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.

As of October 29th, Hero Inlet is ice free. The tide gauge is still offline while we wait for the new cable to be manufactured and shipped down to Palmer. We are hoping to get the new one in January 2026. Be on the lookout for any news moving forward.

A mother Weddell seal and pup resting on the Hero Inlet ice, October 11th, 2025. The last ice disappeared from Hero Inlet on October 29th. *Image credit: Ben Rosen-Filardo*

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.

On October 10th, the backyard weather station stopped reporting. The cause was identified as a bad segment of data cable, running between the Seismic Hut and the weather station. A replacement

cable was installed on October 16th, and the station is now operational. The ceilometer has not been reporting since August 10th. Troubleshooting is ongoing.

Palmer Research Associate working with RVIB NATHANIEL B. PALMER Electronics Technicians to repair the backyard weather station, October 11th 2025. *Image credit: Ben Rosen-Filardo*

Weather information for October 2025:

Unfortunately, due to a broken data cable, meteorological data is missing for October 10th-16th. Despite this outage, we can still draw some conclusions about October's weather. It was very calm, with only eight days of high winds (30+ knot gusts). Precipitation was below average as well, with 39.6 mm total of melted precipitation. There was minimal wind and precipitation during the October 10th-16th system outage. The snow level continues to be very low. The average snow stake depth was 71.8 cm, compared to the 9-year average of 115.7 cm.

One-minute weather data is archived on the AMRDC website:
https://amrdcdata.ssec.wisc.edu/dataset?q=Palmer+Station.

Palmer Monthly Met summary for October, 2025

Temperature
Average: -1.1 °C / 30 °F
Maximum: 6.2 °C / 43.16 °F on 29 Oct 07:47
Minimum: -5 °C / 23 °F on 5 Oct 08:21
Air Pressure
Average: 980.8 mb
Maximum: 1009.6 mb on 26 Oct 11:07
Minimum: 954.2 mb on 9 Oct 05:47
Wind
Average: 10.4 knots / 11.9 mph
Peak (5 Sec Gust): 40 knots / 46 mph on 29 Oct 10:53 from NNE (25 deg)
Prevailing Direction for Month: ESE
Surface
Total Melted Precipitation: 39.6 mm / 1.56 in
Total Snowfall: 34 cm / 13.3 in
Greatest Depth at Snow Stake: 80.8 cm / 31.5 in
WMO Sea Ice Observation: 11-20 bergs, bergy bits, growlers, brash ice
Average Sea Surface Temperature: Not available due to broken tide sensor

Weather data was not recorded from Oct 10 01:06 – Oct 16 22:33 UTC due to a broken data cable.

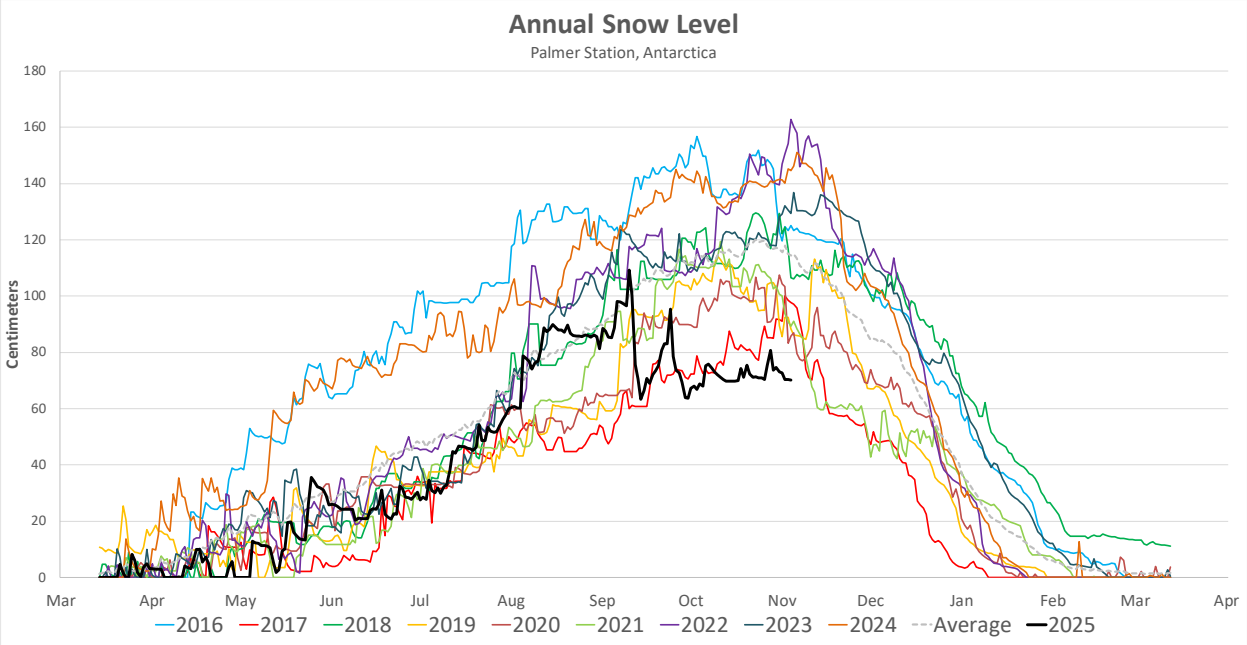

Figure 1. Palmer Station snow level (average of five backyard snow stakes), 2016-present.

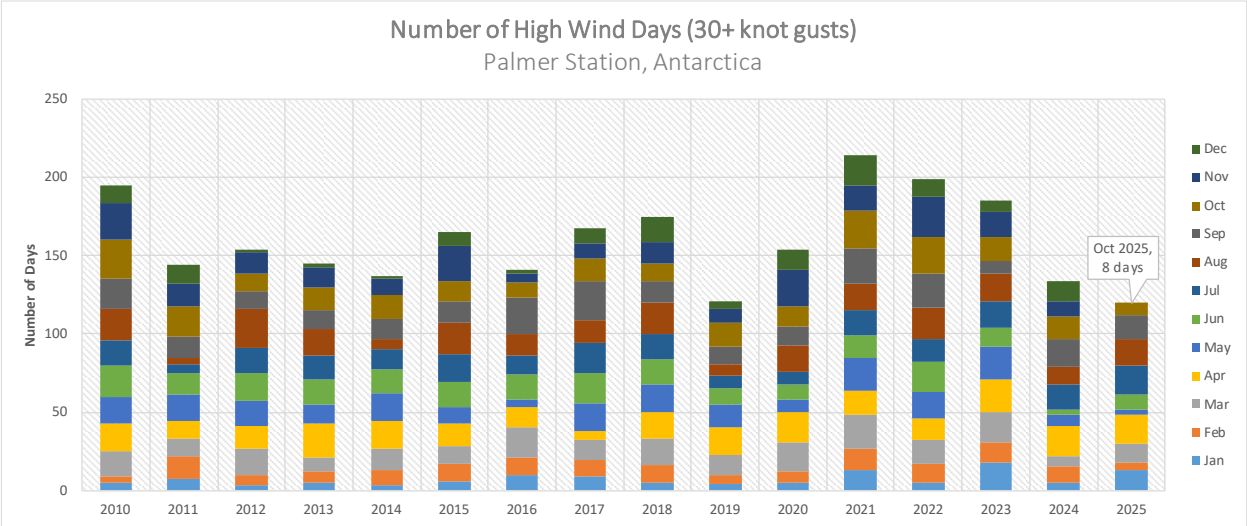

Figure 2. Number of high wind days (gusting 30+ knots) at Palmer Station, 2010-present.