

JUNE WEATHER

For the most part June weather was typical for this time of year, with several large storms developing in the Bellingshausen Sea bringing primarily easterly and northeasterly winds to the area. The average temperature for this month (-4.3°C) is comparable to the 15-year average for June of -4.5°C . Temperatures have remained below freezing all month with the exception of a high of $+0.2^{\circ}\text{C}$ on the 4th. Temperatures were quite moderate throughout the month with the low temperature of the month only reaching -8.5°C . Several occurrences of rain and fog were indicative of relatively shallow temperature inversion conditions.

Precipitation continues to be low for the year and was much lower for the month of June than the 15-year average. The precipitation for June was 11.7 mm compared to 15-year average of 48 mm and 183 mm for the year compared with 395 mm. However it is interesting to note that the snow depth is not significantly less than past years. The maximum snowstake depth was 49 cm but decreased to 45 cm by the end of the month due to winds and freezing rain.

Sea surface temperatures hovered around -1.5°C throughout the month, forming pancake ice near shorelines on calm days. The far end of Hero Inlet is frozen solid and continues to freeze up. Large icebergs were seen occasionally during the month, along with the usual brash ice and bergy bits that were seen throughout the month.

PALMER STATION RESEARCH ASSOCIATE MONTHLY REPORT June 2007

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. The 15-second epoch interval GPS data files were collected continually at station PALM throughout the month. Transmission of these files to the NASA/CDDIS data center in Reston, VA occurred without incident throughout the month.

The GPS base station continues to operate using the spare base station receiver with apparently normal data, but unconfirmed configuration settings. Plans to change the base station receiver from the obsolete Ashtech Z-12 backup to the new Trimble NetRS are still on hold pending receipt of directions from the new project PI.

Issues concerning security scan “vulnerabilities” on the GPS receiver continued to be unresolved. After several communications with Network Engineer and Information Security personnel, a risk acceptance request was submitted for the receiver.

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

Rhett Butler, 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. Data files are recorded to tape and also sent real-time to the U.S. Geological Survey (USGS).

The system operated well throughout the month. PIs were informed of occurrences of drilling in the vicinity of the vault for the new utilidor and a vault visit by the electrician for panel maintenance.

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

Charles Stearns, 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 system operated normally throughout the month.

O-204-P A STUDY OF ATMOSPHERIC OXYGEN VARIABILITY IN RELATION TO ANNUAL TO DECADEAL 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. Samples taken from the station are sent to Scripps where the analysis of O₂ and CO₂ content takes place.

Samples were taken on schedule. A new shipment of flasks arrived and one full crate was packaged and prepared for retro shipment on LMG07-07.

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

David Hofmann, Principal Investigator, Earth System Research Laboratory, Global Monitoring Division, National Oceanic and Atmospheric Administration

The National Oceanic and Atmospheric Administration (NOAA) Earth System Research Laboratory continues its long-term measurements of carbon dioxide and other climate relevant atmospheric gases. The Palmer Station air samples are returned to the NOAA laboratory for analysis as part of NOAA's effort to determine and assess the long-term buildup of global pollutants in the atmosphere. Data from this experiment will be used in modeling studies to determine how the rate of change of these parameters affects climate.

Samples were taken on schedule. One full crate of CCGG flasks was sent out for retro shipment on LMG07-07.

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

Charles Stearns, Principal Investigator, University of Wisconsin

The Research Associate monitors data transmissions for the project. AWS transmissions from Bonaparte Point were monitored using the TeraScan system. AWS data received were also forwarded to UCSB for B-032-P (Smith).

The Bonaparte Point AWS operated normally throughout the month. It was discovered that the Peninsula AWS data displayed on the intranet was not updating due to a problem with the drive paths in Matlab. The appropriate changes were made and problem fixed.

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

Umran 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.

VLF data acquisition ran normally throughout the month. Several periods of extra data were recorded.

T-312-P TERASCAN SATELLITE IMAGING SYSTEM.

Dan Lubin, Principal Investigator, Scripps Institution of Oceanography

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).

Issues involved with performing vulnerability scans on the TeraScan machine were followed up with RPSC Image Specialist and Info Sec Network Engineer.

Problems concerning ftp access to iceberg server were discussed with Image Specialist and Network Engineer. The TeraScan machine is able to ftp into the iceberg server, but other machines are blocked. The problem has not been resolved.

A problem with the inability to send out emails from the TeraScan machine was traced to an IT security change to the mail server. The problem was fixed by Network Engineer and risk acceptance submitted to allow emails to continue to be sent out.

Sea ice images were provided to the LMG and the NBP on request.

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 though 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 performed normally throughout 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.who.edu/tsg/>.

The system operated normally throughout the month, except for an instance of unusual outgoing data transfer and subsequent problem with the WHOI website server. A different server was used to display web cam images and live data for several weeks until the original server was back up.

Seawater flow to the system required adjustment several times during the month. The fluorometer remains uninstalled awaiting further direction from PIs.

The PIs were contacted concerning an Info Sec “medium” security risk on the TSG nport server and the possibility of upgrading to ssh.

T-513-P: ULTRAVIOLET (UV) SPECTRAL IRRADIANCE MONITORING NETWORK (UVSIMN)

Charles Booth, Principal Investigator, Biospherical Instruments, Inc

The Research Associate operates and maintains on-site equipment for the project. 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. Data from the GUV-511 instrument are made available on a daily basis on the project's website at <http://www.biospherical.com/nsf>.

The UV monitor operated normally throughout the month, except for an incident where the GUV data acquisition software needed to be restarted.

T-998-P: IMS RADIONUCLIDE MONITORING

Michael Pickering, Principal Investigator, 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 equipment operated well throughout the month. Samples were prepared and set aside for the next quarterly shipment.

TIDE GAUGE

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 cannot be used.

The tide gauge operated normally throughout the month except for one instance where the data display program stalled for an unknown reason and approximately 16 hours of data were lost. The tide gauge computer was rebooted, and the display program restarted. The intranet tide display Matlab program was subsequently modified due to an inability to run with missing data.

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 are archived locally and forwarded twice each month to the University of Wisconsin for archiving and further distribution. Synoptic reports are automatically generated every six hours by the Palmer Meteorological Observing System (PalMOS) and emailed to the NOAA for entry into the Global Telecommunications System (GTS). Isobar images are sent to the LMG each day for cruise support.

The PalMOS anemometer that was changed out on the tower last month was sent to the manufacturer for annual calibration and maintenance.

VNC was installed on the MAWS system to support remote system checks. The MAWS display now runs in the background and sky chart software runs on the display. Daily files are checked for completeness.

A problem accessing the iceberg ftp server from the PalMOS machine was discussed with RPSC IT personnel. The issue remains unresolved and the PalMOS machine continues to be unable to access iceberg. This problem affects the transfer of PalMOS meteorological data to SPAWAR, and the SPAWAR lead forecaster was contacted to inform him of the change.

While troubleshooting the iceberg ftp server issue, an incompatibility between the Ipswitch ftp server and Windows Server 2003 OS on PalMOS computer was discovered and fixed. PalMOS was rebooted several times during the process and subsequently missed 2 synoptic reports.

Another problem with the failure of synoptic email reports sent out from PalMOS machine was traced to an IT security change to the mail server. The Network Engineer

was notified and the settings were changed back to allow emails to be sent out. Four synoptic reports were missed during this period.

The ceilometer was received and installed, however the data acquisition software does not seem to be receiving data from the sensor. A laptop was used to try to troubleshoot the problem via the ceilometer's service port, but the problem remains undetermined and troubleshooting procedures will continue.

Climate files were updated with the past few months of meteorological data from the PalMOS system. Several requests for Palmer Station meteorological data were fulfilled this month.