PHYSIOLOGICAL AND ULTRASTRUCTURAL ADAPTATIONS OF ANTARCTIC FISHES TO CHRONICALLY COLD BODY TEMPERATURE. B. Sidell, University of Maine.

All remaining members of S-036 departed Palmer Station on 8 Jun 91 on the R/V POLAR DUKE. No report is available.

S-106 -- VLF TRIMPI STUDIES AT PALMER STATION.
-- VLF REMOTE SENSING OF THUNDERSTORM AND RADIATION BELT COUPLING. U.S. Inan (P.I.),
No personnel on station. Equipment being monitored and maintained by station Senior Science Leader, Michael Butler.

Departing science technician, Ned Wilson, officially turned over the operation of the station equipment to the station Senior Science Leader, Michael Butler on 7 Jun 91.

Weekly printouts of Trimpi data summary charts were faxed to Stanford University. Their analysis of these charts indicated a needed change in the frequency standard used for the phase receivers. This change was made over a period of several days but the new standard was finalized on 23 Jun 91.

It was discovered by the new operator that the synoptic recorder used for Broadband VLF recording had failed on one track. Both the erase head for "A" track and the record head on the "B" track which records from the East/West loop antenna had failed. An examination of unshipped data on station indicates that Data was apparently lost from 21 Mar 91 until 18 Jun 91. Extensive cleaning has corrected the failed "B" record head and it has been working since 18 Jun 91. The East/West loop antenna is now being recorded on the previously unused "D" channel as well as the "B" channel.

During the data analysis to discover the extent of lost "B" track data, it was found that the "A" track data for the North/South loop antenna had not properly recorded from 16 Mar 91 to 24 Mar 91.

The synoptic recording for 02 Jun 91 cannot be found. There is no indication in the weekly reports from the departing technician of this recording having failed. Nonetheless, it is not cataloged with the other tapes being packed.

A wind storm severely damaged the power cable that feeds the building where all S-106 equipment is installed. The resulting power failure caused the loss of all data for 27 Jun 91. The damaged power cable has been temporarily repaired, although further

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repairs will be needed.

System maintenance involved applying epoxy insulation to a previously damaged section of receiver cable that was repaired late last month.

INVENTORY OF RECORDED DATA ON STATION: 30 JUN 1991

TYPE QUANTITY DATES COVERED
SYNOPTIC ANALOG TAPES....119.....23 Feb. to Present
(missing 6 April thru 10 April - due to Atlantis experiment)
(missing 22 March, 30 April, June 2. No known reason*)
(missing 27 June. Power Failure)

CONTINUOUS VLF.....70.....18 April to Present
(missing 30 April, 21 May, 31 May. No known reason*)
(missing 27 June. Power Failure)

DIGITAL TRIMPI TAPES.....71.....19 April to Present
(missing 30 April. No known reason*)
(missing 27 June. Power Failure)

* The new site operator, after going through the old reports and logs, has found no written acknowledgement or reason for the missing data. This is most curious especially in the case of 30 Apr 91 where no data for S-106 was apparently recorded.

S-254 CHLORINE & BROMINE - CONTAINING TRACE GASES IN THE ANTARCTIC
R.A. Rasmussen, Oregon State University
No personnel on station. Equipment being monitored by Hugh Cowan, Station Physician.

Twelve (12) samples were collected during Jun 91. A total of twenty-seven (27) prepared samples are currently on station. A total of seventy-four (74) unused cylinders remain.

S-257 GMMC DIVISION ANTARCTIC RESEARCH PROGRAM - J.T. Peterson /
L. Waterman, NOAA
No personnel on station. Equipment being monitored by Hugh Cowan, Station Physician.

Eight (8) samples were collected this month. Two crates of collected samples were shipped to CONUS on the departing R/V POLAR DUKE. The crates contained a total of twenty-four (24) samples and two (2) broken flasks. There now are six (6) collected samples, & fifty (50) unused flasks remaining on station.

S-275 UM/DOE ATMOSPHERIC MONITORING PROGRAM at Palmer Station.
T. Snowdon, University of Miami; C. Sanderson/N. Chui, EML/DOE N.Y.
No personnel on station. System being run by station Senior Science Leader, Michael Butler.

Departing science technician, Ned Wilson, turned over the operational duties of system operation to returning station Senior Science Leader, Michael Butler.

Sampling continued to be conducted with a weekly schedule of calibration, background and sample counts, with one sample filter being exposed for the duration of the week. Data was logged on computer disk, as well as transmitted via NOAA satellites.

All collected data on station at the time the R/V POLAR DUKE departed was shipped to CONUS.

Recorded Data On Station, 30 Jun 91:

- 1) One (1) Data Disk, currently in use. (June)

- 2) Four (4) exposed filters.
- 3) One (1) prepared blank filter.
- 4) One (1) filter currently being exposed.

System equipment continues to run well and there are adequate system supplies for operation throughout the austral winter.

T-312 TERASCAN SATELLITE IMAGING SYSTEM. R. Whritner, Scripps Institute ARC.

No personnel on station. System being run by station Senior Science Leader, Michael Butler.

Departing science technician, Ned Wilson, officially turned over the operation of the Terascan system to returning Senior Science Leader, Michael Butler on 6 Jun 91.

The satellite collection schedule continued with four daily passes: (1) high elevation pass, one (1) pass to the east of Palmer over the Weddell Sea, one (1) pass to the west over the Bellingshausen and (1) pass of arbitrary elevation and azimuth. The satellite image data was collected digitally on 8mm video tape. Both HRPT and DMSP satellite data were recorded.

Orbital elements were received and entered into the Terascan imaging and Telonics tracking systems.

Tracking system time continued to be controlled with the Omega clock which maintains accuracy to within one second, calibrated with the GOES satellite clock.

The Captain of the R/V POLAR DUKE utilized the TeraScan satellite images and graphics in order to expedite the season's final crossing of the Drake Passage.

Eight satellite data archive tapes (PAL100 - PAL107) were shipped to Bob Whritner on the R/V POLAR DUKE on 9 Jun 91.

Images processed from data uploaded via the Vectra PC continue to look good, with the exception of extremely high elevation passes which contain dropouts. It is believed that this is caused by slight inaccuracies in the Omega clock which controls the satellite tracking system.

Recorded data tapes on station consist of PAL108 through PAL111. PAL112 is currently being recorded.

T-313 NSF UV MONITORING EXPERIMENT. C. Booth, Biospherical Instruments.

No personnel on station. System being run station Senior Science Leader, Michael Butler.

Departing science technician, Ned Wilson, officially turned over the operation of the NSF UV Monitoring system to returning Senior Science Leader, Michael Butler on 06 Jun 91.

UV data and calibration scan information continued to be collected and sent to BSI on a daily basis.

Data for days 140 - 142 were resent to Biospherical. The reason they did not receive them on schedule is unknown.

There has been chronic instability in the response levels of the system for almost two months and much of the system activity centered around isolating this problem.

On 5 Jun 91, a series of tests on the High Voltage module of the system Spectralink were performed. The results indicated that the module was working well. Unfortunately, this test also led to the loss of some data. Through operator error the Spectralink was left off, and scans BD911900.156 through BD912300.157 were lost. Data BD911800.166 through BD910000.167 were also lost through the failure of a warning program and the subsequent overflow of a data disk.

An absolute calibration of the system was made on 17 Jun 91,

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and the details of that scan were sent to Biospherical.

Biospherical sent a special request for major system changes in order to help eliminate the response problem. Two absolute scans were run on 24 Jun 91, and the photo-multiplier tube in the system was changed. After some time for the system to stabilize, the new photo-multiplier tube had the high voltage levels adjusted or optimized. There was some problem doing this, as the new tube indicated a peak higher than expected at a lower light frequency than the frequency being monitored.

Shortly after the new tube was installed, we experienced high winds on station and these damaged the power cable that feeds the building housing the NSF UV equipment. The resulting loss of power caused a full system shut down and loss of data. Scans BD911900.177 up to BD911805.178 were lost. Due to the power outage, the system lost all temperature regulation and several subsequent scans may be compromised.

It has been observed by the system operator that the system has not yet fully stabilized. The current output levels for which the new photo-multiplier was optimized are now running measurably higher than at the time the tube was adjusted. A series of four absolute calibration scans are being delayed because of continuing bad weather, and for word from Biospherical concerning the system's stability.