

Research Title	A study of ozone in Thailand
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Research Grants	Fiscal Year 2015 Research and Development Institute, Silpakorn University
Year of completion	2016

Abstract

In this research work aims to investigate the atmospheric ozone in Thailand using ground-based and satellite-based approaches. The work is composed of four parts. In the first part, the total ozone column (TOC) at Nakhon Pathom (13.82°N, 100.04°E), Chiang Mai (18.78°N, 98.98°E) and Ubon Ratchathani (15.25°N, 104.87°E) was derived from solar ultraviolet radiation measured at these locations. In addition, TOC data from the Dobson spectrophotometer in Bangkok (13.67°N, 100.62°E) and from Brewer spectrophotometer at Songkhla (7.20°N, 100.60°E) were acquired. The analysis of TOC data shows that TOC at these locations increases from January to April, then its level is relatively constant until September. Afterward, TOC decreases until December. In the second part, TOC data for the period of 30 years (1986-2015) were acquired from four satellites, namely Nimbus-7, Meteor-3, Earth Probe and Aura. The TOC data from these satellites were compared with those from the ground-based measurements and reasonable agreement was found. Afterward, the TOC data were used to generate maps of monthly average daily TOC and yearly average daily TOC. The maps reveal geographical variation of TOC over the country. For the third part, based on a 30-year period of satellite-derived ozone data, time variation trend of the TOC was investigated. It is found that TOC in Thailand has average decreasing trend of -0.0018 DU/year. In the last part, a case study of the ozone at the Thai Meteorological Department in Bangkok was conducted. In this case study, ozonesondes were launched to measure the ozone profiles in the troposphere and stratosphere. In addition, surface ozone concentration data and other related meteorological data were collected. The analysis of these data reveals the influence of various meteorological factors on the tropospheric ozone at the study site. Finally, the stratospheric ozone over this site was investigated using the data from ozonesondes. It is found that the maxima concentration of stratospheric ozone are located at the height of 25-28 km.

Key wards : Atmospheric ozone, ground-based measurement, satellite data