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.

Unfortunately, the tide gauge stopped transmitting data on August 2nd. After a few days of struggling to remove the tide gauge from the water due to sea ice, on August 8th the connector pins of both the sensor and the connector cable were snapped off, rendering the tide gauge useless for the rest of the season. The saga does not end there. On August 27th while pulling the tide gauge out of the water to get measurements of the cable, the tide gauge got stuck in the tube where it still sits today. Based on some preliminary underwater footage, it looks like the pipe that houses the tide gauge was smashed by an iceberg which may have caused the sensor to be stuck inside the tube. A new cable and sensor will be shipped down to Palmer Station around midsummer. In early August, there was a lot of sea ice and large icebergs in Hero Inlet which may be the cause of the damage.

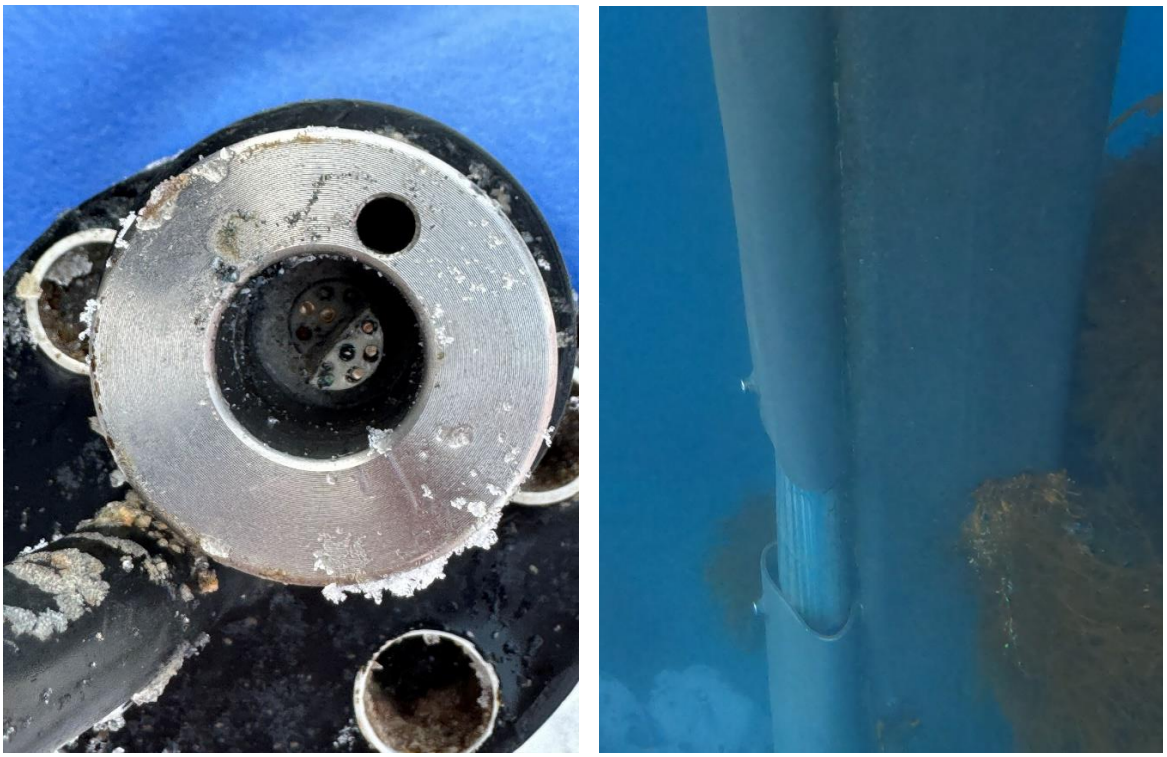

Figure 8. Left: Broken pins on the tide gauge connector. Right: The section of pipe that houses the tide gauge under water where we think the tide gauge is now stuck.

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 August 2025:
Palmer had a huge snowstorm on August 5th which dramatically improved our hopes for a snowy season. Sadly, that storm was an anomaly as it accounted for 19 cm of the total 34 cm for the month. The beginning of the month also saw a lot of sea ice which remained for the first half of the month, before being fully dispersed by August 17th. It was another month with high winds, this time we experienced winds over 30 knots for 17/31 days, or 55% of the days. Interestingly, the high temperature for the month came just below the average high (3°C versus 3.43 °C), but the average temperature was almost 3°higher (-2.59 °C versus the average of -5.25 °C). One-minute weather data is archived on the AMRDC website: https://amrdcdata.ssec.wisc.edu/dataset?q=Palmer+Station.

Palmer Monthly Met summary for August, 2025

Temperature
Average: -2.6 °C / 27.3 °F
Maximum: 3 °C / 37.4 °F on 16 Aug 13:52
Minimum: -9.7 °C / 14.54 °F on 7 Aug 09:36
Air Pressure
Average: 988.3 mb
Maximum: 1011.8 mb on 1 Aug 08:52

Minimum: 956.2 mb on 5 Aug 16:56
Wind
Average: 12.9 knots / 14.9 mph
Peak (5 Sec Gust): 59 knots / 68 mph on 8 Aug 02:15 from NNE (22 deg)
Prevailing Direction for Month: NNE
Surface
Total Melted Precipitation: 46.7 mm / 1.84 in
Total Snowfall: 34 cm / 13.3 in
Greatest Depth at Snow Stake: 90 cm / 35.1 in
WMO Sea Ice Observation:
Average Sea Surface Temperature: -1.66 °C / 29 °F

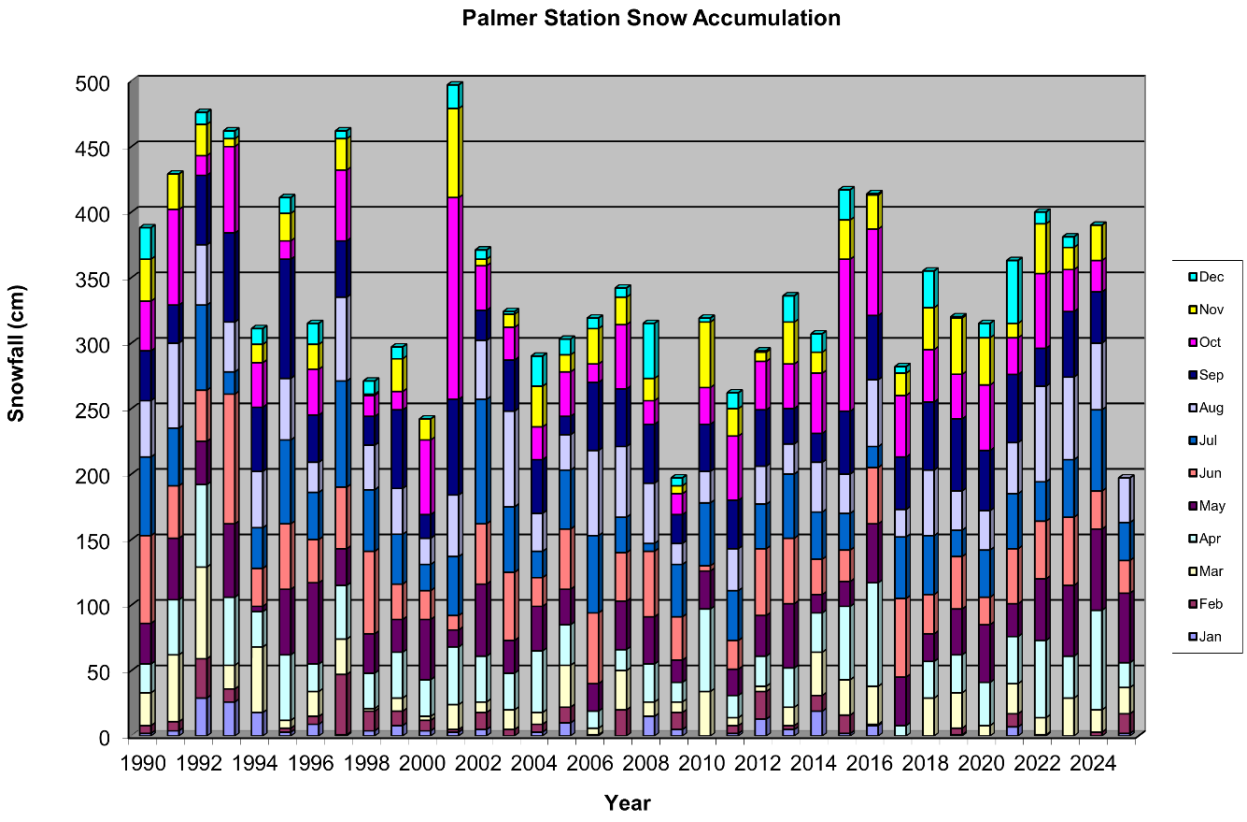

Figure 9. Palmer Station snow accumulation, 1990-present.

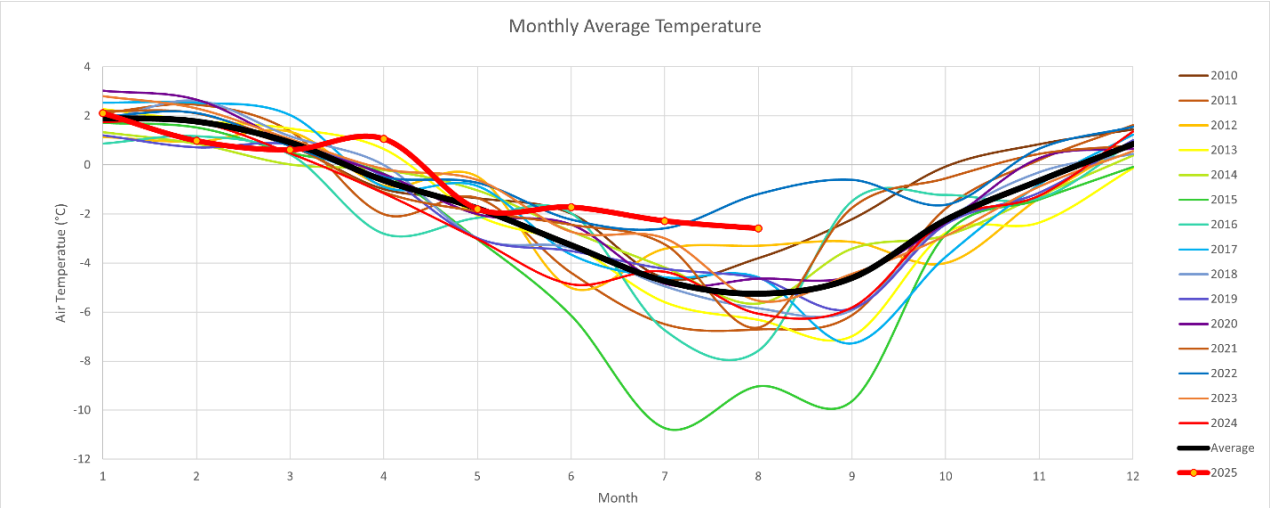

Figure 10. Palmer Station monthly average temperature, 2010-present.

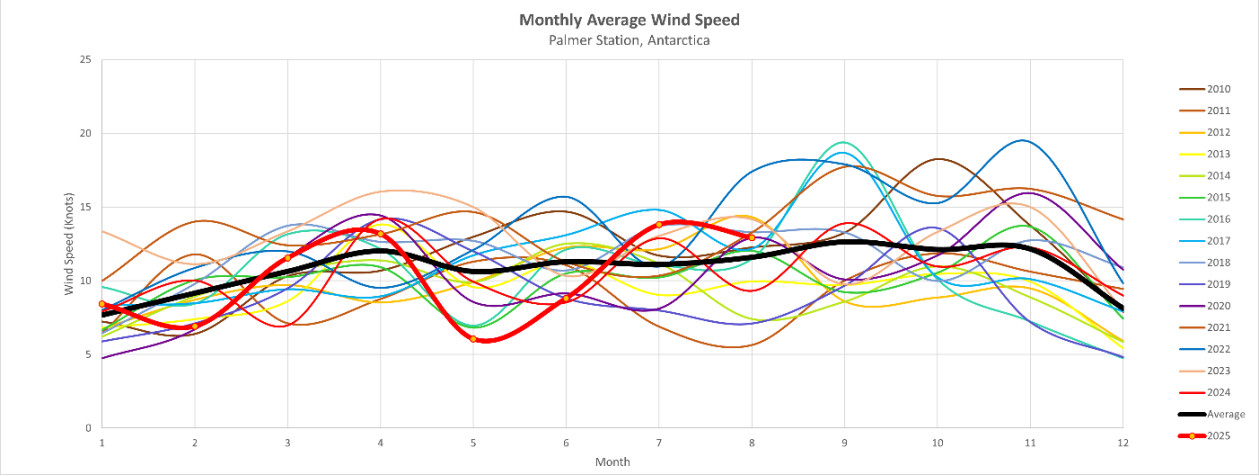

Figure 11. Palmer Station monthly average wind speed, 2010-present.

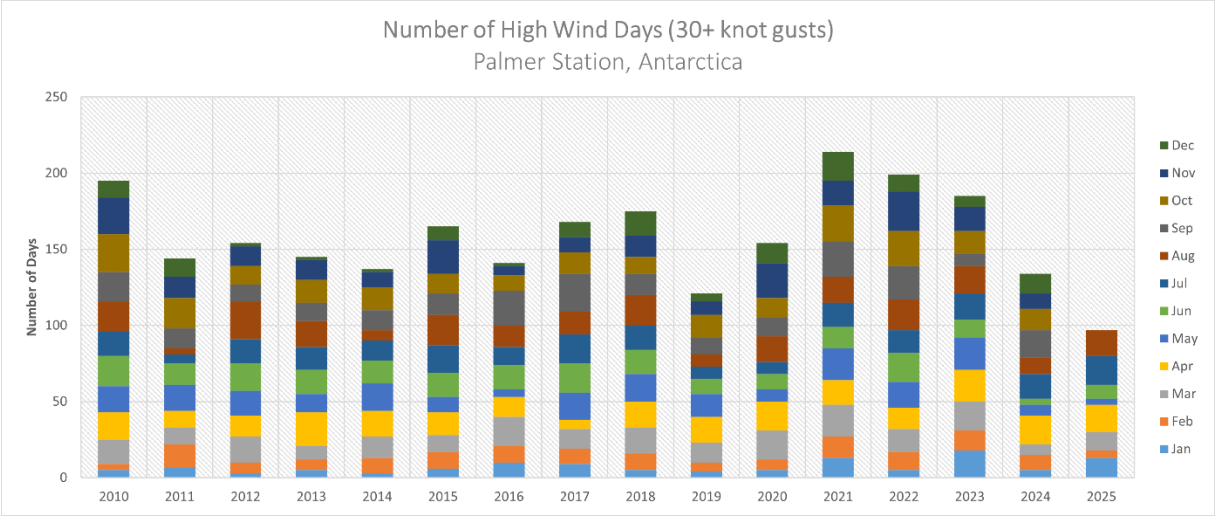

Figure 12. Number of high wind days (gusting 30+ knots) at Palmer Station, 2010-present.