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 is still offline while we wait for the new cable to be manufactured and shipped down to Palmer. A replacement should arrive January 2026. Be on the lookout for news moving forward.

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.

Weather information for September 2025:

As mentioned in the introduction, we hit a new high temperature record for September at 5.9˚C on September 28th. Winds have generally been high; we measured winds greater than 30 knots for half of the days in September. We recorded a significant amount of rain (89.3 mm) and snow (58 cm) which was expected as warmer air masses bring more moisture. Sea surface temperature measurements have been down due to the issues with the tide gauge, but looking at the Waterwall, our sea surface temperatures hovered just below freezing for the 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 September, 2025

Temperature
Average: -1.6 °C / 29.2 °F
Maximum: 5.9 °C / 42.62 °F on 28 Sep 14:28
Minimum: -7.3 °C / 18.86 °F on 8 Sep 10:25
Air Pressure
Average: 983.6 mb
Maximum: 1002.6 mb on 24 Sep 10:34
Minimum: 956.4 mb on 30 Sep 03:03
Wind
Average: 13.7 knots / 15.8 mph
Peak (5 Sec Gust): 72 knots / 83 mph on 12 Sep 03:32 from N (3 deg)
Prevailing Direction for Month: N
Surface
Total Melted Precipitation: 88.9 mm / 3.5 in
Total Snowfall: 58 cm / 22.6 in
Greatest Depth at Snow Stake: 109.2 cm / 42.6 in
WMO Sea Ice Observation:
Average Sea Surface Temperature: °C / 32 °F

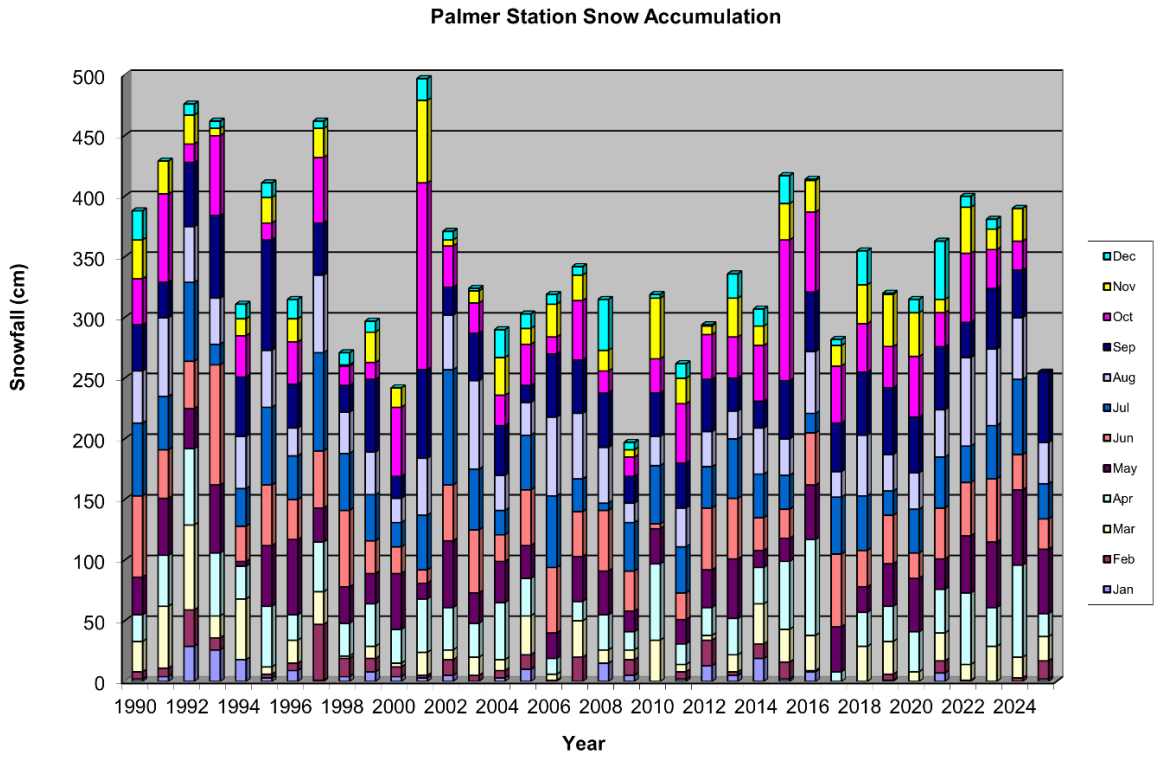

Figure 8. Palmer Station snow accumulation, 1990-present.

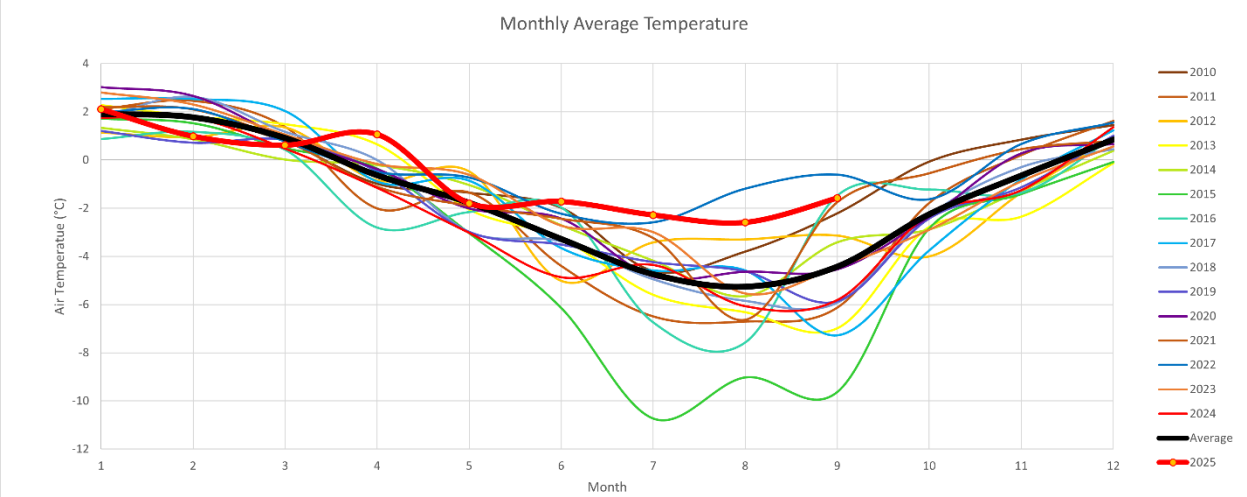

Figure 9. Palmer Station monthly average temperature, 2010-present.

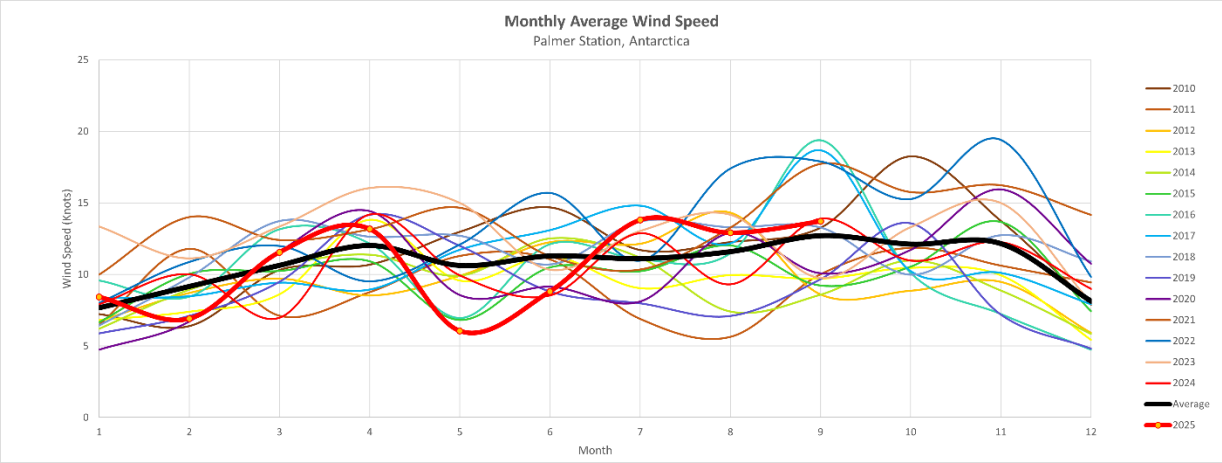

Figure 10. Palmer Station monthly average wind speed, 2010-present.

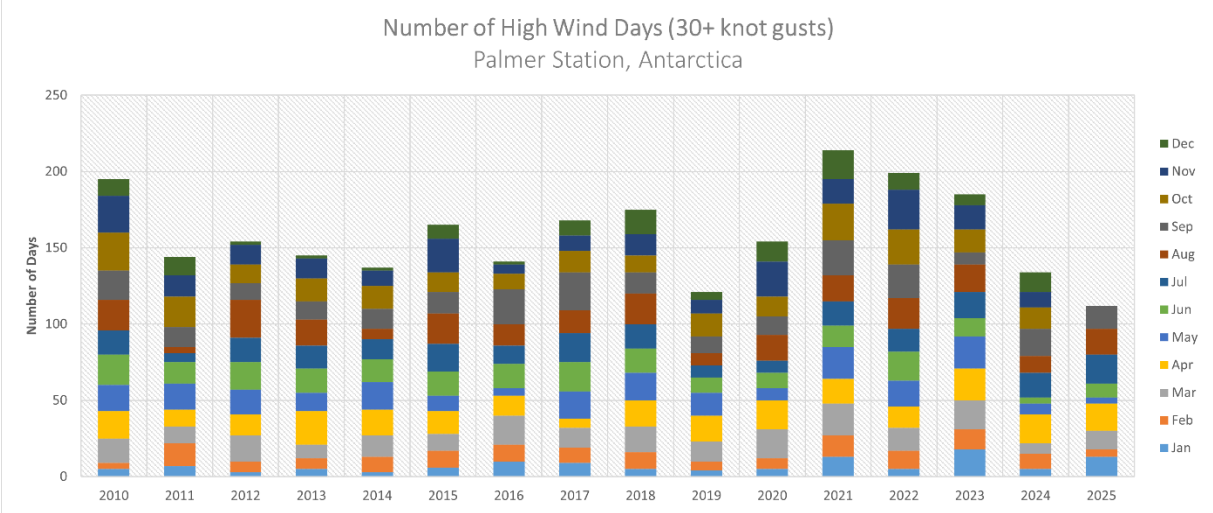

Figure 11. Number of high wind days (gusting 30+ knots) at Palmer Station, 2010-present.