ON THE USE OF THE BOULDER ATMOSPHERIC OBSERVATORY AS A CO_2 TALL TOWER SITE

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The Boulder Atmospheric Observatory (BAO) tower was constructed and became operational in 1977. This 300-m tower, although originally supporting the development and improvement of ground-based remote sensing devices, has been used extensively in the study of the atmospheric boundary layer as well as plume dispersion and air quality. It was used in studies of the Denver Brown Cloud during the winters of 1987-1988 and 1996-1997. Located about 20 km east from the foothills of the Rocky Mountains, it is subject to a wide range of weather conditions ranging from nighttime drainage winds with a low-level jet structure, to downslope wind storms and upslope snow storms. During the summer of 2007 with the addition of 3 levels of gas sampling, it became part of the NOAA ESRL/Global Monitoring Division tall tower network. Its location in complex terrain and its proximity to urban areas will provide a number of challenges in the interpretation of the data it provides. In this poster, we describe some of the history of the tower in past air quality studies, examples of its complex meteorological setting and initial results comparing diurnal variation in CO_2 and CO with boundary layer depths and structure observed with an acoustic sounder.