

Aerosol Climatology at Mt. Lulin: AERONET and *In Situ* Measurements

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The Lulin Atmospheric Background Station (LABS) located at Mt. Lulin (2862m) in central Taiwan was established to monitor the atmospheric compositions and radiation in the lower free troposphere of East Asia since 2006. Our aerosol measurement suite, including Cimel sun-photometry, aerosol *in situ* system (i.e. particle soot absorption photometer, continuous light absorption photometer, AE31, TSI Nephelometer, TSI Condensation Particle Counter), has been operated based on NASA Aerosol Robotic Network (AERONET) and NOAA Earth System Research Laboratory (ESRL) Global Monitoring Division (GMD) protocols, respectively. In this presentation, we will focus on the overall climatology of aerosol optical depth (AOD) and aerosol microphysics at LABS. The annual mean AOD is 0.07 with the maximum value of 0.2 observed in March. The higher AOD is associated with high loading of biomass-burning aerosols transported from Indochina in spring. In comparison with other AERONET high-elevation sites, the Lulin site shows a significant seasonal variation and is relatively sensitive to influences of continental outflows. In addition to AERONET data, we will also present the aerosol data from ESRL/GMD aerosol system at Lulin and compare several key optical parameters (i.e., aerosol absorption coefficient, scattering coefficient, as well as single-scattering albedo) to AERONET climatology. The different between columnar and *in situ* aerosol optical properties will also be discussed in the presentation.

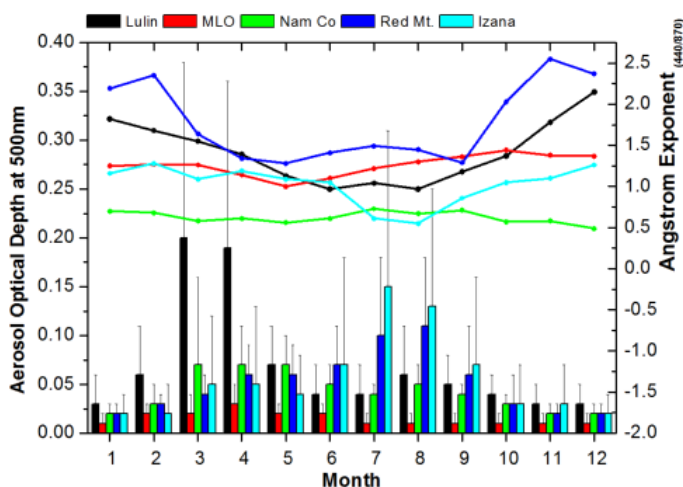


Figure 1. Comparisons of AOD and Angstrom between 5 high-elevation AERONET sites in the northern hemisphere.