

Urban Boundary Layer and Its Effects on Haze Episode in Thailand

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Abstract : Atmospheric boundary layer shows effects of land cover on atmospheric characteristic in term of temperature gradient and wind profile. They are key factors to control atmospheric process such as atmospheric dilution and mixing via thermal and mechanical turbulent. Bangkok, ChiangMai, and Hatyai are major cities of central, southern and northern of Thailand, respectively. The different of them are location, geography and size of the city, Bangkok is the most urbanized city and classified as mega city compared to ChiangMai and HatYai, respectively. They have been suffering from air pollution episode such as transboundary haze. The worst period of the northern part of Thailand was occurred at the end of February through April of each year. The particulate matter less than 10 micrometer (PM10) concentrations were higher than Thai's ambient air quality standard (120 micrograms per cubic meter) more than two times. Radiosonde technique and air pollutant (CO, PM10, TSP, O3, NOx) measurements were used to identify characteristics of urban boundary layer and air pollutions problems in the cities. Furthermore, air pollutant profiles showed good relationship to characteristic's urban boundary layer especially on daytime temperature inversion on 29 February 2009 caused two times higher than normal concentrations of CO and particulate matter.

Keywords : haze episode, micrometeorology, temperature inversion, urban boundary layer

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