A review on the local and inter-regional contributions to primary and secondary PM2.5 pollution in key regions of China

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Rapid economic growth and urbanization in China lead to increased primary air pollutants emissions and secondary particulate matter formation from power generation, industries, transportation as well as residential sectors. Primary and Secondary PM2.5 can be formed by local emissions and also can be transported over longer distances. Understanding the contributions of local and regional transport contributions to primary and secondary PM2.5 in key regions of China is necessary for designing effective emission control programs to reduce PM2.5 pollution in these regions. In this study, we reviewed the studies on the local and regional transport contributions of PM2.5 in China published in literature based on various methods including ambient measurements, trajectory analysis, and air quality modeling, etc. Contributions of different source regions to primary and secondary PM2.5 will be summarized quantitatively for the key regions under representative pollution episodes. The meteorological conditions that affect the formation, transport and gas-to-particle partitioning of PM2.5 will be analyzed.

Keywords: PM2.5, local emission, regional transport

