

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. The tide gauge performed nominally this month. We had a few days of large tides, reaching +0.75 meters which is the highest we've since this season so far.

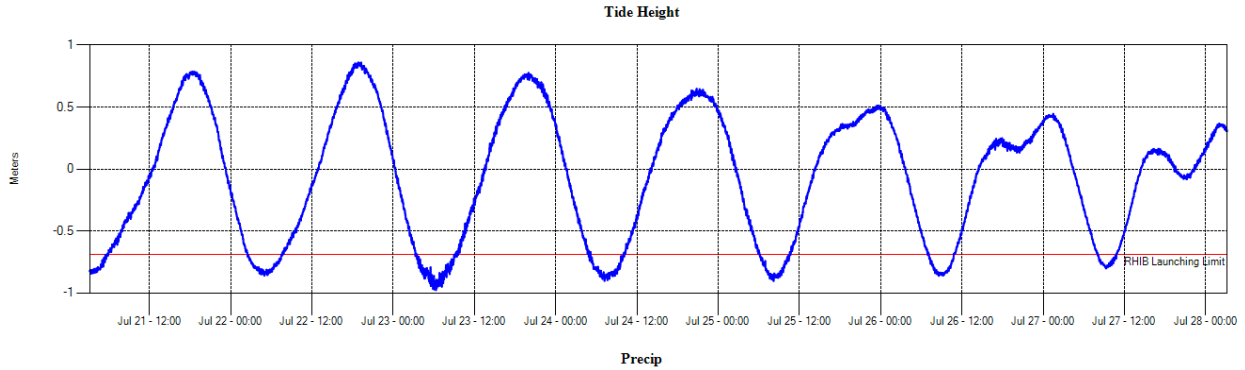


Figure 8. Palmer Station tide gauge data for the week of July 21st showing very high tides.

Additionally, at the end of the month the tide gauge was influenced by tides created from the magnitude 8.8 earthquake, some 12,000 km (7500 miles) away.

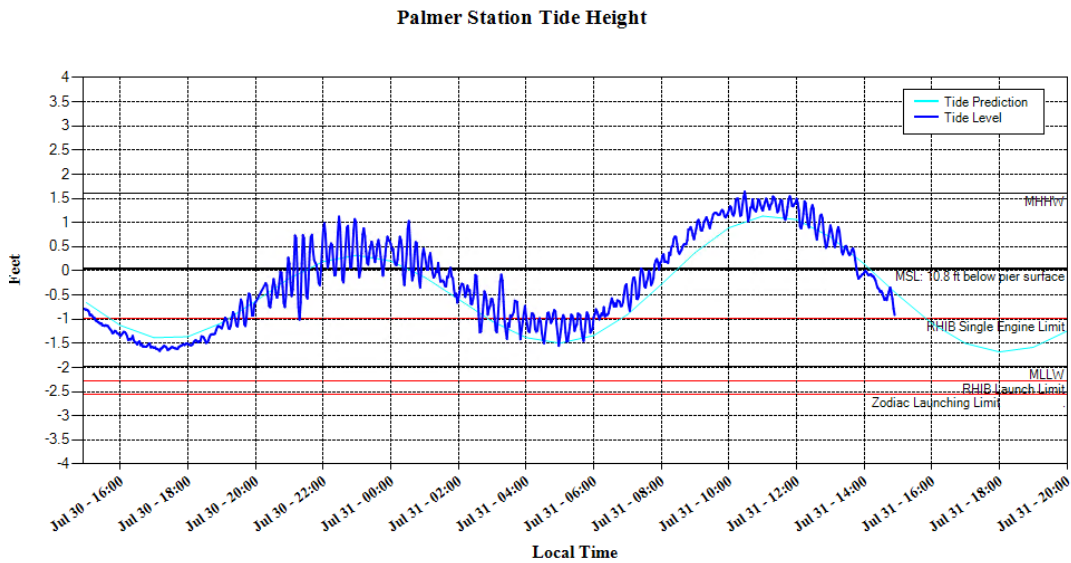


Figure 9. Palmer Station tide gauge after the magnitude 8.8 earthquake on July 30th.

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.

The wind has returned as we had 19 days with winds above 30 knots, and we hit a peak gust of 66 knots on July 22nd. We have also remained on the warmer side, observing an average air temperature of -2.3C (compared to the historic average for July which is typically -4C). The end of the month brought colder sea surface temperatures resulting in sea ice that persisted for multiple days in a row. Snow accumulation remained low, as we added only 29 cm of snow for the month. One-minute weather data is archived on the AMRDC website:
<https://amrccddata.ssec.wisc.edu/dataset?q=Palmer+Station>.

Palmer Monthly Met summary for July, 2025

Temperature
Average: -2.3 °C / 27.9 °F
Maximum: 4.2 °C / 39.56 °F on 8 Jul 05:59
Minimum: -9 °C / 15.8 °F on 16 Jul 23:11
Air Pressure
Average: 985.7 mb
Maximum: 1010.3 mb on 6 Jul 14:26
Minimum: 951.8 mb on 11 Jul 19:58
Wind
Average: 13.8 knots / 15.9 mph
Peak (5 Sec Gust): 66 knots / 76 mph on 22 Jul 15:10 from N (360 deg)
Prevailing Direction for Month: N
Surface
Total Melted Precipitation: 51.6 mm / 2.03 in
Total Snowfall: 29 cm / 11.3 in

Greatest Depth at Snow Stake: 60 cm / 23.4 in

WMO Sea Ice Observation: 11-20 bergs, bergy bits, growlers, brash ice, occasional pancake ice forming and remaining through the end of the month.

Average Sea Surface Temperature: -1.35 °C / 29.6 °F

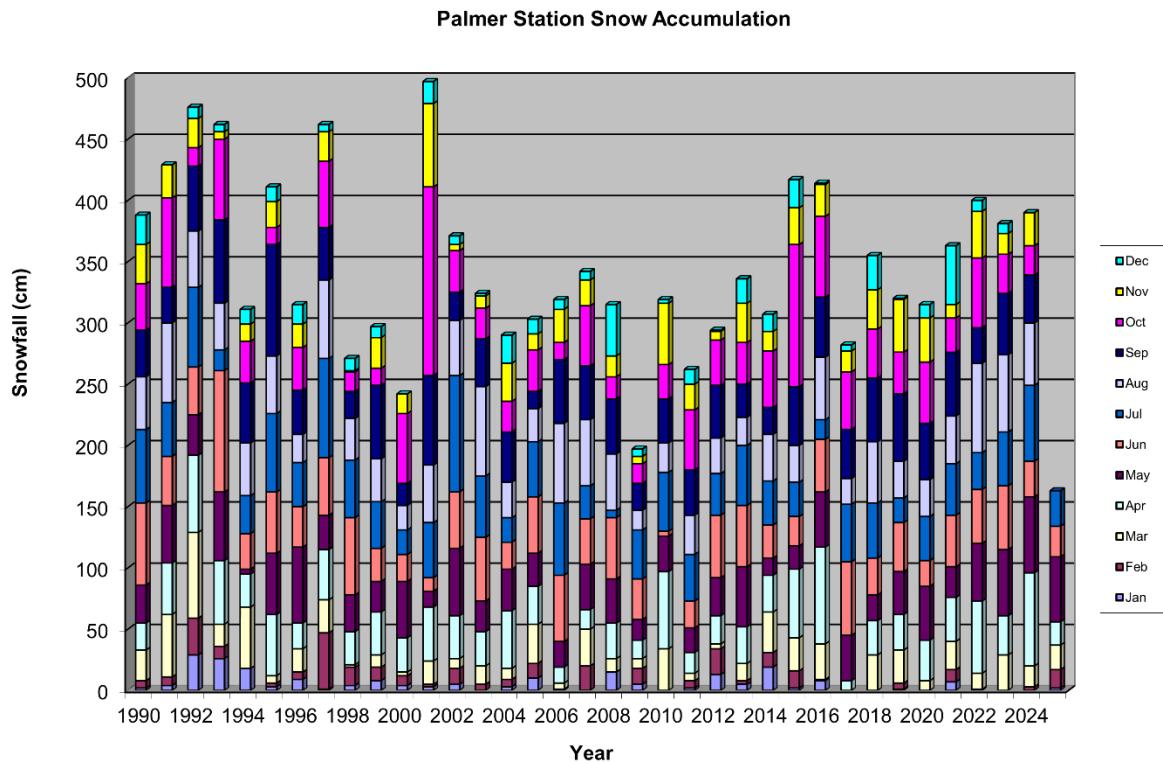


Figure 10. Palmer Station snow accumulation, 1990-present.

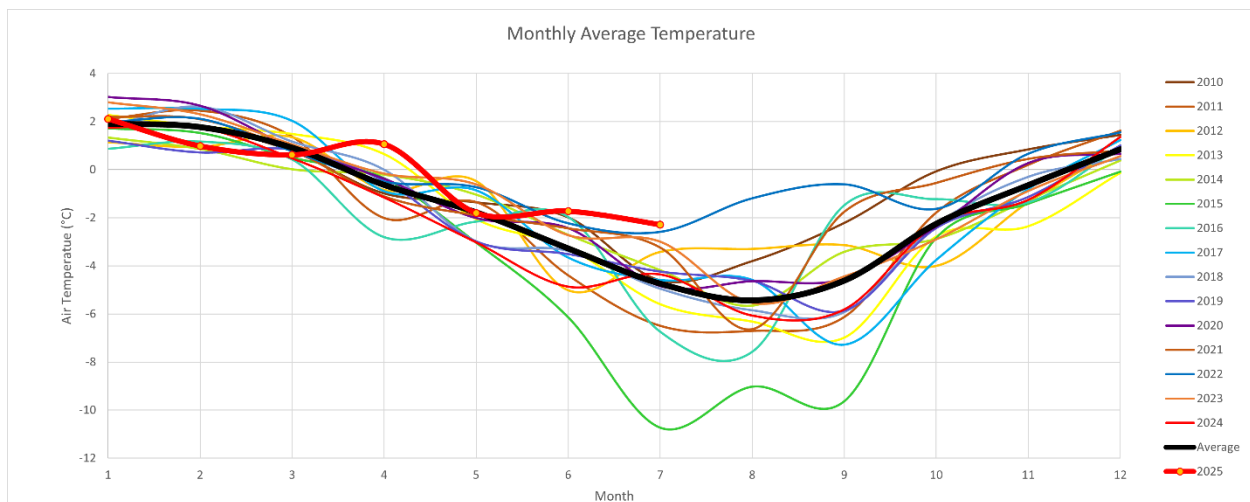


Figure 11. Palmer Station monthly average temperature, 2010-present.

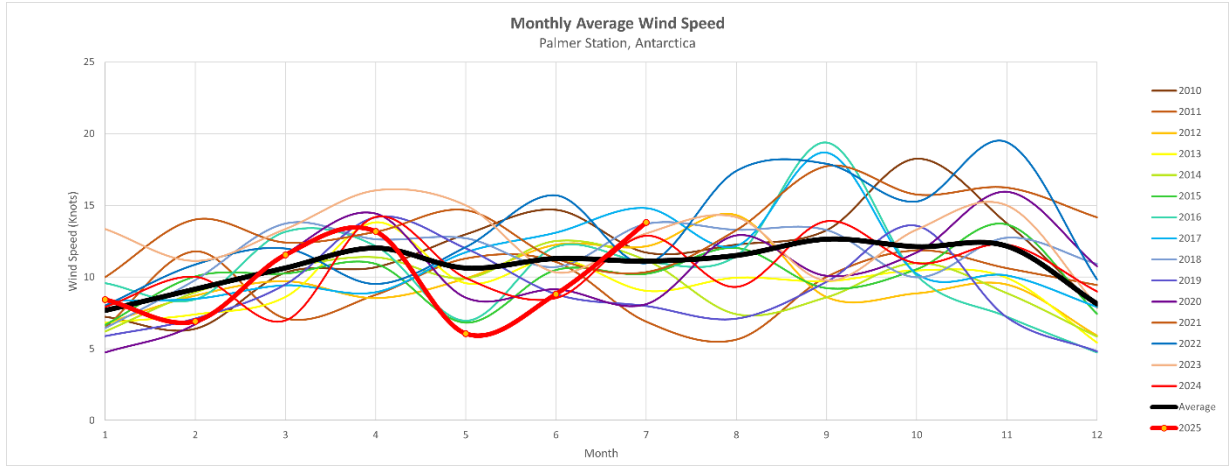


Figure 12. Palmer Station monthly average wind speed, 2010-present.

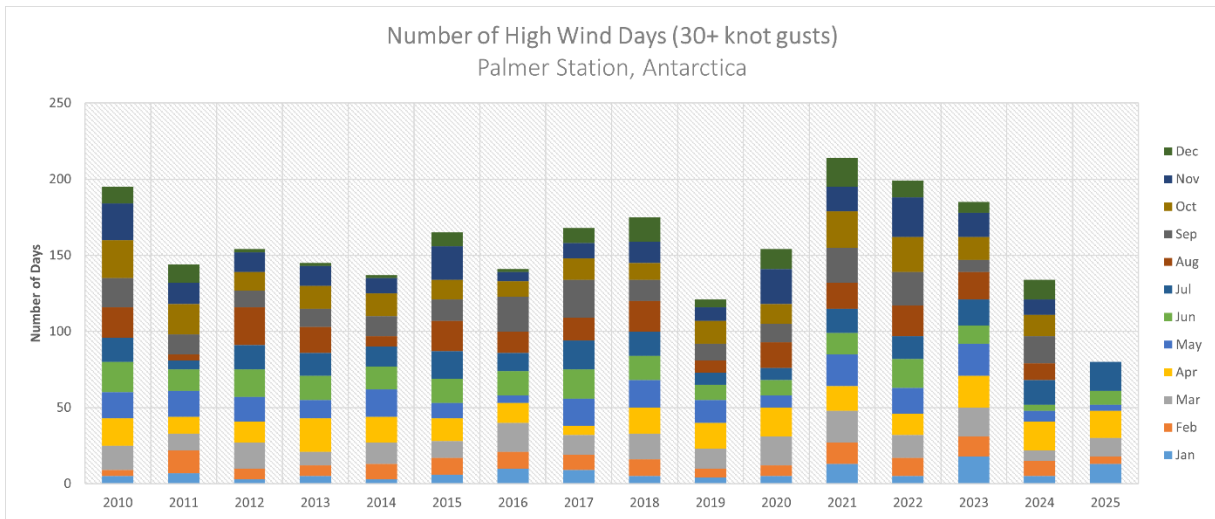


Figure 13. Number of high wind days (gusting 30+ knots) at Palmer Station, 2010-present.