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Future changes in Beijing haze events under different shared socioeconomic pathways

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The occurrence of severe haze events remains a serious problem in Beijing. Previous studies suggested that the frequency of weather patterns conducive to haze may increase with global warming. The new Shared Socioeconomic Pathways (SSPs) cover a wide range of uncertainties in aerosol and greenhouse gases emissions. Global and Chinese aerosol emissions are projected to decrease in most SSPs, while increases in greenhouse gases and global warming will continue for the rest of the century. The future, therefore, remains unclear.

We quantified the air pollution over Beijing and associated weather patterns using multiple indices calculated from the SSPs

We show that the occurrence of weather patterns conducive to the formation of haze significantly increases by the end of the century due to increases in greenhouse gases. Aerosol reductions also cause an increase in their occurrence, but reduce the severity of haze, and overall reducing aerosol emissions will be beneficial.