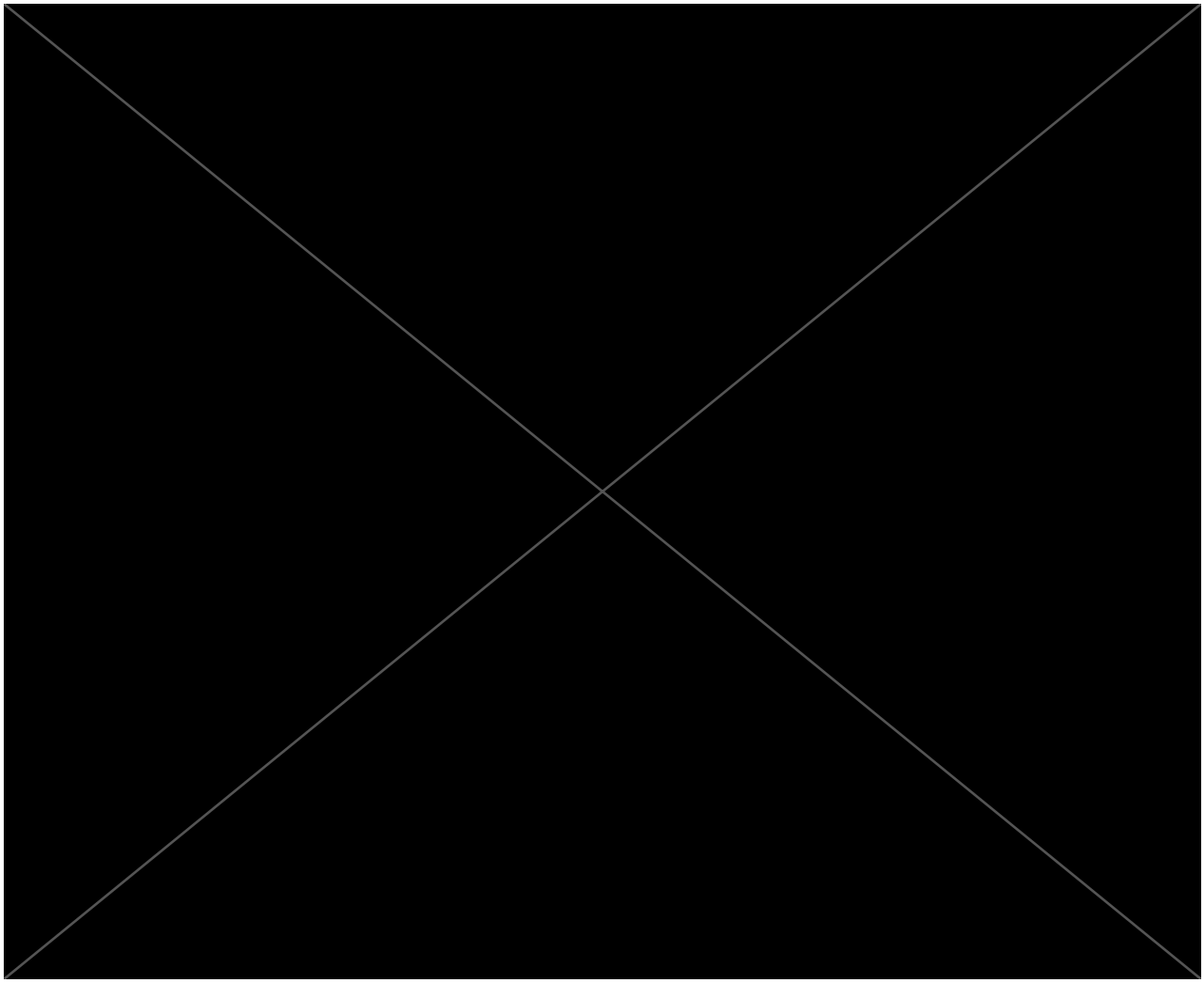

PHYSICAL OCEANOGRAPHY

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. Observations of sea ice around station were made daily. Sea ice imagery was provided to the R/V NATHANIEL B. PALMER to support their ongoing science cruise in the Ross Sea (NBP25-01).

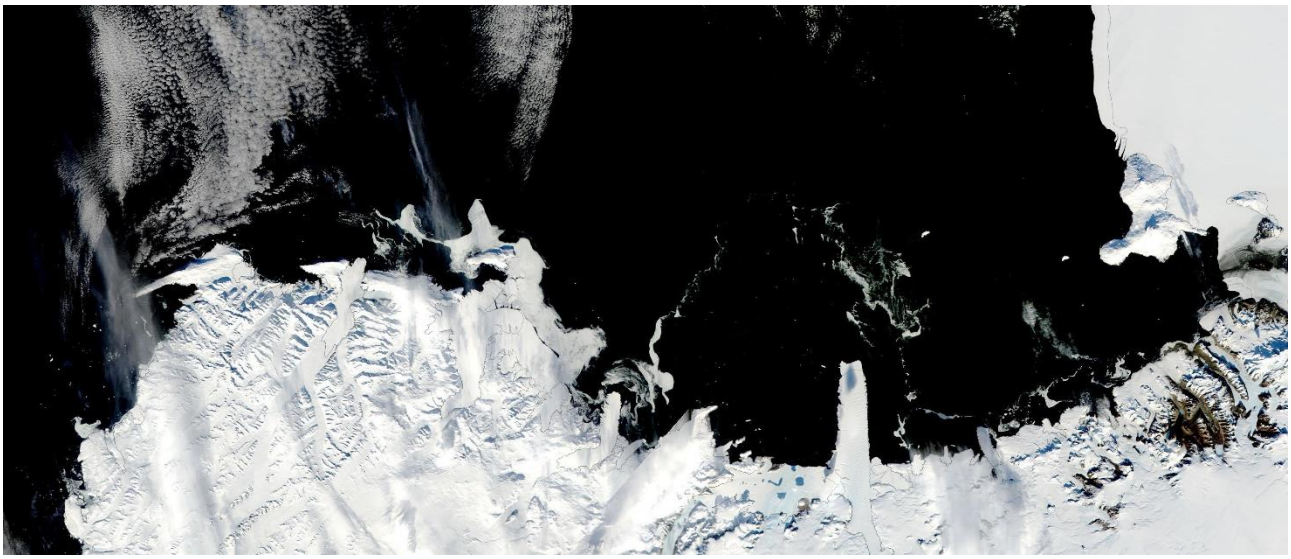

Figure 24. February 17th satellite imagery of the Drygalski Ice Tongue area, where NBP25-01 is operating until April. Source: NASA/MODIS Aqua

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.

All three AWSs were visited this month. On February 7th, the Research Associate returned to AWS #1 to install the spare DCP. The station is now fully operational. On February 11th, the RA visited AWS #3 to tighten a loose battery terminal. Lastly, on February 26th, the loose connectors at AWS #2 were re-sealed in preparation for another winter. AWS #2, located on Howard Island

in the Joubin Islands group, has been inoperative since February 2024 due to radio communication issues. Troubleshooting with the manufacturer, Mesotech, is ongoing.

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

Figure 25. A sunny day at AWS #3 on Island #412 in the Gosslers island group, February 11th, 2025.
Image credit: Ben Rosen-Filardo

Palmer Monthly Met summary for February, 2025

Conditions this month continued to be calm and dry, which made for ample outdoor recreation opportunities. With only 20.6 mm of melted precipitation, 2025 saw the driest February on record (1990-present). It was also less windy than average. There were only 5 days with 30 knot gusts or higher, compared to the February average of 10 days (2010-present). This follows a trend of decreasingly frequent high wind events over the last four years.

Lastly, February saw cooler than usual air temperatures, with a monthly average of 1.0 °C, high of 5.5 °C, and low of -3.5 °C, compared to historical February averages of 1.9 °C, 7.8 °C, and -2.1 °C, respectively (1990-present).

Temperature
Average: 1.0 °C / 33.8 °F
Maximum: 5.5 °C / 41.9 °F on 23 Feb 17:34
Minimum: -3.5 °C / 25.7 °F on 28 Feb 02:10
Air Pressure
Average: 981 mb
Maximum: 997.2 mb on 16 Feb 23:39
Minimum: 943 mb on 19 Feb 17:17
Wind
Average: 6.9 knots / 8 mph
Peak (5 Sec Gust): 45 knots / 51 mph on 19 Feb 13:16 from SE (134 deg)
Prevailing Direction for Month: SE
Surface
Total Melted Precipitation: 20.6 mm / 0.81 in
Total Snowfall: 15 cm / 5.9 in
Greatest Depth at Snow Stake: 12.8 cm / 5 in
WMO Sea Ice Observation: 11-20 bergs, bergy bits, growlers, brash ice
Average Sea Surface Temperature: 1.32 °C / 34.4 °F

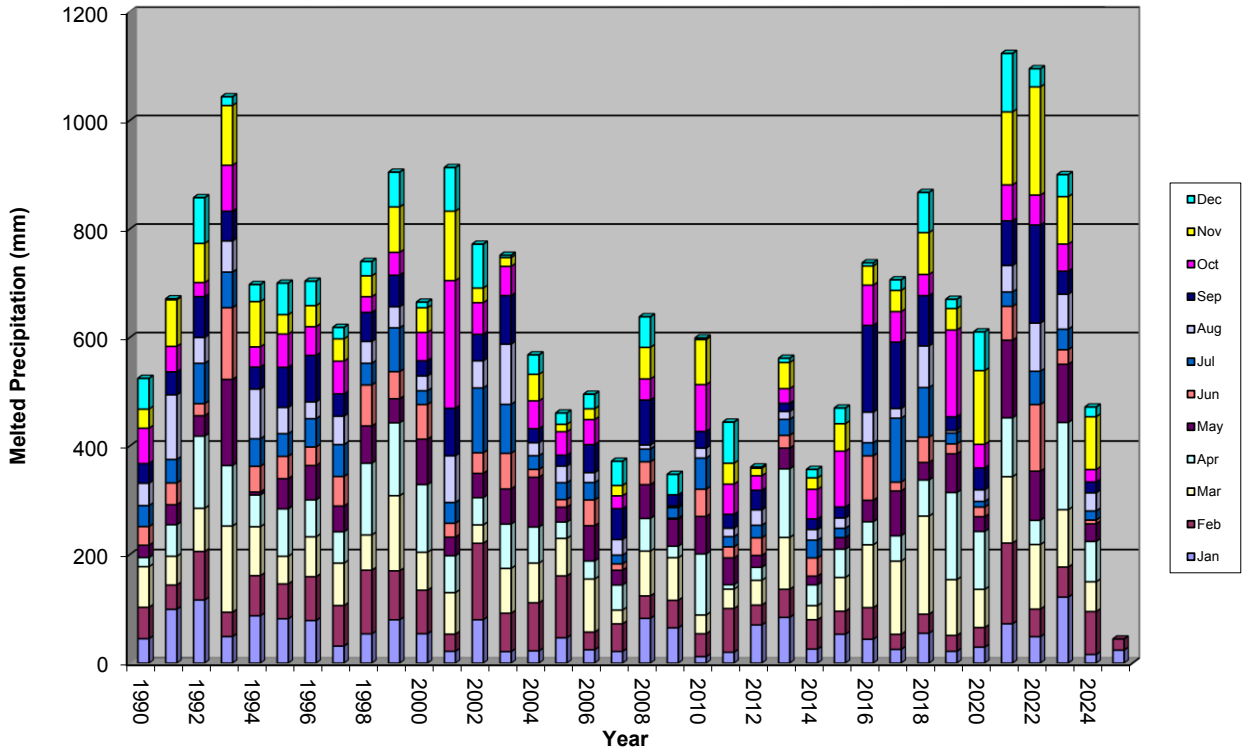

Figure 26. Palmer Station melted precipitation, 1990-present.

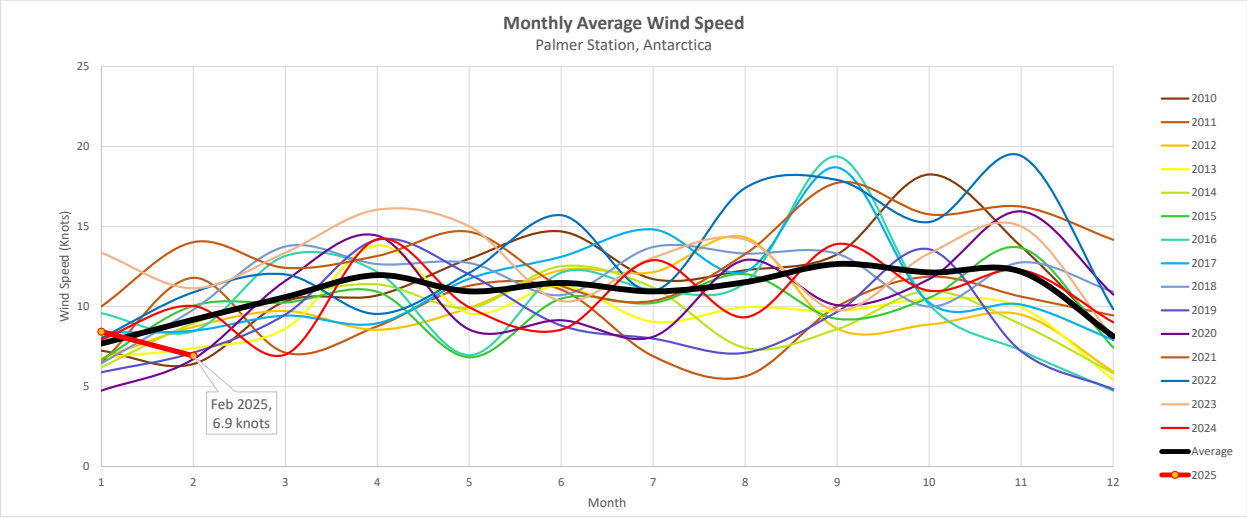

Figure 27. Palmer Station monthly average wind speed, 2010-present.

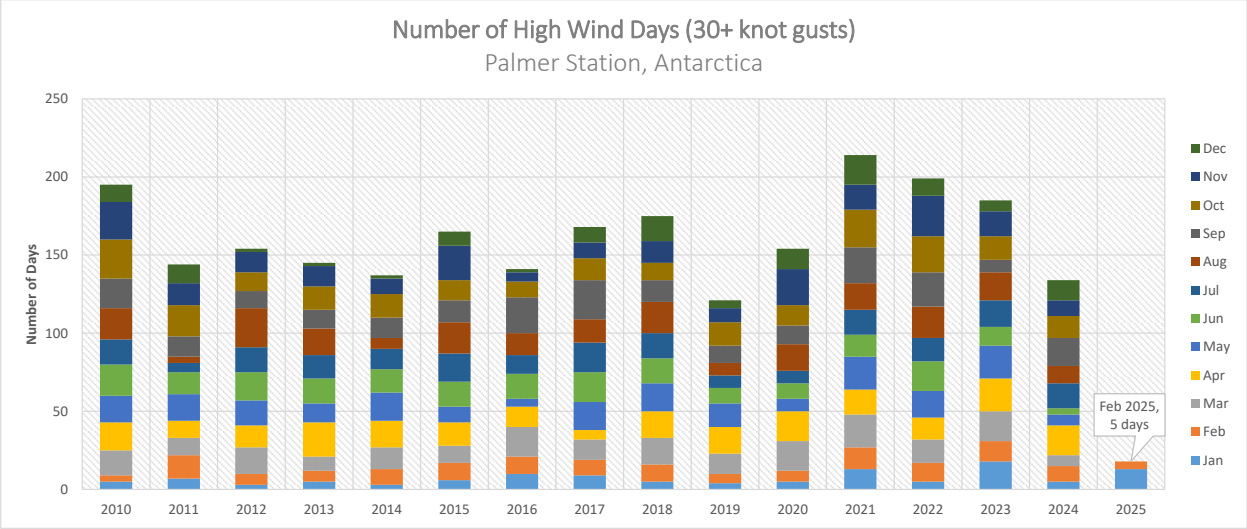

Figure 28. Number of high wind days (gusting 30+ knots) at Palmer Station, 2010-present.

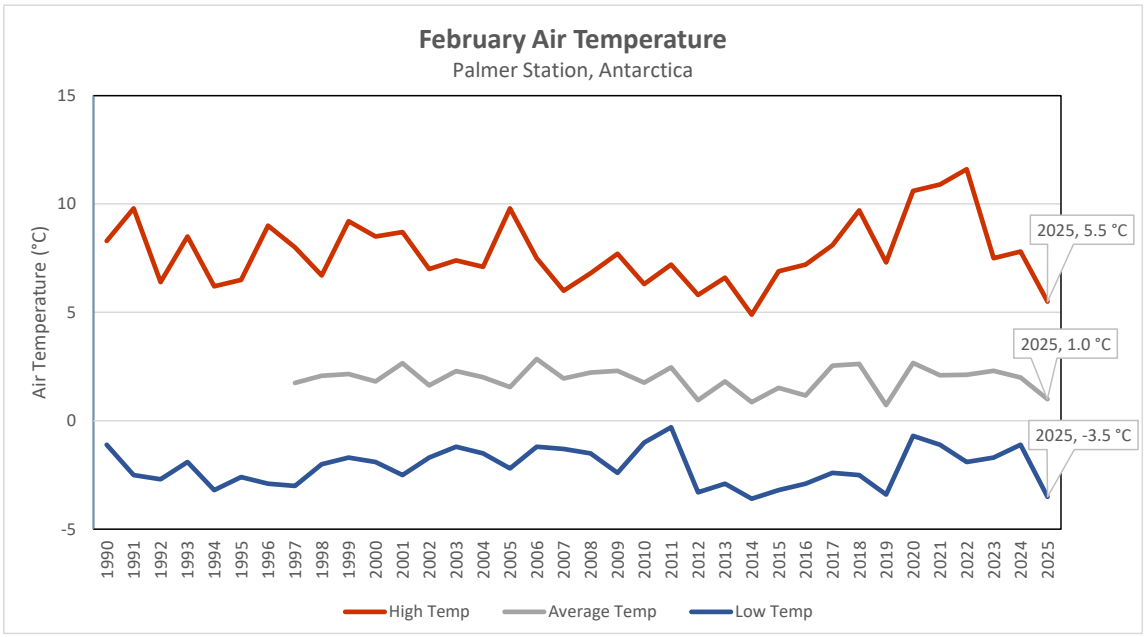

Figure 29. Palmer Station February air temperature, 1990-present.