

University of Washington (UW)-NOAA Cooperation at the Mt. Bachelor Observatory (MBO)

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Since 2004 a team from the University of Washington has operated the Mt. Bachelor Observatory at 2.8 km on the summit of a dormant volcano in central Oregon. Measurements at the site have focused on understanding the climate and air quality impacts from gas and aerosol pollutants transported to North America. The site is unique in regularly sampling free tropospheric air on the west coast of North America and is operated with the cooperation of the Mt. Bachelor Ski Area. Data from the site have been used in more than 2 dozen publications on O₃, CO, aerosols, NO_x, mercury and other species.

Starting in October of 2011, the NOAA/GMD Carbon Cycle Greenhouse Gas (CCGG) Group installed a flask sampling package at MBO to collect daily whole air samples. These observations will provide new data for understanding the sources and sinks of key chemical compounds. Flask samples are collected at 12 (Global Mountain Time) every day, which is the time with the most frequent occurrence of free tropospheric air at the site. The flask data include all of the usual carbon, Greenhouse Gas and other species measured by the CCGG group. Since 2004 we have measured CO by non-dispersive Infrared technology. As part of our Quality Assurance procedures we have compared the CCGG flask measurements with our existing Nondispersive Infrared Sensor (NDIR) measurements for the first data period (Oct 2011-Jan 2012). The adjacent figure shows this comparison. Note that the NDIR measurements have a 1 sigma precision of 14 ppbv so this comparison does not suggest any bias in either method. In the near future we will install a Picarro cavity ring-down system for CO and CO₂, which will provide higher time resolution and better precision than the NDIR system.

This UW-NOAA partnership will provide one of the few records of long-term changes in the free troposphere. More information on the MBO including real-time and archived data can be found here: <http://www.atmos.washington.edu/jaffegroup>.



Figure 1. Photo of Mt. Bachelor in central Oregon.

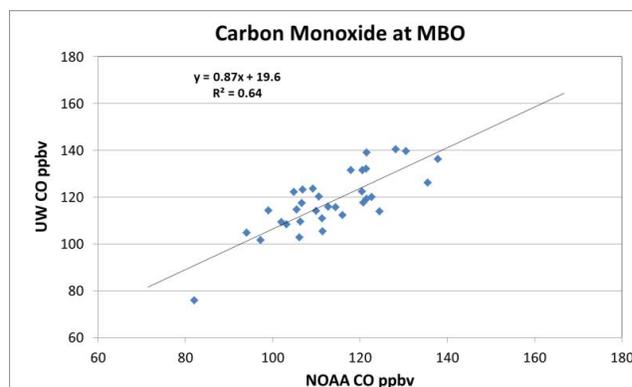


Figure 2. Comparison of CO measured by the UW and NOAA/GMD groups at Mt. Bachelor.