Proposing a new IGAC activity: Urban Air Pollution and Interaction with Climate (U-APIC)

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Abstract

Urban environment plays a unique and critical role in the Earth system. Air pollution and atmospheric chemistry can interact with urban meteorology and emissions in a complex way, which has not been fully understood. Urban is also the most populated region where air pollution can exert significant adverse impacts on human health, with potential environmental justice issues. Moreover, different urban regions may have their own characteristics for air pollution and interaction with climate, which requires international collaboration and coordination. Thus, this proposed U-APIC activity aims to address this imperative topic.

Currently, there are no IGAC activities solely dedicated to urban air quality and interactions with unique urban climate/weather environments. Existing IGAC activities may cover certain aspects of urban air pollution (e.g., urban emissions in GEIA), which are either primarily from chemistry perspective or not as a major focus of the entire activity. This brings opportunities for cross-activity collaborations with our proposed U-APIC activity.

This proposed U-APIC activity is unique on several aspects: (1) filling in knowledge gaps of cross-scale complex chemistry-climate interactions in unique urban environments under climate change; (2) connecting urban air pollution and climate/weather extremes to public health and environmental justice; (3) advocating the engagement with the society (e.g., local community and stakeholders) to promote actionable sciences.

Our goals are to leverage both observational and modeling capabilities to improve the understanding and quantification of urban air pollution affected by urban emissions and climate/weather and associated feedback to urban climate/weather as well as the impacts on public health and environmental justice, and to provide useful scientific basis and guidance to enhance policy making and benefit the public.

Early Career Scientist

NO, I am not an early career scientist.