

LINKING EMISSIONS FROM LOCAL TO GLOBAL,

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Abstract:

Global emission inventories of carbon monoxide, particulate matter, volatile organic compounds, and nitrogen oxides have been generated for models of regional to global atmospheric chemistry. These traditional air pollutants also affect climate, so these emission inventories are used to estimate climate change in the past, present and future.

Despite their importance in understanding future air quality and climate, global inventories suffer from some major uncertainties. Presently, they use very broad assumptions and are based on minimal data. Key questions that relate to the representation of Asian countries are: (1) What are typical emission factors from technology that is not widely used in the United States and Europe, where many measurements are done? (2) How much fuel is burned in different types of technology (for example, stoker boilers versus pulverized coal plants)? (3) How much fuel is consumed in small industries and businesses for process heat? (4) How are residential energy needs for cooking and heating supplied in urban, peri-urban and rural areas? (5) What is the chemical composition of emitted particulate matter and precursors? These affect radiative transfer and cloud formation.

Answers to these questions should not be taken from default emission compilations, such as those done by the Environmental Protection Agency in the United States. Those data may be inappropriate for Asia. However, there is a wealth of knowledge on these topics in many countries—emission measurements, urban inventories, and air quality planning. While this information is being used for air quality planning, it isn't yet connected with global models of the past, present, and future. In this presentation, I'll demonstrate computer tools for linking local and global emission inventories and for sharing data between countries. This connection allows better representation of urban air quality knowledge in global atmospheric models.

Keywords: co-benefits, climate, emission inventory

Note: Poster request