



NOAA
Global
Monitoring
Laboratory

The Planetary Pulse

WINTER 2026



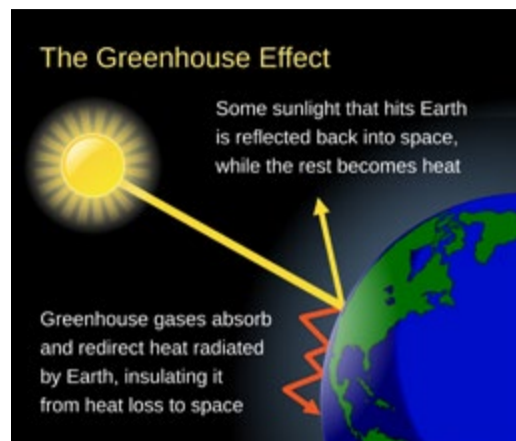
Feature Story

NOAA index tracks the continuing increase in heating from greenhouse gases

Greenhouse gases associated with human activity trapped 54 percent more heat in the atmosphere during 2024 than those same gases did in 1990, according to an annual NOAA report. Long-lived greenhouse gases absorb infrared radiation and warm the atmosphere, land, and oceans. NOAA's Annual Greenhouse Gas Index, known as the AGGI, tracks increases in the warming influence of heat-trapping gases—including carbon dioxide, methane, nitrous oxide, chlorofluorocarbons, and 17 other gases—generated by human activity.

In 2006, scientists in the Global Monitoring Laboratory developed the AGGI as a way to help non-scientists readily appreciate how the overall warming from atmospheric concentrations of these greenhouse gases has changed over time.

The index is based on thousands of air samples collected each year from NOAA's Cooperative Global Air Sampling Network. [>>>](#)



Credit: User Efbrazil / [Wikimedia Commons](#) / Creative Commons Attribution-Share Alike 4.0 International

Research News



GML team installed meteorological instruments at the Colorado Atmospheric Observatory tower

On January 15, staff from the Global Monitoring Laboratory's (GML) Observatory and Global Network Operations division completed installation of meteorological (MET) instruments at the lab's Colorado Atmospheric Observatory tower in Byers, CO. The team installed the tower-MET system at three heights—30m, 100m, and 502m. The instruments will measure temperature, relative humidity, wind speed, and wind direction. This work supports the long-term vision for GML's tower network. [>>>](#)

Staff from the GML Observatory and Global Network Operations division installed instruments at the Colorado Atmospheric Observatory tower. Credit: Jon Kofler, CIRES/NOAA.



International report chronicals atmospheric impacts of 2022 Hunga volcanic eruption

A report released by the World Climate Research Programme provides a comprehensive analysis of the atmospheric effects of the January 15, 2022, eruption of the Hunga volcano, the most explosive volcanic event of the satellite era. Combining unprecedented satellite, balloon, and ground-based observations with global modeling studies, the report documents the eruption's far-reaching effects on Earth's stratosphere, climate system, and ozone layer.

"Our rapid response balloon-borne measurements, taken within one week of the eruption, enabled us to directly observe large water vapor enhancements and a rapidly forming aerosol layer, colocated with ozone anomalies, and verify global climate model simulations of this anomalous event," said CIRES/GML researcher Lizzy Asher. [>>>](#)

A view of the Hunga Tonga eruption plume from January 2022. Credit: Tonga Geological Services, adapted from Wikimedia Commons (CC BY 3.0)

In Our Community



In memoriam: Dan Endres

Former Barrow station chief Dan Endres passed away in March 2026. Dan spent 23 years working at the Barrow Atmospheric Baseline Observatory and several years in Boulder supporting observatory operations. Dan was always quick to share his considerable knowledge, tell a story, and share a pot of tea. He served as the GML Barrow Observatory Station Lead from 1985-2008 and was a member of the OBOP Boulder Staff from 2008-2014, and his dedication is evidenced by his record on the right. Dan was a jack of all trades, a force of nature, and will be sorely missed.

24 Hour Darkness	1,495 days	4 years, 1 month
24 Hour Sunlight	1,840 days	5 years
Days below 32°F	5,635 days	15 years, 5 months
Days below 0°F	3,680 days	10 years, 1 month

Awards and Recognitions



NOAA recognizes graduates of the NOAA Leadership Competency Development Program, Cohort XIII

Congratulations to all the graduates of the [NOAA Leadership Competency Development Program \(LCDP\)](#) Cohort XIII for recently completing NOAA's premier executive leadership program! GML graduates include **Christy Smith**, Acting Deputy Director **Errol Ronje**, and former Acting Deputy director **Josh Jackson**.

GML's Christy Smith, Errol Ronje, and Josh Jackson recently completed NOAA's premier executive leadership program. Credit: NOAA



2025 NOAA Boulder students and mentors. The Boulder Summer Interns Team was recognized with an OAR Group Employee of the Year award. Credit: NOAA

GML teams recognized with 2025 OAR Group Employee of the Year Awards

GML's **Lauren Chartier**, **Gary Morris**, and **Isaac Matson** were selected as recipients of a 2025 OAR Group Employee of the Year award in the Outreach and Education category. They were recognized, with colleagues from the Boulder Summer Interns Team, "for developing and implementing a unified summer internship program across NOAA Research labs in the DSRC, reducing administrative burdens, and improving research outcomes with record-high satisfaction rates." Congratulations!

GML's **Gregg Phillips**, **James Salzman**, **Jeff Dowse**, and **Preston Sato** were selected as recipients of a 2025 OAR Group Employee of the Year award in the Administrative and Technical Support category. They were recognized "for unwavering support during challenging transitions. The GML IT Team ensured reliable service and secure global data. Their resilience and excellence are critical to GML's mission." Congratulations!



2025 NOAA Hollings Scholar in GML won AMS student award

Minda Chen, a 2025 GML intern and NOAA Hollings Scholar from the University of Washington, won a student award at the 2026 annual meeting of the American Meteorological Society for her poster: "Influences of Hurricanes Ike (2008) and Harvey (2017) on Ozone in Houston, Texas, as Identified in Satellite, Surface Monitor, and Balloon Data."



Alex Fritz received NOAA Team Member of the Month award for July 2025

Alex Fritz (Office of Atmospheric Research Partner) was nominated for providing excellent, innovative, and cost-effective engineering solutions. His most significant contribution is the reengineering and successful deployment of the "Sonde-Pi" reception system, a small, portable hardware system used to collect data from balloon-borne instruments monitoring water vapor, ozone, and aerosols. This system has impressively increased data reception by over 15% and data telemetry volume by 300% compared to the prior system, with permanent units installed at NOAA GML observatories and international partner sites, and with mobile units used in field campaigns.



GML's Skyler Jordan promoted to Lieutenant, Fionna Matheson promoted to Captain

Congratulations to **Skyler Jordan** in GML Observatory Operations, who was promoted to Lieutenant, and **Fionna Matheson**, Special Assistant to the GML Director, who was promoted to Captain. These promotions were effective October 1.

Staff from GML awarded 2025 Outreach Gold Stars

The following staff from GML were 2025 Outreach Gold Star Award winners, recognized for their exceptional dedication during a year of significant transition and a rapidly changing landscape. Despite the busy and evolving nature of 2025, NOAA Boulder remained remarkably impactful, successfully executing more than 250 events—including specialized tours, school groups, employee engagement, intern development, and high-level Congressional and VIP visits.

Kathryn McKain • Bianca Baier • Isaac Vimont • Monica Madronich • Molly Crotwell • Eric Moglia • Aleya Kaushik
Sergio Ibarra-Espinosa • Sara Morris • Andy Jacobson • Peter Effertz • Karin Vergoth • Patrick Cullis • Gary Morris

GML and CIRES team received a shared 2024 Outstanding Publication Award

Two articles were joint recipients of the 2024 Outstanding Publication Award from the journal *Atmospheric Measurement Techniques*. The following paper co-authored by GML and CIRES staff received one of the awards. Congratulations, team!

Atmospheric H₂ observations from the NOAA Cooperative Global Air Sampling Network. **Gabrielle Pétron**, **Andrew M. Crotwell**, **John Mund**, **Molly Crotwell**, **Thomas Mefford**, **Kirk Thoning**, **Bradley Hall**, **Duane Kitzis**, **Monica Madronich**, **Eric Moglia**, **Donald Neff**, **Sonja Wolter**, Armin Jordan, Paul Krummel, Ray Langenfelds, and John Patterson. *Atmos. Meas. Tech.*, 17, 4803–4823, 2024 <https://doi.org/10.5194/amt-17-4803-2024>

GML Publications

Zabala, I., Casquero-Vera, J. A., **Andrews, E.**, Casans, A., Carrillo-Cardenas, G., Gannet Hallar, A., et al. (2026). Cloud condensation nuclei phenomenology: predictions based on aerosol chemical and optical properties. *Atmospheric Chemistry and Physics*, 26, 3697–3722. <https://doi.org/10.5194/acp-26-3697-2026>

Michalsky, J. J., **Augustine, J. A.**, **Hall, E.**, Sheffer, B. R., et al. (2026). Optimizing the precision of infrared measurements using the Eppley Laboratory Inc. model PIR pyrometer. *Atmospheric Measurement Techniques*, 19, 983–992. <https://doi.org/10.5194/amt-19-983-2026>

Hsu, C.-H., Henze, D. K., Mizzi, A. P., Harkins, C., Lyu, C., Cooper, O. R., et al. (2026). Top-down estimates of U.S. NO_x emissions using TEM-PO and TROPOMI NO₂ remote sensing observations with WRF-Chem/Chem-DART. *Journal of Geophysical Research: Atmospheres*, 131, e2025JD044223. <https://doi.org/10.1029/2025JD044223>

Gurganus, C., Bednarz, E. M., Rollins, A., Waxman, E., Ray, E., **Hints, E.**, et al. (2026). Constraining the stratospheric sulfate budget in global models: Insights from 2025 in-situ observations during 2025 SGL117405 and comparison with satellite, balloon and surface data. *Geophysical Research Letters*, 53, e2025GL117405. <https://doi.org/10.1029/2025GL117405>

Riddell-Young, B., **Michel, S. E.**, **Lan, X.**, **Tans, P.**, Röckmann, T., Dasgupta, B., et al. (2025). Microbial driver of 2006–2023 CH₄ growth indicated by trends in atmospheric δD-CH₄ and δ¹³C-CH₄. *Proceedings of the National Academy of Sciences*, 122 (50), e2516543122. <https://doi.org/10.1073/pnas.2516543122>

Palmo, J. O., Heald, C. L., Blake, D. R., Bourgeois, I., Coggon, M., Collett, J., et al. (2025). Investigating fire-induced ozone production from local to global scales. *Atmospheric Chemistry and Physics*, 25, 17107–17124. <https://doi.org/10.5194/acp-25-17107-2025>

Authors directly affiliated with GML, either as federal employees, CIRES employees, post-doctoral candidates, students, or contractors are listed in **bold**.

The Pulse of the Planet is published by the NOAA Global Monitoring Laboratory | gml.noaa.gov

Vanda Grubišić, Director | Stephen Montzka, Senior Scientist | Errol Ronje, Deputy Director (Acting) | Colm Sweeney, Associate Director
Contact: Karin Vergoth | GML Communications | karin.vergoth@noaa.gov

