

Combining Satellite and Ground Based Remote Sensing Measurements with In-situ Sensor Network to Derive Spatial Distribution of Pollutants

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Ambient air quality monitoring network often comprises with in-situ monitors. These in-situ monitors are easy to calibrate and provide very accurate data. However, they are only point measurements which are not able to capture the spatial variation of pollutants. On the other hand, satellite based remote sensing measurements provide indispensable spatial information of air pollutants. Spatial distributions of pollutants are derived from the satellite observations of Earth's reflected sun light for the investigation of atmospheric dynamics and emissions from both anthropogenic and natural sources. However, satellite only provide column measurements and the accuracy of satellite observations are highly dependent on the assumption in the retrieval. In addition, the temporal resolution of satellite measurements is often limited to single observation per day. Therefore, it is useful to integrate satellite and ground based remote sensing observations with in-situ sensor network for the investigation of spatial and temporal variation of pollutants. In the presentation, we show the basic principle of satellite and ground based remote sensing measurements and spatial information derived from these measurements. In addition, preliminary surface pollutant concentration maps derived from satellite measurements by using a simple regression technique are also shown.