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, and for the ice-damaged tide tube and sleeve to be repaired and replaced. Divers will be on site in January 2026 to assess the situation. Be on the lookout for any news moving forward.

The Research Associate has begun providing ice imagery to the *R/V Roger Revelle* and *R/V Sikuliaq* for the upcoming UNOLS-01 and UNOLS-02 cruises, respectively.

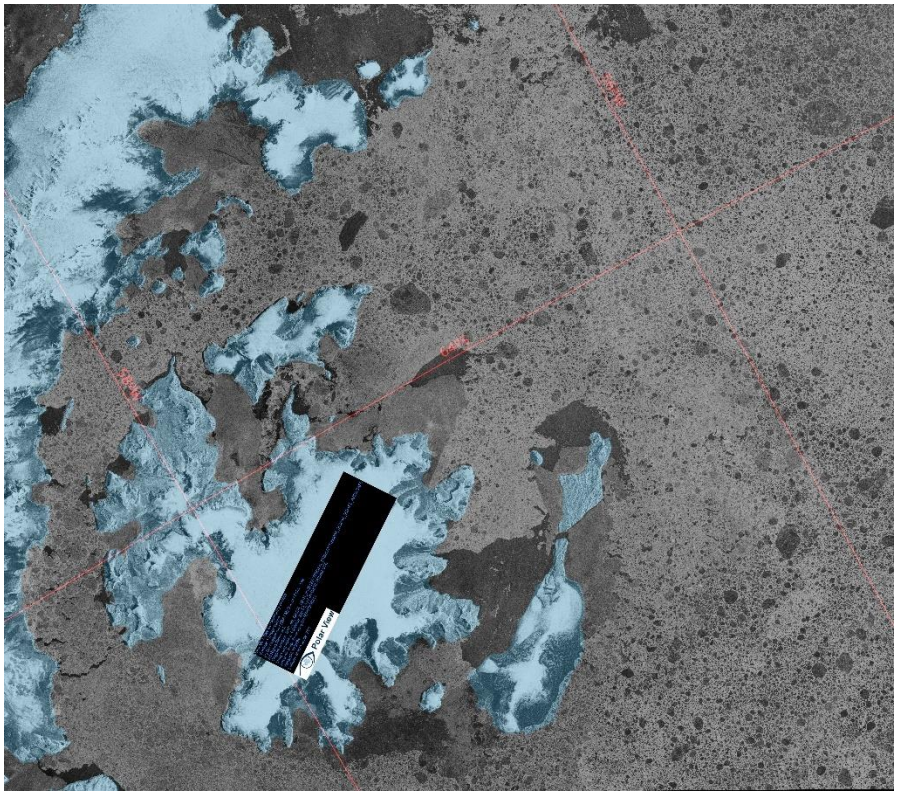


Figure 10. December 27, 2025 SAR sea ice imagery of the Seymour Island area, where UNOLS-02 will be operating. *Source: Polar View/Sentinel-1C*

METEOROLOGY

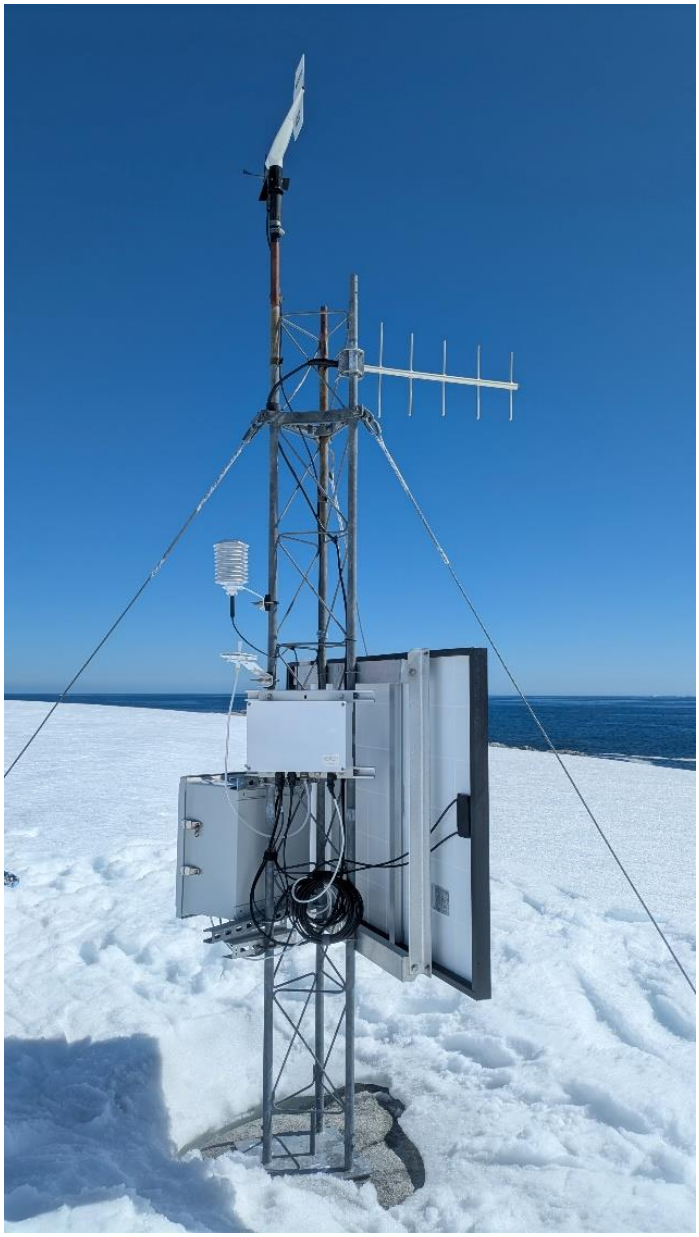
Mike Carmody, Principal Investigator, United States Antarctic Program

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 PAWS ceilometer has not been reporting since August 10th. Troubleshooting is ongoing.

Remote weather station work continued this month. The loose antenna at the Gossler Islands station (AWS3) was tightened, and the antenna was re-pointed to have better line-of-sight to Palmer Station. A corroded power cable was also repaired. The Wauwerman Islands station (AWS1) was visited to install a new battery and raise the DCP to help keep it out of the snow. The Joubin Islands station (AWS2) continues to report reliably, with the exception of the barometer.



Wauwerman Islands weather station after raising the DCP, December 28, 2025.
Image credit: Ben Rosen-Filardo

Weather information for December 2025:
December continued to follow this season's trends of calm and dry weather, with only six days with 30+ knot winds and five days with precipitation. Three of those five precipitation events lasted less than 90 minutes.

It was a warmer December than usual, with a record-high average temperature of 2.3 °C (tied with 2006, data 1996-present). The monthly low temp of -1.4 °C was the second-highest on record (1989-present), surpassed only by December 1992 (-0.7 °C).

The snow level continued to drop this month, with only 1 of 5 backyard snow stakes remaining buried from 12/19 onward. 2025 had the second-lowest average snow level since the installation of the backyard snow stakes in 2016. (2017 had the lowest.)

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

Palmer Monthly Met Summary for December 2025

Temperature
Average: 2.3 °C / 36.1 °F
Maximum: 7.9 °C / 46.2 °F on 13 Dec 13:10
Minimum: -1.4 °C / 29.5 °F on 19 Dec 06:36
Air Pressure
Average: 983.4 mb
Maximum: 1005.6 mb on 7 Dec 08:43
Minimum: 966.5 mb on 22 Dec 21:05
Wind
Average: 7 knots / 8.1 mph
Peak (5 Sec Gust): 41 knots / 47 mph on 2 Dec 09:16 from E (82 deg)
Prevailing Direction for Month: E
Surface
Total Melted Precipitation: 6.4 mm / 0.3 in
Total Snowfall: 0 cm / 0 in
Greatest Depth at Snow Stake: 63.4 cm / 24.7 in
WMO Sea Ice Observation: 11-20 bergs, bergy bits, growlers, brash ice
Average Sea Surface Temperature: Not available due to broken tide sensor

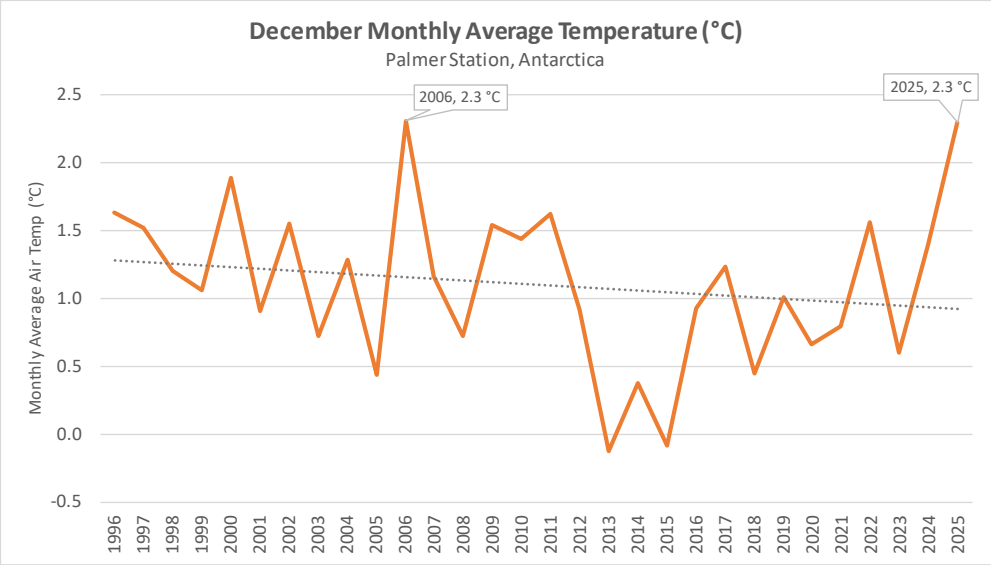


Figure 11. Palmer Station December monthly average air temperature, 1996-2025. December 2025 tied with December 2006 for a record high of 2.3 °C.

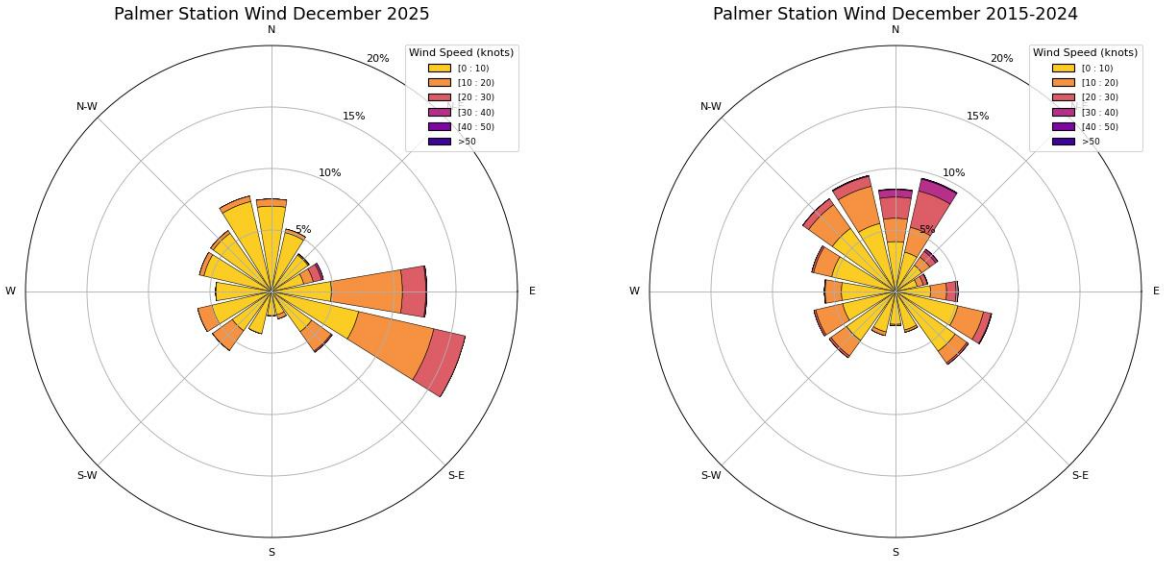


Figure 12. Palmer Station wind roses, December 2025 vs. December 2015-2024. December 2025 was uncharacteristically dominated by gentle ESE winds.

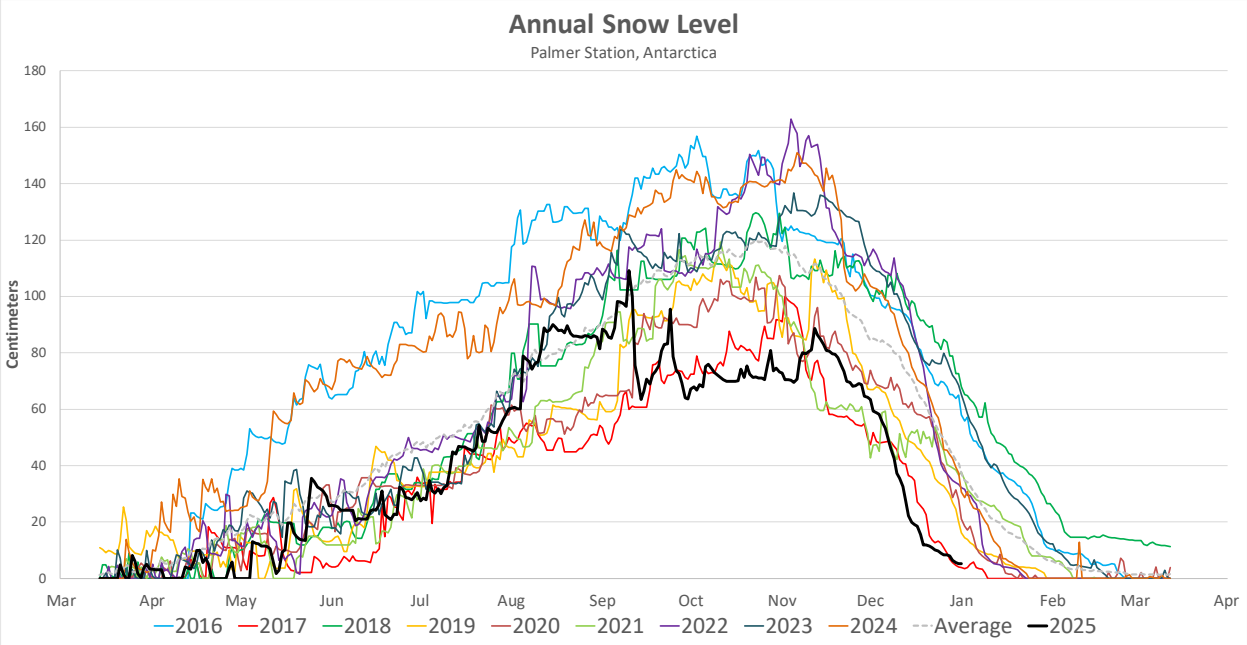


Figure 13. Palmer Station snow level (average of 5 backyard snow stakes), 2016-present.

Palmer 2025 Annual Met Summary

Temperature
Average: -0.4 °C / 31.3 °F
Maximum: 8.3 °C / 46.9 °F on 13 Mar 14:19
Minimum: -9.7 °C / 14.5 °F on 7 Aug 09:33
Air Pressure
Average: 986 mb
Maximum: 1019.2 mb on 11 Jun 02:08
Minimum: 943 mb on 19 Feb 17:17
Wind
Average: 10 knots / 11.5 mph
Peak (5 Sec Gust): 72 knots / 83 mph on 12 Sep 03:30 from N (3 deg)
Prevailing Direction for Month: NNW
Surface
Total Melted Precipitation: 516.6 mm / 20.3 in
Total Snowfall: 310 cm / 120.9 in
Greatest Depth at Snow Stake: 109.2 cm / 42.6 in
Average Sea Surface Temperature: 0.04 °C / 32.1 °F (01 Jan through 07 Aug)

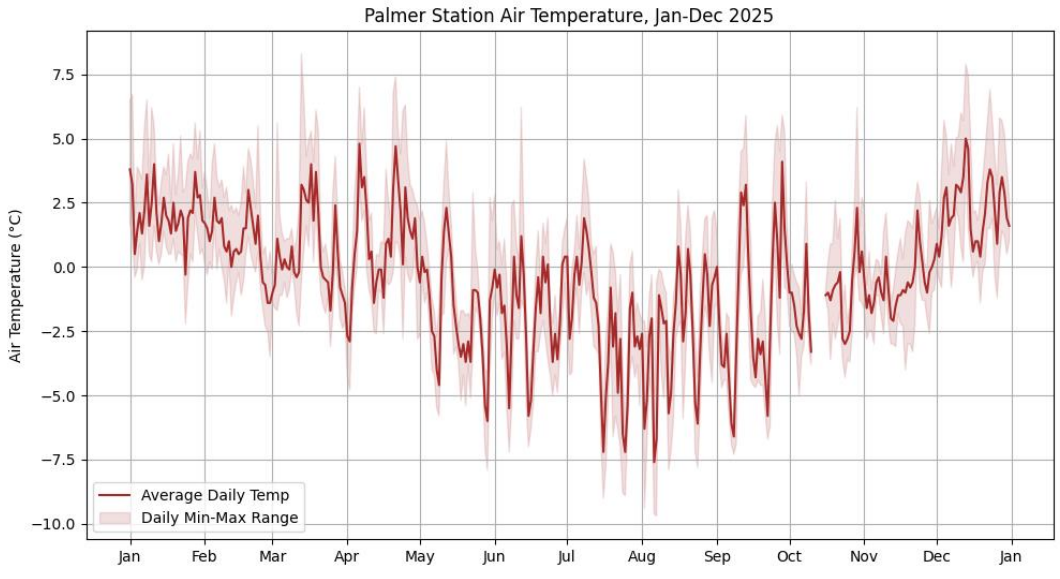


Figure 14. Palmer Station annual air temperature January through December, 2025.

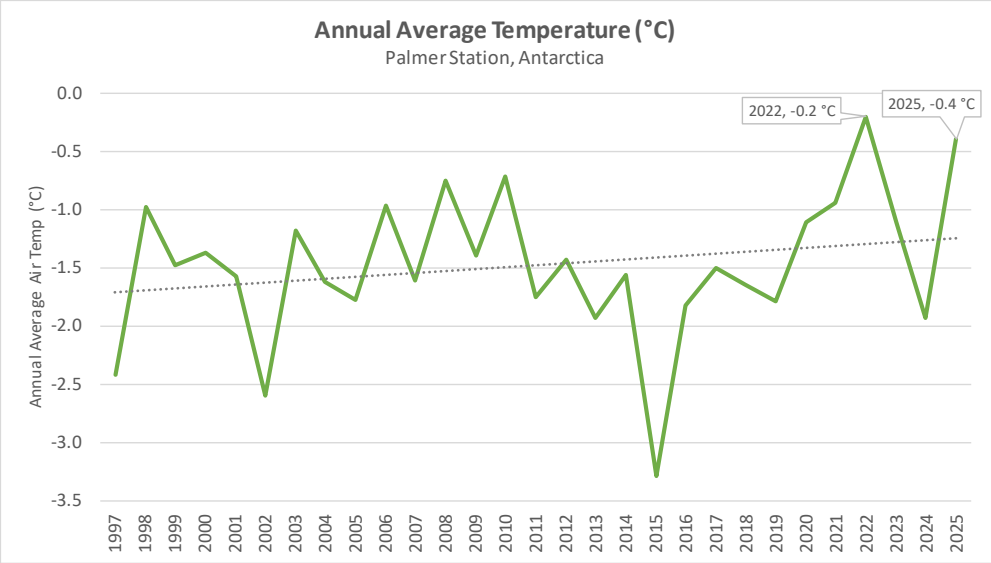


Figure 15. Palmer Station annual average air temperature, 1997-2025.

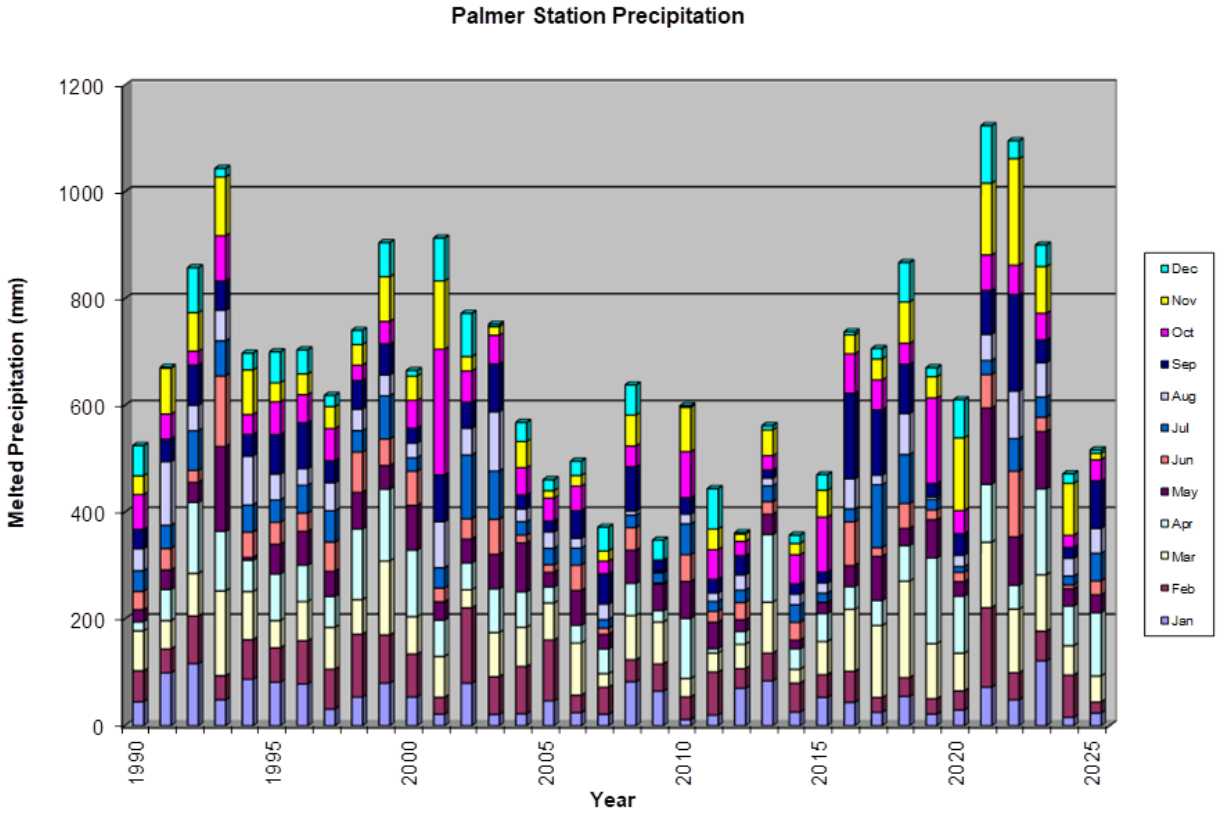


Figure 16. Palmer Station melted precipitation, 1990-2025.