

Abstract

The study on effects of terrain databases: GTOPO30, SRTM, and DTED2 to the maximum 1-hour, 24-hour, and 1 year concentrations predicted by AERMOD air quality model, selected Leam Chabang Industrial Estate, Chonburi as the study area. Meteorological data during 2005 – 2007 from Bangkok, Cheingmai, Ubonratchathani, and Songkla weather stations were applied. Comparisons for the maximum concentrations and the means of the maximum concentrations were conducted. The study also proceeded with four different meteorological data to study whether the meteorological data effected to the comparisons result.

The study found that the maximum concentrations predicted by AERMOD using GTOPO30 terrain database were different from the maximum concentrations predicted using DTED2 and SRTM, while, the maximum concentrations predicted using DTED2 and SRTM terrain databases were found mostly the same.

Comparison between the means of the maximum concentrations predicted by AERMOD air quality model around the study area, the values predicted using GTOPO30 were found significantly different from the values predicted using DTED2 and SRTM with 95% confidence, while, the means of the maximum concentrations predicted using DTED2 and SRTM were found none significantly different with 95% confidence.

The result study of the effects of meteorological data to the maximum concentrations comparisons result using four meteorological data with GTOPO30, DTED2 and SRTM terrain databases found that, the meteorological data did not affect or slightly affected on the comparisons result when different terrain database were applied.

The maximum concentrations predicted using GTOPO30 were generally different and lower than values predicted by DTED2 and SRTM, so, GTOPO30 should not be used. The maximum concentrations predicted by using DTED2 and SRTM were found typically similar , so, either of them may be applied, The availability of SRTM is better according to easier to be accessed, so, SRTM is advised to be generally used in the process of air quality impact assessment using AERMOD air quality model.