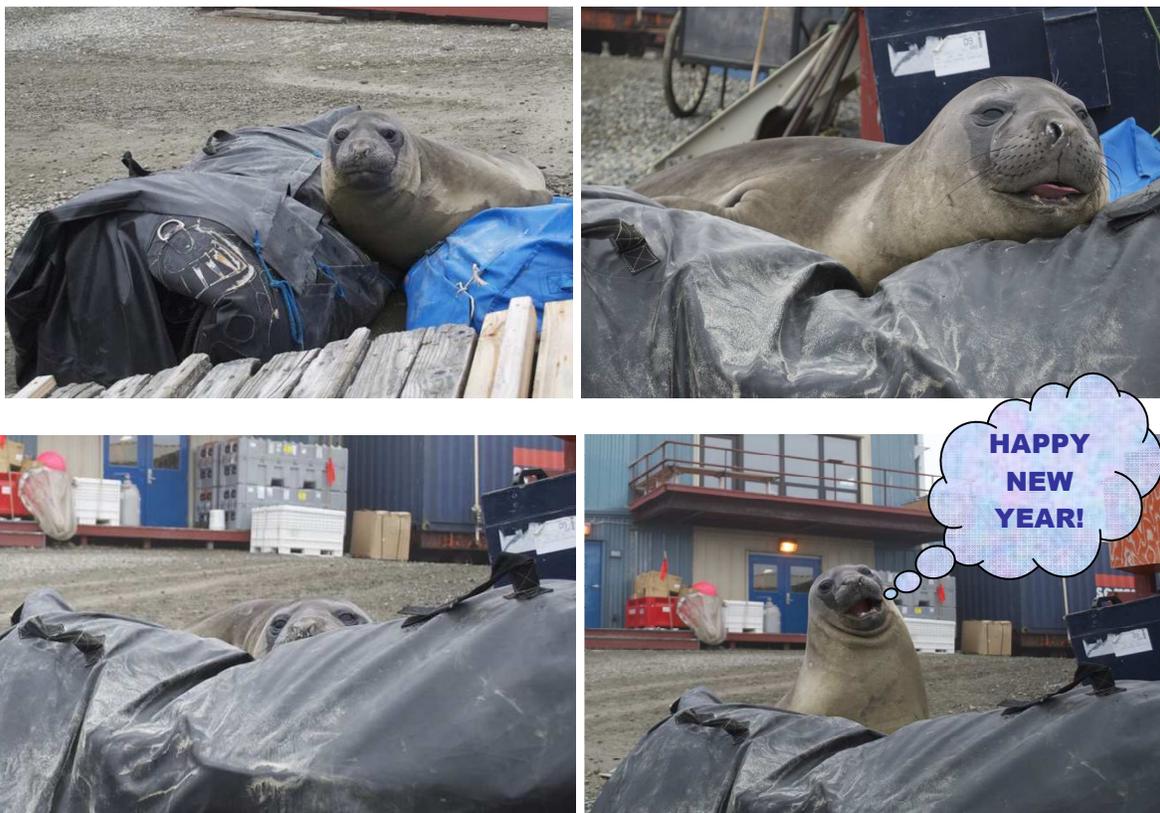


PALMER STATION MONTHLY SCIENCE REPORT December 2010



Elephant seal getting comfortable for the holidays at Palmer Station

Image Credit: Lily Glass

NEWS FROM THE LAB

By Tracey Baldwin, Manager Science Support

December was a month marked by the comings and goings of cruise ships and the *RV Laurence M. Gould*. Writers and visiting scientists came and went while the local wildlife grew stronger as the summer solstice approached. The month tied up in holiday celebrations with an unexpected Elephant seal visitor as we eagerly began preparations for the busy month of January.

We welcomed at the very end of November three science journalists, led by Dr. Christopher Neill from the Marine Biological Laboratory, and Katherine Coles, a poet deployed to Antarctica under the National Science Foundation's Artist and Writer grants. They quickly began producing several works of literature, entertainment, and broadcasts. The station community greatly benefited from the infusion of creativity and increased conversation. Read about their activities below under Y-609-P (Chris Neill) and W-485-P (Kate Coles). Stand by for more to come from these exceptional journalists and poet!

We welcomed several cruise ships while the writers were on station. These tourism visits were fast and furious with a strong outreach effort. The Palmer LTER received a new microscope camera from an Abercrombie and Kent organized philanthropic cruise led by Dr. Jim McClintock aboard *Le Boreal*. The passengers were excited to meet the

scientists that would later publish photos of the Antarctic microscopic organisms taken with their donation. The camera was quickly set-up and pictures taken of locally caught phytoplankton. See the project activity below for B-239-P (Grieg Steward) for a great example. The Holland America *Veendam* also called to station, allowing station personnel the opportunity to present and answer questions from some 1300 passengers about the work of the United States Antarctic Program. To date, we have talked about our work in the Antarctic with more than 2000 passengers with a few thousand more to go before the season is over. We are happy to promote this outstanding work and to send home ambassadors to further spread the word about our efforts here. A main talking point with our visitors is always the flora and fauna of the area.

The fauna activity has increased with more critters being born every day. The penguin chicks have hatched and are rapidly outgrowing their parents. The bug activity has increased as well- towards the end of the month, station personnel noticed larvae squirming in the moss on Torgersen Island. This is just in time for the incoming entomologists, led by Dr. Rick Lee, to begin their collections of *Belgica Antarctica*, the Antarctic wingless fly. You can read more about their work next month in the January Science Report from Palmer Station.

On the opposite end of the size spectrum from *Belgica*, the station also hosted a visiting Elephant seal. The seal took up a temporary residence on station, sandwiched among two rolled up Zodiac boats. He was the bologna between two slices of Zodiac "bread". He took a snooze for a few days, without care about our activities, and then went along on his merry, well- rested and festive way. This was, of course, much to the delight of station personnel- we love to see that we are so unobtrusive to the wildlife. It reminds us that this is, despite our buildings and big noisy equipment, their home first and foremost.

We rang in the New Year with one more resident on station to wish everyone near and far a happy New Year. We hope this report finds you as happy and as well as the Elephant seal of Palmer Station.

DECEMBER WEATHER

By Brian Nelson, Research Associate

December contained a smorgasbord of weather; sun, cloud, fog, calm, wind, rain, and even a little snow.

Wind averaged 8 knots, with a peak gust of 49 knots.

Snowfall amounted to only 3cm in December, none of which stuck. This brought 2010's total snowfall to 319cm, 30cm below average.

Temperatures were very typical for December. The mean temperature was 1.4 °C, maximum temperature was 7.5 °C, and minimum temperature was -3.0 °C. Sea surface temperatures trended up a degree early in the month and bounced around 0.75 °C for the remainder of December.

Late in the month, the entire station watched as the iceberg beyond DeLaca island dramatically collapsed into thirds. Within days, the two smaller pieces drifted and became lodged near Shortcut Point, and the larger piece remains just beyond DeLaca.

B-013-P PALMER LONG TERM ECOLOGICAL RESEARCH (LTER): LOOKING BACK IN TIME THROUGH MARINE ECOSYSTEM SPACE, APEX PREDATOR COMPONENT

William R. Fraser, Principal Investigator, Polar Oceans Research Group, Sheridan, MT

Personnel on station: Jennifer Blum, Marc Travers, Kelsey Ducklow

Weather was surprisingly mild through most of December, allowing us regular access to local islands though some long-distance field work was delayed due to high winds. Despite some missed days, we were able to continue monitoring breeding chronology of our selected Adélie penguin nests and maintain regular censuses of the local Adélie colonies as well as gentoo colonies on Biscoe Island. A peak egg census was completed at the beginning of the month for the chinstrap penguins on Dream Island. The last portion of the gentoo peak egg census was completed on Biscoe Island; all 3 penguin species were censused in the Joubin Islands soon after. We continue to monitor the number of depredated eggs from all 3 penguin species on all islands and continue to make collections for further analysis and collaborations. Preparations for the Humble Island Adélie penguin radio transmitter project began with instrument, equipment and software checks/testing.

Skua work continued this month, as we began checking for hatches of brown skuas on local islands as well as on Dream and Biscoe Islands. Our south polar skua study on Shortcut Island intensified with recording nest initiation/lay dates for the entire island and collecting scat samples. Blue-eyed shags hatched in early December and the censusing continued on Cormorant Island. An all-island kelp gull survey was completed near the beginning of the month. Giant petrel satellite transmitter work continued on Kristie Cove and Shortcut Island. Our all-island census of giant petrels began in mid-

December; new breeders were banded and the census will continue into January. The giant petrel nest monitoring study on Humble Island began in mid-December.

Our monitoring of marine mammals continued this month and was highlighted by sightings of humpback whales in the Palmer area mid-month. Lab work has continued with the processing of new samples. LTER cruise preparations continued throughout the month. Prior to their mid-December departure, the LTER science journalists accompanied us during some of our field days and we coordinated a number of question/answer sessions with each journalist and our group.

Thanks to RPSC for their continued support this month. Special thanks to Ted McKinley for his extra efforts in fixing our issues with the Avian Island platforms. Also thanks to Jeff Otten for his assistance with setting up the cruise palms. Finally, a warm-hearted thank you to our chefs, Steven "Beaver" Cohen and Diane Curran, for putting together the special holiday meals and for keeping us fueled in the field.

B-019-P PALMER LONG TERM ECOLOGICAL RESEARCH (LTER): LOOKING BACK IN TIME THROUGH MARINE ECOSYSTEM SPACE, PHYTOPLANKTON COMPONENT

Oscar Schofield, Principle Investigator, Rutgers University

Personnel on station: Kaycee Coleman, Travis Miles, Michael Garzio

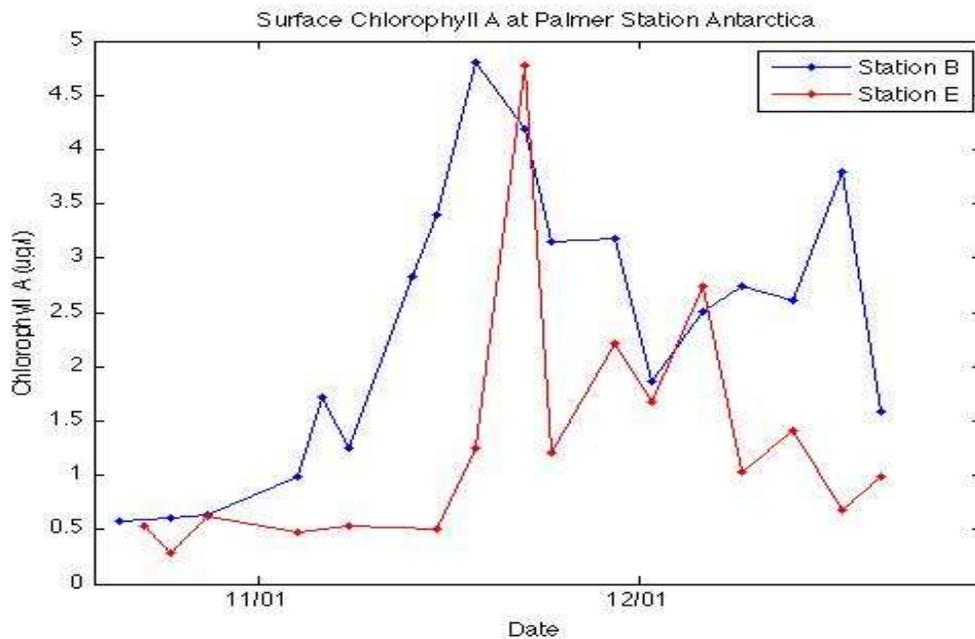
This month an autonomous underwater vehicle, RU-25, was launched approximately a mile south of station E. We deploy slightly past E in deeper water in attempt to lessen the chance of the glider being washed onto nearby shoals or islands. It ran a two-week mission in order to test its capabilities before it was sent on its main mission down to the British Antarctic Survey base, Rothera, on Adelaide Island. Between the two missions RU-25 was brought back into the lab and given new o-rings and batteries to make sure that it was in peak shape for its journey south.

One of the main reasons RU-25's mission is so important is because it surveys the ocean prior to the Laurence M. Gould's journey down to Rothera on the Long Term Ecological Research (LTER) cruise in January. The science data the glider collects can help strengthen sampling decisions and fill in gaps where the cruise ship grid will miss.

Additionally this month a great deal of time was spent preparing for the Gould's arrival. Two of this lab's members, Travis Miles and Mike Garzio, will be leaving Palmer to accompany Oscar Schofield in his research efforts. Also Grace Saba's ocean acidification experiment will be run again on the LTER cruise, so approximately half of the equipment we have in our lab on station was cleaned and packed up to be used on the boat.

Lastly, in December we found time to run all of our chlorophyll samples that we have collected thus far. The graph below illustrates chlorophyll levels measured in ug/l for the surface water at Station E and B. The graph shows that during most of the days we sampled, there were higher levels of chlorophyll A at station B than at station E at the

surface. This could be due to the fact that station B is closer inshore located near a penguin colony where there is a greater chance of nutrient inflow than at station E.



In January we look forward to deploying three more of our gliders that were prepped this month. Furthermore we look forward to the opportunity to work in conjunction with the University of Delaware and California Polytechnic State University on autonomous underwater vehicle work.

B-020-P PALMER LONG TERM ECOLOGICAL RESEARCH (LTER): LOOKING BACK IN TIME THROUGH MARINE ECOSYSTEM SPACE, ZOOPLANKTON COMPONENT.

Deborah K. Steinberg, Principal Investigator, Virginia Institute of Marine Science, VA

Personnel on station: Kim Bernard

Zooplankton sampling continued through the month of December.

Preparations are underway for the annual LTER cruise to enable more extensive sampling of the Zooplankton community along the West Antarctic Peninsula.

B-045-P PALMER LONG TERM ECOLOGICAL RESEARCH (LTER): LOOKING BACK IN TIME THROUGH MARINE ECOSYSTEM SPACE, MICROBIAL ECOLOGY COMPONENT

Hugh Ducklow, Principal Investigator, Marine Biological Laboratory, Woods Hole Massachusetts

Personnel on station: Alice Alpert, Edgar Woznica

Microbial ecology sampling and analyses at Palmer Station have gone smoothly through December. Bacterial production rates have continued to increase significantly, indicating close coupling with phytoplankton growth.

Our flow cytometer has performed well in the field, opening new possibilities for detailed observation of changes in populations within the bacterial and planktonic communities throughout the summer season. In addition, we increased our sampling resolution to seven depths from four, giving us a more precise view of bacterial abundance and production rates through the water column.

We are currently readying for start of the annual LTER summer cruise, which complements our time series at Palmer station with spatially extensive data collection during the month of January.

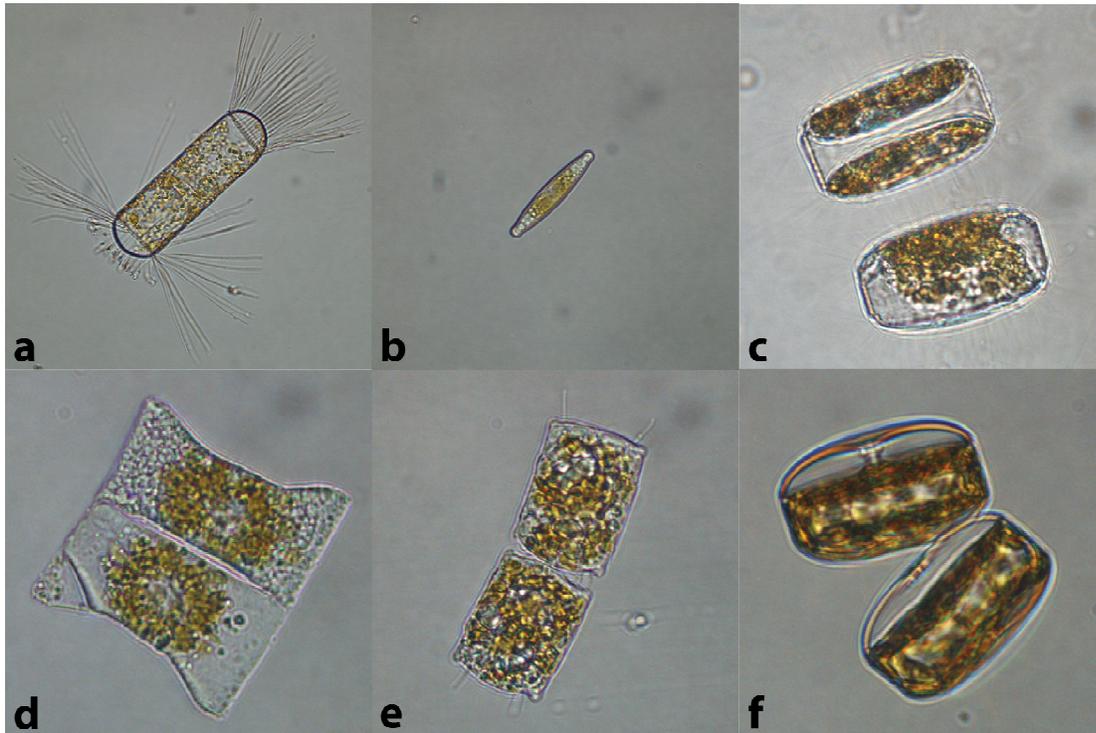
B-239-P VIRAL CONTRIBUTIONS TO SUMMER BLOOM DYNAMICS IN THE WESTERN ANTARCTIC PENINSULA

Grieg Steward, Principal Investigator, University of Hawai'i at Manoa

Personnel on station: Alexander Culley, Christopher Schvarcz

The prolonged period of good weather throughout the month of December allowed us to complete our sampling program without interruption. The program is comprised of two components: weekly core sampling, which includes collections for total viral abundance, the frequency of infected cells, viral nucleic acids and viral community composition from Station B, and monthly or semi-monthly collections to determine the rate of viral production, generate viral metagenomes and core sampling at an alternative station within the Palmer Basin. We are also continuing to collect and process samples for Jennifer Brum, a postdoc from the University of Arizona, who is investigating lysogeny in the Antarctic microbial community at Station B.

Additionally, we have been preparing for the second ocean acidification experiment conducted by the Schofield group (B-019-P) that will take place on the LTER cruise in January. Like in the first experiment, we are collecting samples to assess how different CO₂ levels affect virus abundance, diversity and host infection. We are pleased to report that Chris Schvarcz's efforts to culture prospective viral hosts from the plankton community are starting to bear fruit. To this point, he has isolated various species of the dominant diatoms and small flagellates, a selection of which are shown below.



Cultured representatives of the diatom community at Station B. Images taken with Nikon DS-Fi1c camera: a. *Corethron inerme*, b. putative *Synedropsis sp.*, c. putative *Thalassiosira antarctica*, d. putative *Eucampia sp.*, e. putative *Odontella sp.*, f. putative *Thalassiosira sp.* Scales vary.

We are excited about the progress of the sampling effort thus far, particularly since it is our first season here at Palmer Station. We have received an abundance of support and expertise from the support staff and other scientists. In particular, we thank Lily Glass, Carolyn Lipke and Tracey Baldwin for their astute insight and deft improvisational skills.

**B-319-P National Science Foundation Postdoctoral Fellow in Polar Regions
Research: Marine Prophages in the Western Antarctic Peninsular Region.**

Jennifer Brum, Principal Investigator, Tucson Marine Phage Lab, University of Arizona

Personnel on station: Jennifer Brum

Regular sampling continued in December, with surface samples collected from Station B on Mondays and Thursdays in association with the LTER groups. Water was collected for virus enumeration, frequency of visibly infected cells, and incubations for determining the percent of cells containing prophages. Jennifer departed Palmer Station on December 16, however her sampling will be continued through the end of January with the generous help of B-239 and support from B-045 and B-019. I sincerely thank the members of B-239, B-019, B-045, and the Palmer science support staff for helping to ensure successful sample collection.

Y-609-P: IPY: Improving the Public's Understanding of Polar Research through Hands-On Fellowships for Science Journalists in the Arctic and Antarctic

Dr. Christopher Neill, Principal Investigator, Marine Biological Laboratory, Woods Hole, MA

Personnel on station: Christopher Neill, Jennifer Bogo, Jane Qiu, Susan Moran,

Our group arrived on station 29 November with three science journalists: Jennifer Bogo (science editor and writer for *Popular Mechanics*), Jane Qiu (reporter for *Nature*), and Susan Moran (freelance journalist and radio host who writes for a variety of publications including the *NY Times*, *The Economist* and *Marie Claire*).

After arrival we set up the laboratory for the journalists to make a series of hands-on measurements associated with on-going experiments at Palmer. Boating training occurred quickly and allowed Neill and journalists to participate in field work right away. On the evening of 2 December the journalists presented a one-hour program that included descriptions of their background, approach and goals to the Palmer Station community in the lounge.

The project has two main goals: (1) provide journalists with hands-on experience that demonstrates the process and richness of science linked to the Palmer LTER being conducted at Palmer. Our focus is on making a series of real-time measurements of seawater nitrate and ammonium (using Hach reagent kits) and chlorophyll concentrations linked to the field and laboratory experiments conducted by the phytoplankton (B-119-P) and zooplankton (B-020-P) groups. We successfully ran nitrate and ammonium standard curves on 2 December and analyzed nitrate and ammonium from depth profiles ($z=0$ to 40 m) collected from Station B on 3 December. The nitrate method worked extremely well at observed concentrations (measurements showed the ocean water was thoroughly mixed with average nitrate concentration of 15 μM). Ammonium measurements were very noisy below about 2 μM (range of the ocean water samples).

Journalists spent time going into the field with the range of science groups operating at Palmer. This included field excursions with the plankton and zooplankton groups, the ocean microbiology group (B-045-P) and the birders (B-113-P).

The journalists produced a wide range of products. These included a 30-minute live radio broadcast on 30 November on KGNU in Boulder Colorado, nearly daily reports to a range of websites including *Popular Mechanics*, *Audubon*, *Nature*, and the MBL's Logan Science Journalism Program Palmer blog. The journalists plan to produce a variety of longer products over the next weeks and months.

W-485-P: Natural Curiosities: Poems of Exploration, Antarctica

Dr. Katherine Coles, Principal Investigator, University of Utah

Personnel on station: Katherine Coles

I left Punta Arenas on the LMG on November 25th. On the boat, I began the "Expedition Journal" portion of the project, generating drafts of two poems and notes for others.

Upon arrival on Palmer Station on November 29th, I began exploring the station environment both indoors and out, participating in boating trips, glacier walks, a recreation hut campout, and many community activities. During my outings, I had close encounters with penguins, including spending about 5 minutes with a penguin in the boat between the station and Wahl-berg and seeing newly-hatched chicks on Torgerson Island, with whales near Spume Island and in Biscoe Bay; and with water in its many manifestations.

Equally importantly, I was able to observe and participate in station culture and became especially fascinated by the kinds of linguistic play in which station personnel and scientists routinely engage at Palmer and which is very much part of station life. This gave rise to a number of poems, which will require a new section, to be called Glossary.

I was also given the opportunity to go out into the field with many of the scientific teams, and the project has greatly benefitted not only from their factual expertise but from adopting certain aspects of their way of approaching and observing their subjects.

At this point, two days from departure, I have drafted out ten poems, several of which are finished or nearly so, and I have notes or partial drafts for about twenty-five more. I anticipate to problems in completing the promised manuscript over the next few months. I will begin to send out poems for publication on my return home.

PALMER STATION
RESEARCH ASSOCIATE MONTHLY REPORT
December 2010
Brian Nelson

G-295-P GPS CONTINUOUSLY OPERATING REFERENCE STATION.

Bjorn Johns, Principal Investigator, UNAVCO

The Research Associate operates and maintains on-site equipment for the project. Throughout the month, 15-second epoch interval GPS data files were collected continually at station PALM, compressed, and transmitted to the NASA-JPL in Pasadena, CA.

The GPS operated normally for the duration of the month.

G-090-P GLOBAL SEISMOGRAPH NETWORK (GSN) SITE AT PALMER STATION.

Kent Anderson, Principal Investigator, Incorporated Research Institutions for Seismology (IRIS)

The Research Associate operates and maintains on-site equipment for the project. Station PMSA is one of more than 143 sites in the GSN monitoring seismic waves produced by events worldwide. Real-time telemetry data is sent to the U.S. Geological Survey (USGS).

Data collection occurred normally during the month. Remote calibrations were performed.

A-132-P FABRY-PEROT INTERFEROMETER

Qian Wu, Principal Investigator, National Center for Atmospheric Research

The Research Associate operates and maintains on-site equipment for the project. The Fabry-Perot Interferometer observes mesospheric and thermospheric neutral winds and temperatures at Palmer Station.

The Fabry-Perot Interferometer was shut down in early December because the sun is no longer dipping low enough for good measurements. The instrument will be turned back on in January.

O-202-P ANTARCTIC METEOROLOGICAL RESEARCH CENTER (AMRC) SATELLITE DATA INGESTOR.

Mathew Lazzara, Principal Investigator, University of Wisconsin

The Research Associate operates and maintains on-site equipment for the project. The AMRC SDI computer processes satellite telemetry received by the Palmer Station TeraScan system, extracting Automated Weather Station information and low-resolution infrared imagery and sending the results to AMRC headquarters in Madison, WI.

The ingestor operated normally for the duration of the month.

O-204-P A STUDY OF ATMOSPHERIC OXYGEN VARIABILITY IN RELATION TO ANNUAL TO DECADAL VARIATIONS IN TERRESTRIAL AND MARINE ECOSYSTEMS.

Ralph Keeling, Principal Investigator, Scripps Institution of Oceanography

The goal of this project is to resolve seasonal and interannual variations in atmospheric O₂ (detected through changes in O₂/N₂ ratio), which can aid in determining rates of marine biological productivity and ocean mixing. The results are also used to help determine the terrestrial and oceanic distribution of the global anthropogenic CO₂ sink. The program involves air sampling at a network of sites in both the Northern and Southern Hemispheres. Palmer Station is especially well situated for resolving signals of carbon cycling in the Southern Ocean.

The Research Associate collects samples fortnightly from both TerraLab and the VLF Building. A goal is that all sampling will eventually be moved to TerraLab. Samples taken from the station are sent to Scripps where the analysis of O₂ and CO₂ content takes place.

Sampling equipment and operations were per plan throughout the month.

O-264-P: COLLECTION OF ATMOSPHERIC AIR FOR THE NOAA/GMD WORLDWIDE FLASK SAMPLING NETWORK

James Butler (Principle Investigator), National Oceanic and Atmospheric Administration / Global Monitoring Division; Boulder, CO

The NOAA ESRL Carbon Cycle Greenhouse Gases (CCGG) group makes ongoing discrete measurements to document the spatial and temporal distributions of carbon-cycle gases and provide essential constraints to our understanding of the global carbon cycle.

The Halocarbons and other Atmospheric Trace Species (HATS) group quantifies the distributions and magnitudes of the sources and sinks for atmospheric nitrous oxide (N₂O) and halogen containing compounds.

Palmer Station is one of many sites around the world providing data to support these projects. The Research Associate collects weekly air samples for Carbon Cycle Greenhouse Gases Group and fortnightly samples for Halocarbons & other Atmospheric Trace Species Group.

Carbon Cycle and Halocarbon sampling occurred normally during the month.

O-283-P ANTARCTIC AUTOMATIC WEATHER STATIONS (AWS).

Mathew Lazzara, Principal Investigator, University of Wisconsin

The Research Associate monitors data transmissions for the project and performs quarterly maintenance on the station at Bonaparte Point. AWS transmissions from Bonaparte Point are monitored using the TeraScan system and the Data Ingestor system. Data collected from this station is freely available from the University of Wisconsin's AMRC website.

The weather station ran normally during the month.

A-109-P ANTARCTIC EXTREMELY LOW FREQUENCY/VERY LOW FREQUENCY OBSERVATIONS OF LIGHTNING AND LIGHTNING-INDUCED ELECTRON PRECIPITATION.

Robert Moore, Principal Investigator, University of Florida

Extremely Low Frequency/Very Low Frequency (ELF/VLF) radio wave observations at Palmer Station are used to provide a deeper understanding of lightning and its effects on the Earth's inner radiation belt. Lightning source currents are estimated or directly measured by experimental observations of individual natural and rocket-triggered lightning flashes in North America. Together, the North American and Antarctic data sets are used to experimentally identify and analyze the components of lightning and the effects of lightning, such as lightning-induced electron precipitation, that are observed in the Antarctic, more than 10,000 km distant.

Data collection continued normally throughout the month.

A-306-P GLOBAL THUNDERSTORM ACTIVITY AND ITS EFFECTS ON THE RADIATION BELTS AND THE LOWER IONOSPHERE.

Umrans Inan, Principal Investigator, Stanford University

Stanford University has been operating a Very Low Frequency (VLF) receiver antenna at Palmer Station since the 1970's. By receiving naturally and manmade signals between 1 and 40 kHz, the Stanford VLF group is able to study a wide variety of electromagnetic phenomenon in the ionosphere (uppermost layer of the atmosphere ionized by solar radiation) and magnetosphere (the area surrounding the earth dominated by the Earth's magnetic field and particles trapped by it). Many of these studies relate to the energetic releases associated with lightning. For example, Palmer Station's unique location enables it to pick up small bits of radiation from lightning strikes as far away as Africa, the USA, or the Pacific Ocean.

Data collection continued normally through the month. Maintenance to the VLF antenna cable was performed as necessary while the snow and glacier melt.

T-312-P TERASCAN SATELLITE IMAGING SYSTEM.

The Research Associate operates and maintains on-site equipment for the project. Throughout the month, the TeraScan system collected, archived, and processed DMSP and NOAA satellite telemetry, capturing approximately 25-30 passes per day. A weekly 85GHz SSM/I ice concentration image was produced and transferred to UCSB for B-032-P (Smith).

The system operated normally during the month.

A-357-P EXTENDING THE SOUTH AMERICAN MERIDIONAL B-FIELD ARRAY (SAMBA) TO AURORAL LATITUDES IN ANTARCTICA

Eftyhia Zesta, Principal Investigator, University of California Los Angeles

The three-axis fluxgate magnetometer is one in a chain of longitudinal, ground-based magnetometers extending down through South America and into Antarctica. The primary scientific goals are the study of ULF (Ultra Low Frequency) waves and the remote sensing of mass density in the inner magnetosphere during geomagnetically active periods. Palmer's magnetometer is also a conjugate to the Canadian Poste de la Baleine station, allowing the study of conjugate differences in geomagnetic substorms and general auroral activity. The station Research Associate maintains the on-site system.

The system collected data normally during the month.

B-390-P: THERMO-SALINOGRAPH

Vernon Asper, Principal Investigator, University of Southern Mississippi

Sea water is pumped continuously through a thermosalinograph (TSG) sampling system, recording the temperature, conductivity, salinity, and fluorescence. The real-time data, including graphs and web camera images of the ocean in the vicinity of Palmer Station, are compiled by a local server into web page format and relayed to a mirror site at Woods Hole Oceanographic Institute, which is a collaborator in the project. The URL for the WHOI mirror site is <http://4dgeo.whoi.edu/tsq/>.

The thermosalinograph operated normally during the month.

T-998-P: IMS RADIONUCLIDE MONITORING

Managed by General Dynamics

The International Monitoring System (IMS) radionuclide sampler is part of the Comprehensive Test Ban Treaty (CTBT) verification regime. The automated Radionuclide Aerosol Sampler and Analyzer (RASA) unit pumps air continuously through a filter for 24 hour periods, collecting particulates in the .2-10 micron range. The

filter is then tested for particulates with radioisotope signatures indicative of a nuclear weapons test. The station Research Associate operates and maintains the instrument.

The system operated normally throughout the month.

ULTRAVIOLET (UV) SPECTRAL IRRADIANCE MONITORING NETWORK (UVSIMN)

A BSI SUV-100 UV spectroradiometer produces full sky irradiance spectra ranging from the atmospheric UV cutoff near 290nm up to 605nm, four times per hour, while the sun is above the horizon. A BSI GUV-511 filter radiometer, which has four channels in the UV and one channel in the visible for measuring Photosynthetically Active Radiation (PAR), is located next to the SUV-100.

The UV monitor collected data normally for the month and all scheduled calibrations were carried out.

TIDE GAGE

The Research Associate operates and maintains on-site equipment for the project. Tide height and seawater temperature are monitored on a continual basis by a gauge mounted at the Palmer Station pier. Although salinity (conductivity) is also recorded by the tide gauge, the measurements are incorrect and should not be used. Correct salinity data can be found on the TSG system.

The tide gauge operated normally during the month. New tide predictions were obtained for 2011.

METEOROLOGY

The Research Associate acts as chief weather observer, and compiles and distributes meteorological data. At the end of the month a summary report is prepared and sent to interested parties. Weather data collected using the automated electronic system is archived locally and forwarded twice each month to the University of Wisconsin for archiving and further distribution. Synoptic reports are automatically generated every three hours by the Palmer Meteorological Observing System (PalMOS) and emailed to the NOAA for entry into the Global Telecommunications System (GTS).

Scheduled inspections were carried out at the Gamage Point tower.

The monthly meteorology report for November resumed the use of temperature and humidity data from the primary weather station, PalMOS, since these new sensors were in place all month.

The ceilometer is still not communicating properly with the weather station. Troubleshooting continues, as time allows.