

**THE AOS ARCHIVE OF VERTICAL PROFILES OF CARBON DIOXIDE ABOVE
AMERIFLUX (40.734°N, 104.301°W) OF NORTHEASTERN COLORADO**

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ABSTRACT

Atmospheric Observing Systems, Inc. has developed a new Airborne Analyzer System for autonomous observations of dry mole fraction of Carbon Dioxide from light aircraft. AOS presents an archive of more than 100 vertical profiles to prove its performance. The observed site was Ameriflux (40.734N, 104.301W) in northern Colorado. Altitude ranged from 7000 to 26000' above sea level, resolution was ~1 Hz, precision was 0.1 ppm / sec, and accuracy was 0.1 ppm referred to the WMO scale of dry mole fraction. As a first attempt to address observational bias of airborne observations, profiles were observed day, night and for three seasons. Selected profiles were verified by comparison to discrete samples from Programmable Flask Packages analyzed by NOAA / CMDL. Mean differences between the two sets of observations (AOS, CMDL) were small to negligible. We present statistical analyses of the profiles and suggest some applications for them.