



Impact of Tropospheric Downwash on Hong Kong Air Quality during Southeast Biomass Burning

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Biomass burning is recognized as an important source of air pollution, which not only affects local air quality, but also air quality at distant places. This study investigated the impacts of biomass burning emissions from Southeast Asia (SEA) and its contribution to local air pollution in Hong Kong. Biomass burning events in the spring from 2012 to 2014 were first identified by using GFED (Global Fire Emission Data) fire emissions with HYSPLIT (Hybrid Single Particle Lagrangian-Integrated Trajectory) backward trajectory dispersion modeling analysis. Cross comparison between event and non-event days was performed using local air quality observation (e.g., nss-K+, PM_{2.5}/PM₁₀ ratio) to ensure the presence of biomass burning signatures. After that, regional air quality model, WRF-CMAQ (Weather Research and Forecasting (WRF) and Community Multi-scale Air) with 4 nested domains (i.e. 27, 9, 3 and 1 km) were applied to evaluate the contribution of biomass burning during the downwash events on local air pollution. The results provide us a better understanding on how long-range transport of SEA biomass burning affects local air quality in South China.