Researchers found that the seasonally enhanced emissions of pollutants from residential heating and efficient secondary aerosol formation and transformation could cause severe haze.

Unfavorable meteorological conditions, for example, enhanced air static stability and shallow planetary boundary layer due to aerosol-radiation and aerosol-cloud interactions could also exacerbate the formation of severe haze, according to An.

"In addition, the regional East Asian winter monsoon and westerly circulation, which are influenced by various factors, including variations of Arctic sea ice and the Siberian High, the topography of the Tibetan Plateau, and El Niño—Southern Oscillation, may also have significant influence on the formation of severe haze in northern China," An said.

Severe haze pollution in northern China provides a unique scientific platform for gaining insights into many aspects of the relevant atmospheric chemistry and physics.

The scientists call for additional research, including on the mechanisms leading to secondary aerosol formation and the chemical/physical transformation of primary and secondary aerosols during haze development as well as the interactions and feedback cycles between haze and meteorological/climatic conditions.
