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Demonstration of The Utah Division of Air Quality’s New CL-51 LIDARs

The Utah Division of Air Quality has installed ceilometers at two monitoring sites in the State of Utah’s air monitoring network. A Vaisala CL-51 has been installed at Hawthorne Elementary School in Salt Lake City, as well as at Birch Creek Elementary School in Smithfield. These instruments are being used to measure the vertical distribution of aerosols between the surface and approximately 15 km. Additionally, these instruments are used to calculate the hourly mixed layer depth, as required by the upcoming PAMS requirement from the EPA. Aside from meeting the monitoring needs for Utah’s air monitoring network, these instruments allow for researchers to study boundary layer dynamics for an extended period of time within the Salt Lake and Cache valleys. So far, these instruments have been able to monitor the buildup of particulates in the Salt Lake valley during December, and the Salt Lake and Cache valleys during January. Preliminary observations have shown stratification of particulates trapped within the stable boundary layer, weak convective mixing near the surface on warm days, and particulate cleanout ahead of approaching cold fronts. Imagery demonstrating the use and utility of these instruments will be presented in order to make it known to other researchers that this data is available.