

Campaigns on Air Pollution Complex of East China: Major Findings and Future Plan

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China has experiencing the most complex air pollution in the world, which is so called Air Pollution Complex, representing as both high concentrations of fine particles and ozone. More and more frequent severe haze and ozone pollution events within large region even cross region have been observed recent years. The key scientific question for China's air pollution is the formation mechanism of the heavy haze and ozone pollution. Several intensive field campaigns have been conducted to investigate the air pollution in East China, major at 3 important city clusters, i.e. Beijing-Tianjin-Hebei Region, Yangtze River Delta, and Pearl River Delta. This presentation will introduce some of the major findings of these campaigns, which do not expect to summarize all the results, but aims to raise the essential scientific questions which require to answer:(1) Accurate and precise measurement of the ambient radical concentrations at an environment with the presence of "Air Pollution Complex"; (2) Control factors of the atmospheric oxidation capacity (sources and sinks of the ambient radicals, e.g. OH and NO_3) at typical regional sites in the metropolitan areas; (3) Mechanism of aerosol nucleation and growth under "Air Pollution Complex": concentrations of potential gas precursors, i.e. sulfuric acid, ammonium, amine, and organic acid etc., and their roles in aerosol nucleation and growth; Understanding of the whole chemical and physical processes of efficient aerosol nucleation and fast growth under polluted environment; (4) Fast formation mechanism of secondary aerosols, i.e. secondary inorganic aerosols (sulfate and nitrate), and secondary organic aerosols. Furthermore, a new scientific plan named "Campaigns on Air Pollution Complex of East China" proposes several intensive field campaigns in the next 4 years, which will be introduced here.