

(45-240329-B) Establishing the Colorado Atmospheric Observatory (CAO): NOAA GML's Newest Atmospheric Measurement Network (AMN) Site and Future Supersite

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The Colorado Atmospheric Observatory (CAO) is a new NOAA Global Monitoring Laboratory (GML) Atmospheric Measurement Network (AMN) Tall Tower site located in eastern Colorado. It is home to a suite of measurements including in-situ continuous greenhouse gas measurements of CO₂, CH₄, CO, and water vapor. Discrete flask samples are also taken, providing concentrations of 70 additional trace gasses, including chlorofluorocarbons, hydrochlorofluorocarbons, and hydrofluorocarbons. In-situ air measurements began on February 29th, 2024 at CAO and are collected through lines that extend to inlets at 30, 100 and 480 meters above ground. The CAO tower is the first site for a new greenhouse gas measurement platform (NextGen) design that will provide consistent measurements across all current and future NOAA GML AMN Tall Tower sites and Atmospheric Baseline Observatories. Future meteorological, surface ozone, broadband radiation, and aerosol measurements will be made at the site and on the tower. The NextGen platform can accommodate additional analyzers for baseline measurements, instrument inter-comparison and temporary deployments. Additional greenhouse gas species will likely be added to future in-situ measurements.

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Figure 1. Figure 1. The Colorado Atmospheric Observatory Tall Tower site.



Figure 2. Figure 2. Installing the site container to house instruments and equipment