

New Tether Ozonesonde System Developed for Uintah Basin Ozone Study in February, 2012

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NOAA/ESRL/GMD participated in the February, 2012 UINTAH basin air quality campaign to measure ozone concentrations from surface to 300 meters above ground level. The study region, southwest of Vernal, Utah, is an active oil and gas production and exploration area. During the previous winter in 2011, an air quality study led by state and local agencies and Utah State University measured very high ozone at several sites, exceeding 140 ppbv centered near Ouray, Utah under shallow boundary layer with surface snow-cover conditions. The high ozone conditions never developed during the 2012 campaign due to dry and warm weather remaining in the 20 to 60 ppbv range. In order to provide near continuous ozone profiles without consuming a balloon and ozonesonde for each sounding, a tether system was developed by the Global Monitoring Division based upon a motorized deep sea fishing rod and reel with 50 pound line. The lightweight system was shown to be rugged and reliable and capable of conducting an ascending and descending profile to 300 m within 90 minutes. Communication software and data loggers continuously monitor the radiosonde pressure to control the ascent/descent rates and altitude. The system can operate unmanned as it will ascend, descend and hold an altitude as controlled from a laptop computer located up to 30 m distant. Four systems operating on 12 volt vehicle batteries are available for future campaigns.



Figure 1. Tethered ozonesonde at Ouray, Utah.

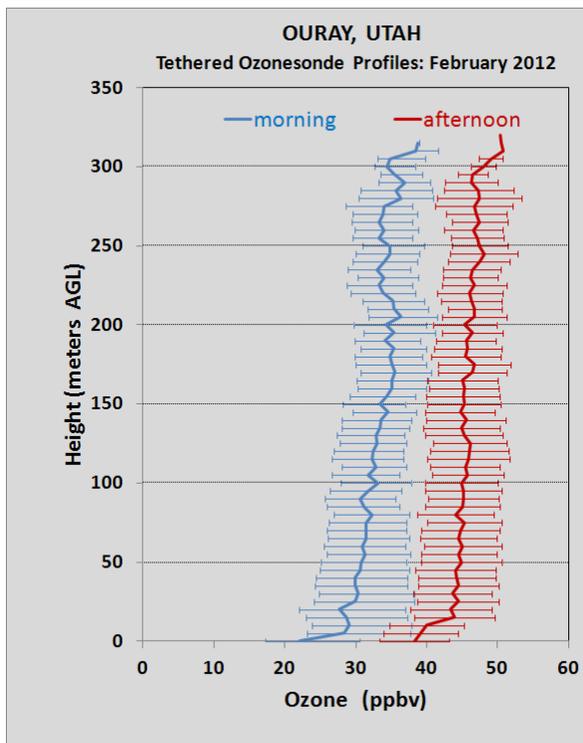


Figure 2. Ozone mixing ratio averages during the Uintah campaign.