

## 6.143 Characteristics and transformations of pollution gases to particulate matters in fog-haze episodes.

Early Career Scientist

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Abstract:

There was a multi-day widespread fog-haze processes during 4 and 12 June 2012 in Huaihe River Basin of China. In the process of continuous 9 d fog - haze episode, there was a moderate haze - heavy haze - fog - severe haze - moderate haze conversion process, and also the pollution gases transformed to particulate matter phenomenon. During the haze-fog process, the visibility reduced with the wind speed decrease, and lifted with the wind speed increase. Lower wind speed converge the pollutants, improve the aerosol particle nucleation condensation and condensation growth, thereby reducing visibility. The formation and development of moderate and severe haze were accompanied with increasing specific humidity, while the haze-fog conversion processes were accompanied with decreasing specific humidity. The higher the specific humidity, the longer the fog-haze duration. The higher the specific humidity before the fog, the lower the minimum visibility during the fog.

Based on the same site, Visibility was positively correlated with the concentration of  $\text{SO}_2$  (Pearson correlation coefficients is 0.42), but was inversely correlated with  $\text{PM}_{2.5}$  and  $\text{PM}_{10}$  concentrations (Pearson correlation coefficients are -0.49 and -0.56, respectively). On the contrastive analysis between the study site and its upwind site, all types of pollutant concentrations have the same variation trends, and the upwind ones earlier than those of the study site. During the fog processes, the upwind  $\text{PM}_{10}$  and  $\text{PM}_{2.5}$  concentrations lower than those of study site. For the contaminated gas, the CO concentration has a small variation, and the upwind  $\text{SO}_2$ ,  $\text{NO}_2$  concentrations were higher than about 2 times those of downwind. However, the downwind NO and  $\text{PM}_{10}$  concentrations were about 1.5 times higher than those of the upwind. The pollutants conversions may be occurred during the fog processes.