

## **2.040 Investigating the relationship between physicochemical properties of fine particles and visibility impairment in central Taiwan.**

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Abstract:

Air quality in Central Taiwan has improved gradually over the past decade, though the visibility has not changed much. From a scientific view, visibility is related to air quality or more specifically the fine particulate matter ( $PM_{2.5}$ ), but not in a direct proportional relationship. With that in mind, this study evaluates the sources and formation mechanisms of  $PM_{2.5}$  to elucidate the likely causes to the aforementioned bottleneck in improving visibility. Data from ground-level measurements, satellite telemetry and mathematic models will be combined, while two independent methods: physical and chemical extinction efficiencies ( $b_{ext}$ ) will be estimated based on the measured aerosol physicochemical properties. The estimated  $b_{ext}$  will then be used to assimilate the  $b_{ext}$  from satellite data, with which further being used to reconstruct the spatiotemporal distribution of past  $b_{ext}$  for evaluating the impact of land use and microenvironment meteorology on visibility. The highly time-resolved aerosol physicochemical properties will be used for apportioning the contributions of sources and chemical-components on impaired visibility.