4.051 Fine particulate matter (PM2.5) in the two largest cities in Vietnam.

Early Career Scientist

Presenting Author:
Huu Huy Duong, Faculty of Environment, University of Science, Vietnam National University – Ho Chi Minh City, Ho Chi Minh City, Vietnam, dhhuy@hcmus.edu.vn

Co-Authors:
Thi Hien To, Faculty of Environment, University of Science, Vietnam National University – Ho Chi Minh City, Ho Chi Minh City, Vietnam

Abstract:

Aerosol pollution is a serious problem in Vietnam. However, only few studies on the fine particulate matter ($PM_{2.5}$) have been reported so far, especially about long-term continuous and high temporal resolution (1 hour) data. This study presents one of the first long-term observations of $PM_{2.5}$ obtained from two monitoring stations in Hanoi and Ho Chi Minh cities in Vietnam during one-year monitoring (2017). Ho Chi Minh City (HCMC) is the largest and most populous city, while Hanoi, the capital, is the second most populous in Vietnam. The average $PM_{2.5}$ concentration of 42.8 $\mu g/m^3$ in Hanoi is much higher than that of 29.7 $\mu g/m^3$ in Ho Chi Minh City. Both of them could not meet the WHO air quality guidelines, indicating that high-risk potential related to PM exposure. A pronounced seasonal variation of $PM_{2.5}$ is observed with the highest during the winter and the lowest during the summer in Hanoi. While in HCMC with the tropical region, the highest concentration is observed during the dry season compared to that during the rainy season. We also found that the diurnal variations vary from season to season which could be affected by daily variation of the meteorological conditions and anthropogenic emissions. Finally, the effect of air mass origins on $PM_{2.5}$ observations is explored using the back trajectory and cluster analysis in HYSPLIT-4 model.