PHYSICAL OCEANOGRAPHY

Palmer Station has a tide and conductivity gauge located on the west side of the pier at -64.774558° -64.055580° at a depth of 11.46 meters (WGS-84). It was reinstalled at this deeper depth after the completion of the Palmer Pier in June 2022.

The Research Associate acts as the station's physical oceanography observer by maintaining and observing the sea state. Observations of sea ice extent and growth stage is recorded along with continuous tidal height, ocean temperature, and ocean conductivity. We were able to remove the tide gauge from the water to clean off bioaccumulation on the sensors. This was completed on May 20th. Work still needs to be done to replace the Digi receiver.

As mentioned in the Seismograph section, a 7.5 magnitude earthquake occurred only 900 km from station. Looking at our tide gauge data, we can see a disturbance in our tide data (dark blue) compared to our prediction line (light blue). Looking at the figure, we can see the typically smooth tide line meld into a much more erratic signal after the earthquake (and its subsequent aftershocks) happened.

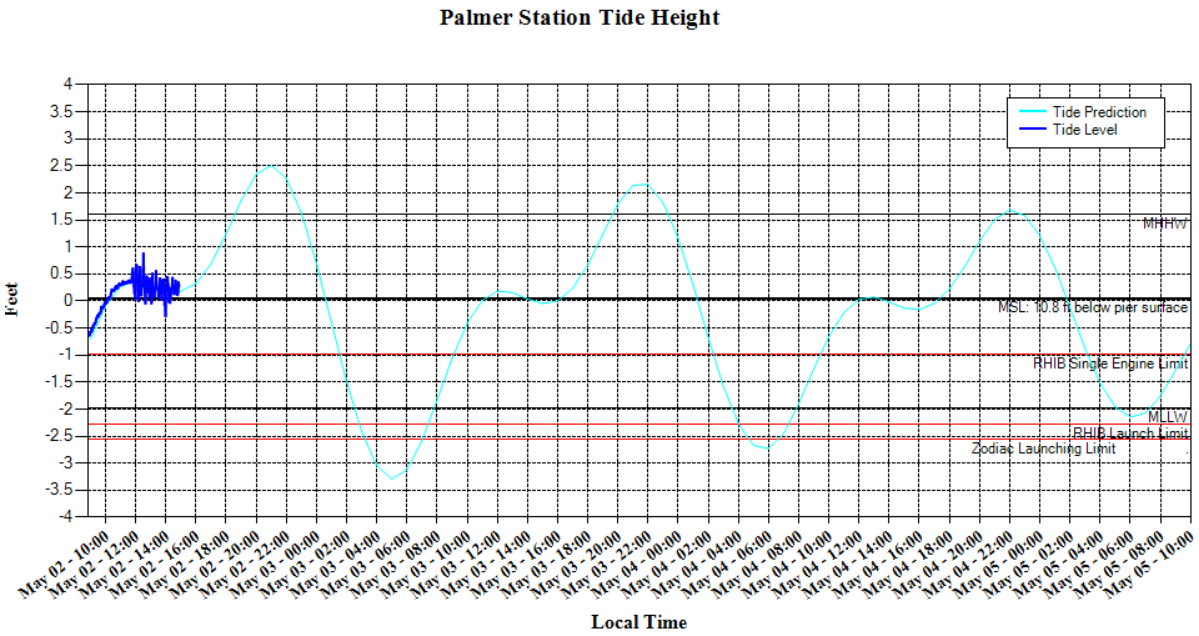

Figure 8. Palmer Station tide gauge data on May 2nd during the earthquake.

Tide level, sea water conductivity, and sea water temperature data is archived on the AMRDC website: https://amrdcdata.ssec.wisc.edu/dataset?q=Palmer+Station.

METEOROLOGY

Mike Carmody, Principal Investigator, United States Antarctic Program

Palmer Station is Station 89061 in the World Meteorological Organization (WMO) Worldwide Network. Automated surface synoptic observations are made 8 times each day and emailed to the National Atmospheric and Oceanographic Administration (NOAA) for entry into the Global Telecommunication System (GTS).

The Palmer Automatic Weather Station (PAWS) is a collection of sensors, computers, and software that records the meteorological data and generates synoptic reports. PAWS began recording data in September of 2015. It was a replacement for the Palmer Meteorological Observing System (PalMOS) that was taken down in November 2017. The PAWS sensors and data acquisition hardware are located on a ridge in the backyard at -64.774130° -64.047440° at an elevation of 38.3 meters above sea level using the World Geodetic System-84. In addition to the synoptic and METAR reporting, PAWS also archives the current conditions at one-minute intervals and displays both raw data and graphs of the sensor data on our local intranet.

The Research Associate acts as Chief Weather Observer on station, measuring, compiling and distributing all meteorological data. Snow accumulation is physically observed at five accumulation stakes found near the PAWS system. All weather data is archived locally and forwarded to the University of Wisconsin on the first day of each month for archiving and further distribution.

Winter is finally here as we settle in to a colder climate with snow staying on the ground after our first snowfall of the month on May 5th. After what felt like a snowless April, May was the 6th snowiest month dating back to 1990 for Palmer Station. As expected with an increase in snow, we also experienced a colder monthly average air temperature, aligning with the average for the last 15 years. Additionally, May brought calmer winds: 4 days with gusts above 30 knots compared to 18 last month. One-minute weather data is archived on the AMRDC website: https://amrdcdata.ssec.wisc.edu/dataset?q=Palmer+Station.

Palmer Monthly Met summary for May, 2025

Temperature
Average: -1.8 °C / 28.8 °F
Maximum: 4.9 °C / 40.82 °F on 12 May 15:21
Minimum: -7.9 °C / 17.78 °F on 29 May 02:36
Air Pressure
Average: 995 mb
Maximum: 1018.6 mb on 27 May 10:24
Minimum: 964 mb on 13 May 03:17
Wind
Average: 6.1 knots / 7 mph
Peak (5 Sec Gust): 60 knots / 69 mph on 13 May 03:01 from N (1 deg)
Prevailing Direction for Month: SE
Surface
Total Melted Precipitation: 33.5 mm / 1.32 in
Total Snowfall: 53 cm / 20.7 in
Greatest Depth at Snow Stake: 35.6 cm / 13.9 in
WMO Sea Ice Observation: 11-20 bergs, bergy bits, growlers, brash ice
Average Sea Surface Temperature: -.74 °C / 30.7 °F

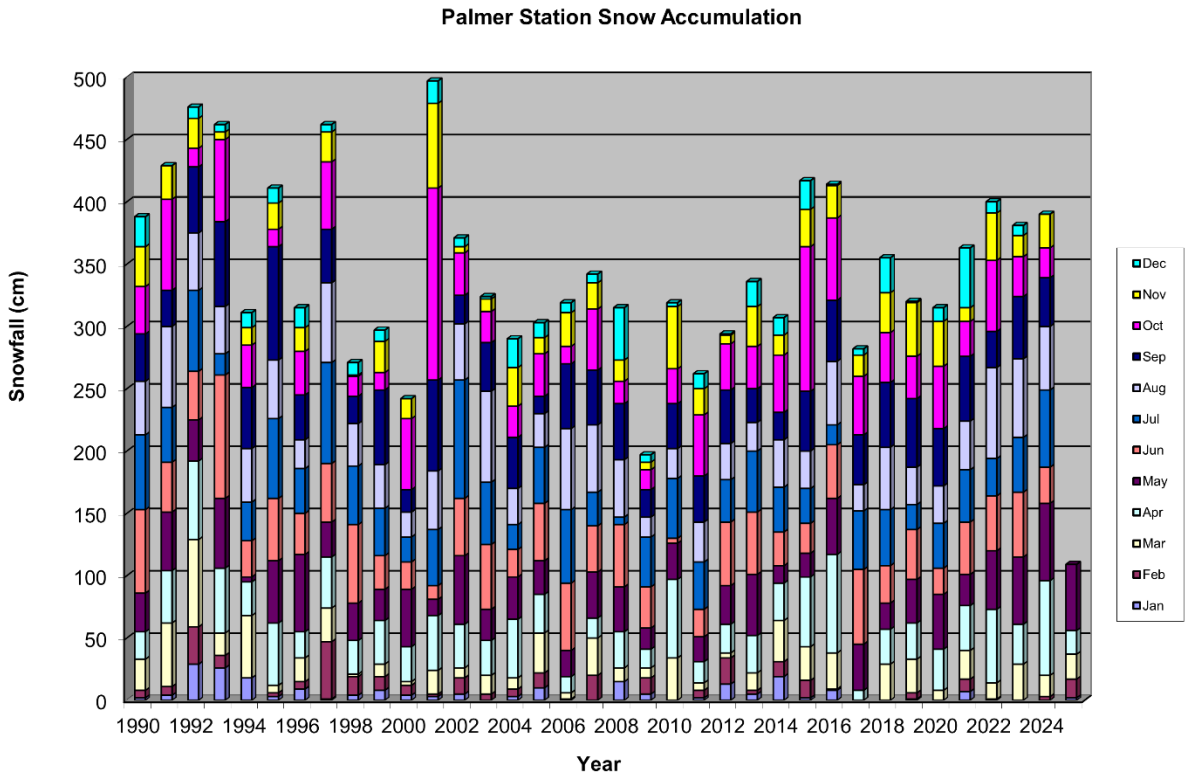

Figure 9. Palmer Station snow accumulation, 1990-present.

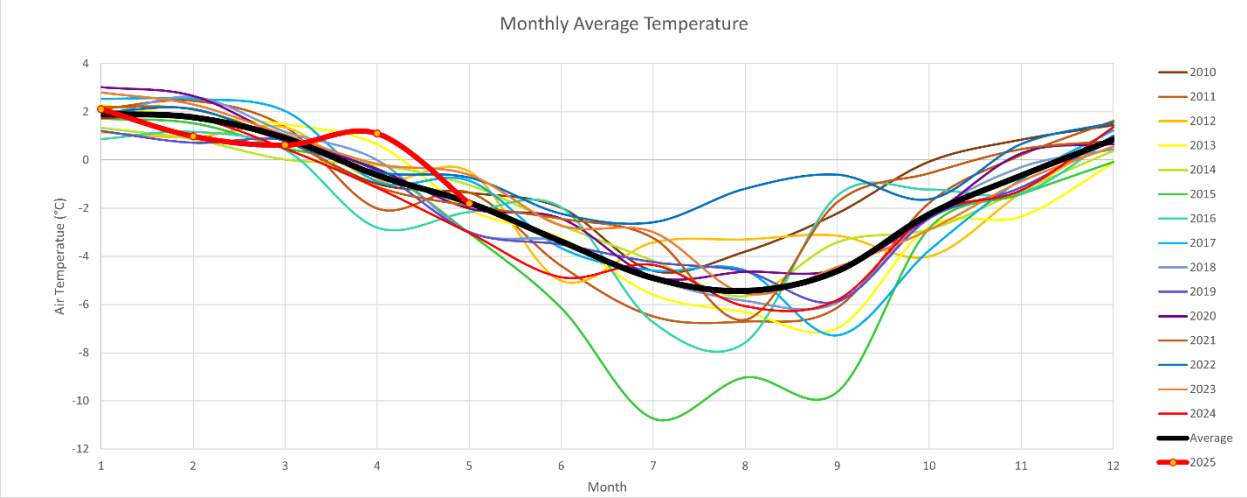

Figure 10. Palmer Station monthly average temperature, 2010-present.

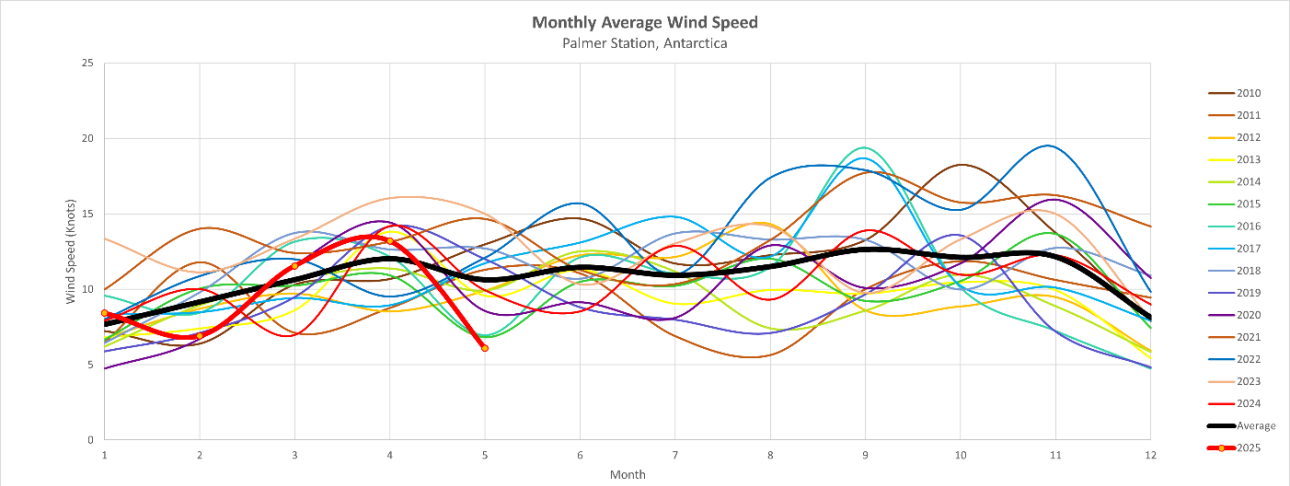

Figure 11. Palmer Station monthly average wind speed, 2010-present.

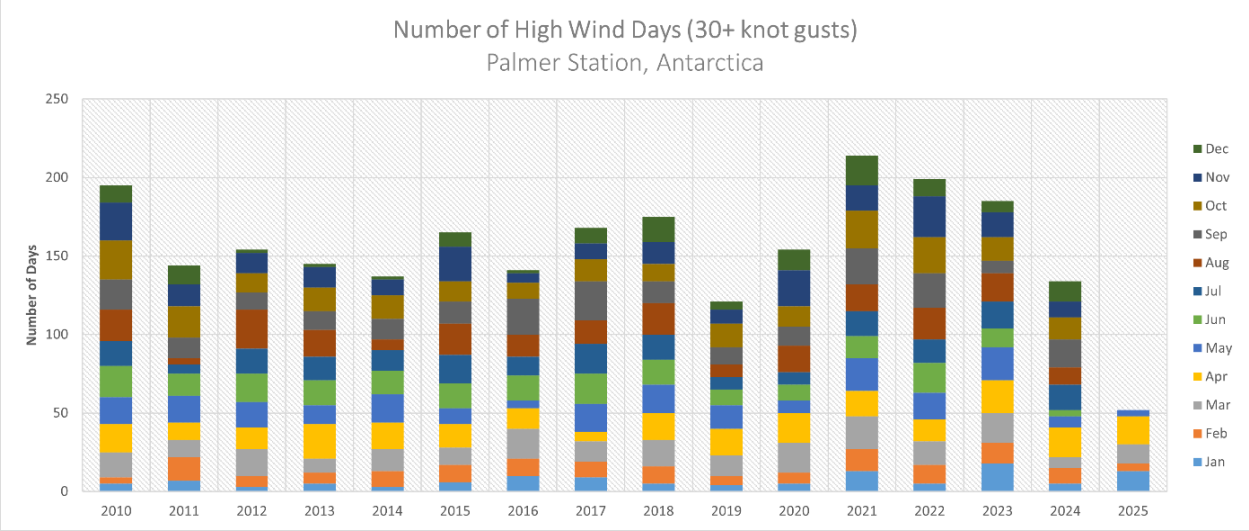

Figure 12. Number of high wind days (gusting 30+ knots) at Palmer Station, 2010-present.