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Deliquescent phenomena of ambient aerosols on the North China Plain

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In this study, we report that the deliquescent phenomena of ambient aerosols on the North China Plain are frequently observed using a humidified nephelometer system. The deliquescence relative humidity (RH) primarily ranges from 73 % to 81 %, with an average of 76.8 %. The observed deliquescent phenomena of ambient aerosols exhibit distinct diurnal patterns and are highly correlated with ammonium sulfate. The diurnal variations of ammonium and nitrate may play significant roles on occurrences of observed deliquescent phenomena. The frequently observed deliquescent phenomena of ambient aerosols in this study imply that current parameterization schemes that describe the RH dependence of particle light scattering may result in a significant bias when estimating aerosol effects on climate.