

Polar-AOD network: strengthening aerosol climatologies for the polar observing community

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Aerosols are highly dynamic components of the atmosphere and play a key role in climate processes, especially at poles. In these regions, aerosol sources include both natural emissions—such as sea salt, dust, and biomass burning—and anthropogenic pollutants like black carbon and nitrate (Tomasi et al., 2015; Quinn et al., 2007). Their presence influences radiative transfer and surface albedo, with significant regional climate impacts. The Polar-AOD initiative aims to improve understanding of aerosol properties and trends at high latitudes. It connects ground-based stations performing vertical column aerosol measurements, providing long-term data on aerosol optical depth (AOD), spectral characteristics, and the seasonal influence of different sources. The network also enhances AOD climatologies by integrating stellar and lunar photometry, especially valuable during the polar night. To support data sharing and collaboration, a new online platform has been developed (<https://polaraod.net>). Managed by CNR via GeoNetwork, it allows participating research groups to archive, access, and manage spatially referenced photometric data and metadata. The presentation will introduce this system, the station network, and the structure of the Polar-AOD metadata catalogue.

Bibliography

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