

## Long-term Variations in Aerosol Optical Properties from in-situ Measurement at Background Sites during 2013 to 2022

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Aerosols can cause climate changes on regional and global scales by inducing changes in radiative forcing through scattering and absorption of solar radiation. To understand the impact of aerosols, which have a short lifetime in the atmosphere and therefore a high spatiotemporal variability, information on the regional variability of aerosol optical characteristics is necessary. The main aerosol optical variables, such as aerosol extinction coefficients, single scattering albedo (SSA), Angstrom exponents (AE), and absorption AE (AAE), can be used to understand the optical trends of different aerosol types. This study utilizes long-term (2013-2022) data from nephelometer (TSI 3563) and aethalometer (Magee scientific AE31 or AE33) at two representative background regions in South Korea, Baengnyeongdo (37.96°N, 124.63°E) and Jeju (33.35°N, 126.39°E) operated by the National Institute of Environmental Science. By obtaining reliable data through QA/QC, we plan to examine the long-term trends of each aerosol optical variable and to investigate the long-term trends by source region through circulation analysis.