Geophysical Research Abstracts
Vol. 20, EGU2018-12726, 2018
EGU General Assembly 2018

Impact of Solar Geoengineering on Human Health from Urban Heat Stress

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Solar geoengineering (SGE) is designed to limiting the global and regional impacts of global warming on human. Observations and simulations under increased greenhouse gas forcing show that the frequency of higher apparent temperature extremes (that is combining temperature, relative humidity, and wind speed) is increasing and will continue through the 21st century. Heat exposure poses severe risks to human health. By comparing future mortality under both IPCC greenhouse gas scenarios and GeoMIP stratospheric aerosol injection experiments using a Distributed Lag Non-linear Model (DLNM) exposure-risk functioning, we examine how SGE could alleviate the impact on heat related mortality (and also impacts on cold-related deaths). We further examine the social benefits associated with long term reduction in mortality due to reduced urban pollution levels (particularly pm2.5) interact with the increased incoming solar radiation due to their clean-up, especially in Chinese cities, particularly Beijing. We extent the analysis to urban centres in much of the developing world where heat stress is generally higher than in the developed economies.