

"PALMER_SCIENCE"

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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

S-014 -- ENERGETICS OF THE ADULTS AND LARVAE OF THE ANTARCTIC KRILL
EUPHAUSIA SUPERBA L. Quetin (P.I. at Palmer Station), R. Ross
(P.I.)

Personnel: M. Amsler, J. Shinbashi, T. Martinez, L. Quetin, C. Wyatt, D. Carlini. C. Wyatt and D. Carlini arrived Palmer Station 6 Feb. L. Quetin departed Palmer Station 8 Feb. M. Amsler was identified as acting project leader.

Cruise 91-2: M. Amsler, J. Shinbashi, C. Wyatt and D. Carlini departed Palmer Station aboard the POLAR DUKE on the evening of 6Feb. and fished for larval krill in the southern Gerlache Strait with no success. Adult krill were sampled in the Schollert Bay area of the Gerlache and live stocks were collected for later station based experiments. Larval searching continued into the northern Gerlache Strait and Croker Passage, where due to mechanical problems with the hydrographic winch, the project bongo net was lost. Sampling for larvae continued with a single 1 meter ring net in Croker Passage as well as several stations in the southern Bransfield Strait with no success. Enroute back to Palmer, waters south of the station (Palmer Basin) were sampled with further lack of success. Due to scheduling complications with the SAAM flight the cruise was terminated one day early. The POLAR DUKE returned to Palmer 8 Feb at 1900 and sailed the following 0300 with L.Quetin aboard bound for the SAAM IIB flight.

Station based work: Progress this month was hampered by continued temperature regulation problems in the coldroom. The coldroom was recharged with freon obtained from the ILLIRIA and was back on line 1 Feb. On 11 Feb. another freon leak occurred resulting in the loss of an experiment and the unit was shut down three days for repairs. Temperatures continued to fluctuate mildly and on 25 Feb. it was decided to shut the system down for thorough diagnostic testing and installation of a spare compressor. At the insistence of NSF Rep. P. Penhale the situation was discussed with a technical representative from the coldroom's manufacturer via INMARSAT. Repairs were completed 27 Feb and use resumed 28 Feb. Performance of unit has been satisfactory to date. The project gratefully acknowledges the efforts of P. Penhale and R. Fredericks in returning the coldroom to normal operation allowing for resumption of the assimilation efficiency experiments, trial larval rearing and STS system trials.

Observations of krill swimming in 5 foot circular tanks during a 24 period continued throughout the month as this study is not coldroom dependent. We recorded light levels, swimming speed and the general behavior of krill during the period. We were able to complete 10 experiments to determine the assimilation efficiency of adult krill when feeding on Thalassiosira (2 concentrations), Rhizosolenia (5 concentrations) and Corethron (3 concentrations). Gravid females obtained during Cruise 91-2 released eggs and trial culturing techniques, use of a roller stirring machine and kriesel

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aquarium, resulted in successful embryo hatching and larval development. Larvae have metamorphosed to the first feeding stage, calyptopis 1. The STS systems have been set up in the coldroom and trials indicate the distribution of phytoplankton within the system is not homogenous. Modifications are underway before the start of long-term feeding experiments on larval krill after the cruise in early March.

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 Science Technician Ned Wilson.

Weekly printouts of Trimpi data summary charts were faxed to Stanford University so that the principal investigators can maintain a better understanding of equipment performance and suggest any needed changes or adjustments to the site.

A gain problem with channels associated with the N/S loop antenna has not been resolved. Swapping of circuit boards in the pre-amp unit failed to resolve the problem. Investigation continues. The loop antennas and transmission line on the glacier were inspected for a second time with no obvious damage visible. Investigation of the problem continues.

The recording schedule continues with one VLF 1/5 synoptic recording, one continuous VLF recording, and one digital tape recording of Trimpi activity on a daily basis.

S-200 -- ENERGETICS OF REPRODUCTION AND FORAGING IN ADELIE PENGUINS
M. A. Chappell (P.I.)

The field team (M. Chappell, V. Shoemaker, D. Janes, and S. Maloney) completed work in the Adelie rookery on Torgersen Island. V. Shoemaker departed from Palmer on 9 February. He successfully returned most of our blood samples to CONUS. During the month of February, adult penguins in the study colonies finished feeding chicks and departed to sea. By the end of the month, almost all chicks had fledged, and adults were returning to molt in large numbers. Leopard Seal predation continued and a number of dead and injured birds were observed on Torgersen Island. Judging from a census conducted shortly before chicks began fledging, about 51% of eggs laid survived to the fledging stage.

The most important research effort during February was assessment of body composition (ratio of lean to fatty tissue) in chicks and fledglings. We monitored 65 known-age chicks banded in January. Approximately 15 of these birds were recaptured on the beach within 1-2 days of fledging, and body composition was determined by measuring total body water using deuterium dilution. We also assisted Dr. William Fraser's team in their work on fledging masses of banded chicks from Humble Island.

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 ASA science technician Ned Wilson.

System continues to operate with normal weekly schedule of

calibration, background, and sample counts, with one sample filter being exposed for the duration of the week. Information on 3.5" floppies is copied and stored on site before the originals are shipped.

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

No personnel on station. System being run by ASA science technician, Ned Wilson.

The satellite collection schedule was increased from three to 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.

Four (4) full 8mm digital tapes of recorded satellite data (PAL087-PAL091) are now on station, pending shipment to Bob Whitner, ARC, SIO.

Orbital elements were received from Hays-Yong Chin (SeaSpace) and entered into the Terescan and Telonics systems.

The Omega clock was reset and used in the Telonics satellite tracking system. The Omega signal strength level was erratic, but the time accuracy remained within one second when compared with the GOES satellite clock.

There is still a problem with capture of DMSP satellite pass information. Satellite tracking was suspected to be part of the problem, however testing of the antenna positioner indicates that it is properly calibrated. Testing showed that in addition to the established problem with the inability of the DMSP bit-sync unit to automatically switch between inverted and non-inverted signals, a frequency switching problem may present in the receiver.

Prior to the Feb 9 departure of the Polar Duke, Scientist Ted Foster (S-206, "Formation of Antarctic Bottom Water") was able to use Terascan imagery in order to determine ice edge locations.

Images processed from data uploaded via the Vectra PC continue to look good.

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

No personnel on station. System being run by ASA science technician Ned Wilson.

The scan schedule was modified as of Feb 15 to accommodate the onset of shorter days. Scanning was completely omitted for hours 0200Z, 0300Z and 0600Z. The new daily scan schedule consists of: 19 data scans, 7 response scans and two wavelength scans. seven response and two wavelength scans per day.

During the second week of the month, Steve Kottmeier (ASA) visited the Palmer Station installation, bringing with him two spare quartz windows for the Collector unit. He listened to observations and suggestions, as well as performing a brief inspection of the UV Spectroradiometer system.

On Feb 15, a chart recorder was installed that is able to generate a continuous temperature record of the indoor environment immediately adjacent to the UV Spectroradiometer. This information is to be faxed to BSI on a weekly basis.

A new monochromator arrived on station and is to be

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installed, pending information to be sent by BSI.

An Absolute Calibration scan was done on Feb 12.

Daily data packages were sent to Biospherical via E-Mail.

Full system scandata disks were replaced as necessary.