Multi-resolution Emission Inventory for PRC and Applications in Policy

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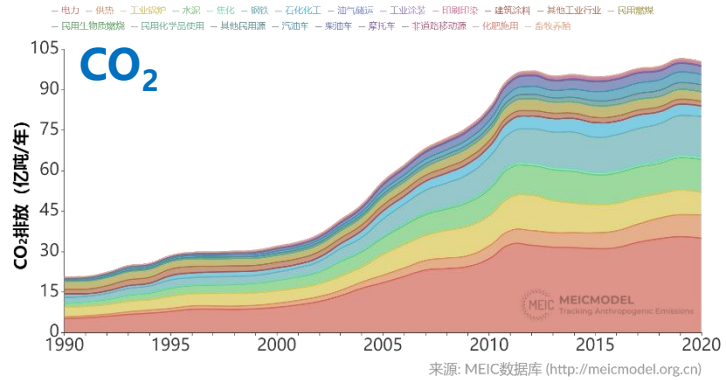
Multi-resolution Emission Inventory for PR China (MEIC)

- Understand magnitudes, trends, and driving forces of anthropogenic emissions in China
- Speed up the development process and update inventories timely
- Provide a rich emissions dataset to the community with constant methodology and underlying data
- Support climate and air quality modeling at different spatial resolution and time scale

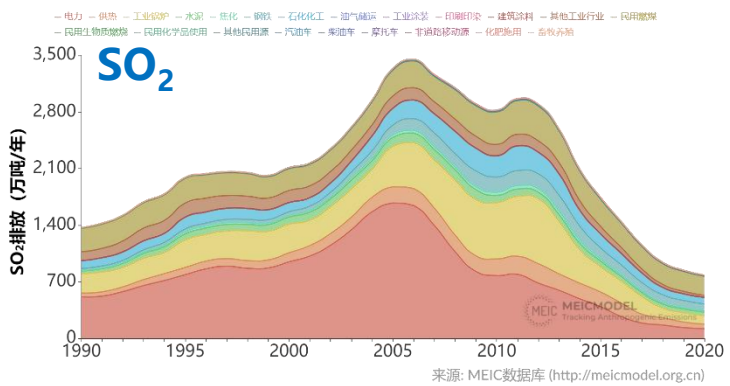
http://meicmodel.org.cn

Trends in PR China's anthropogenic emissions 1990-2020

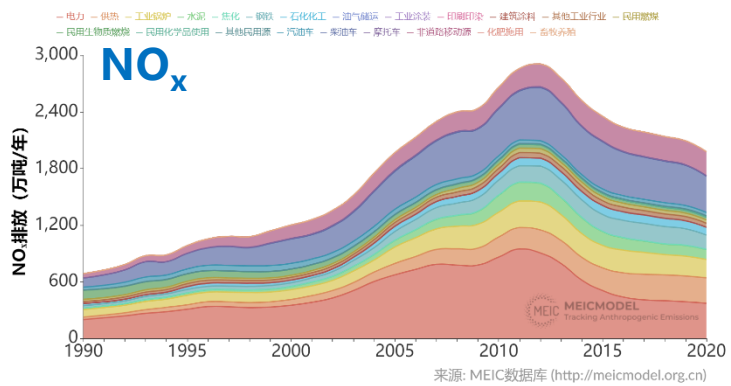
中国分部门CO_2排放



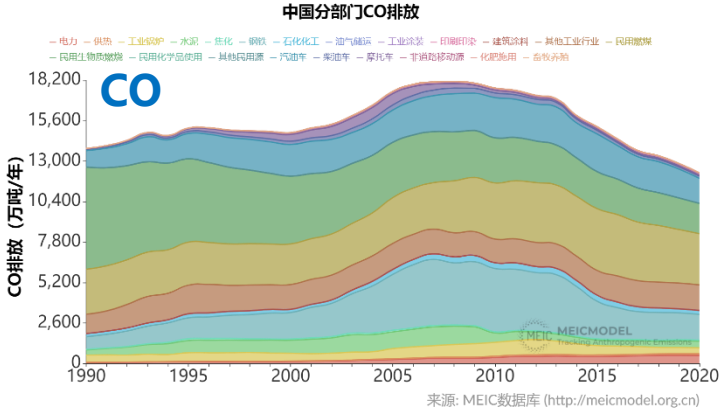
中国分部门SO_2排放



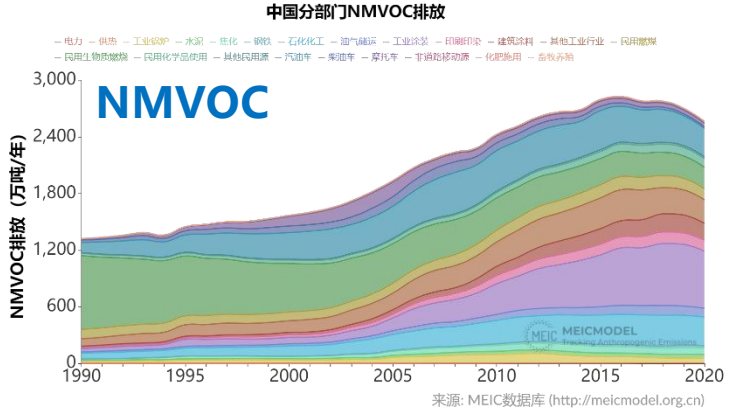
中国分部门NO_x排放



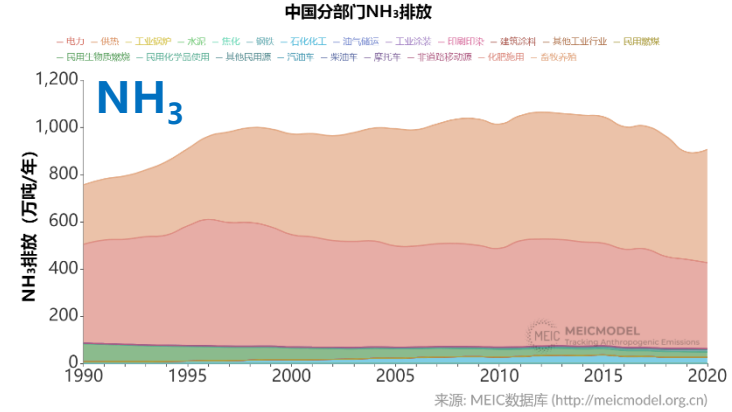
中国分部门CO排放



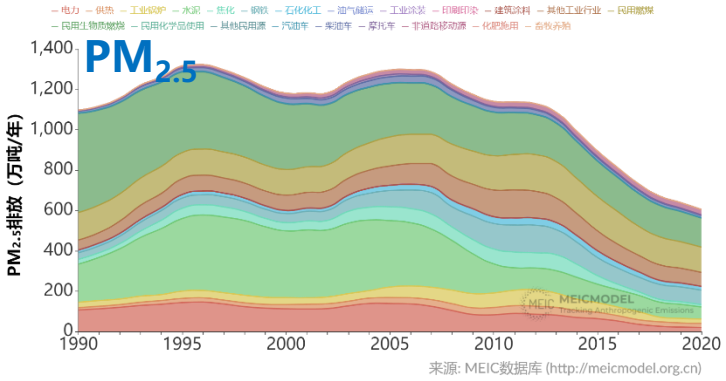
中国分部门NMVOC排放



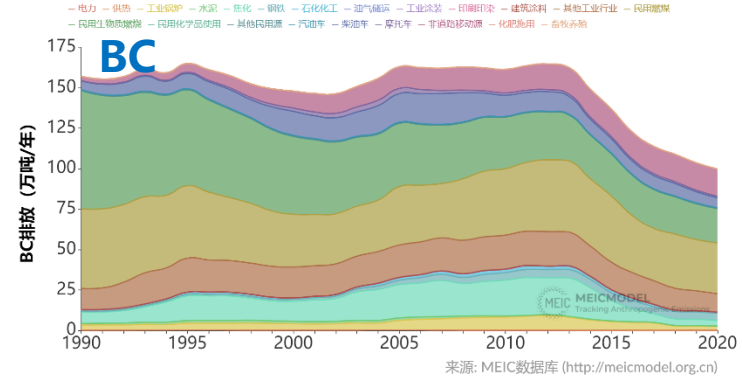
中国分部门NH_3排放



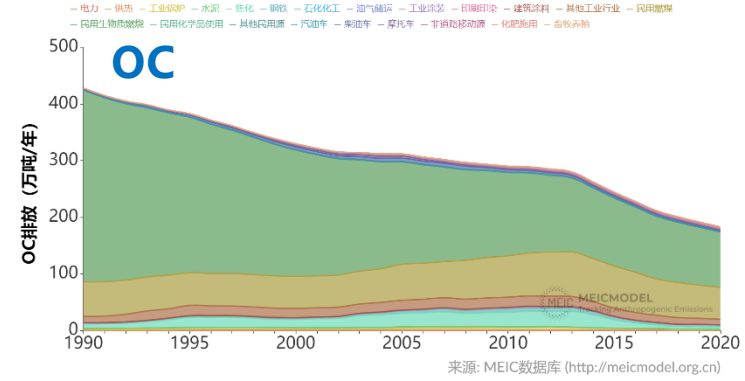
中国分部门$PM_{2.5}$排放



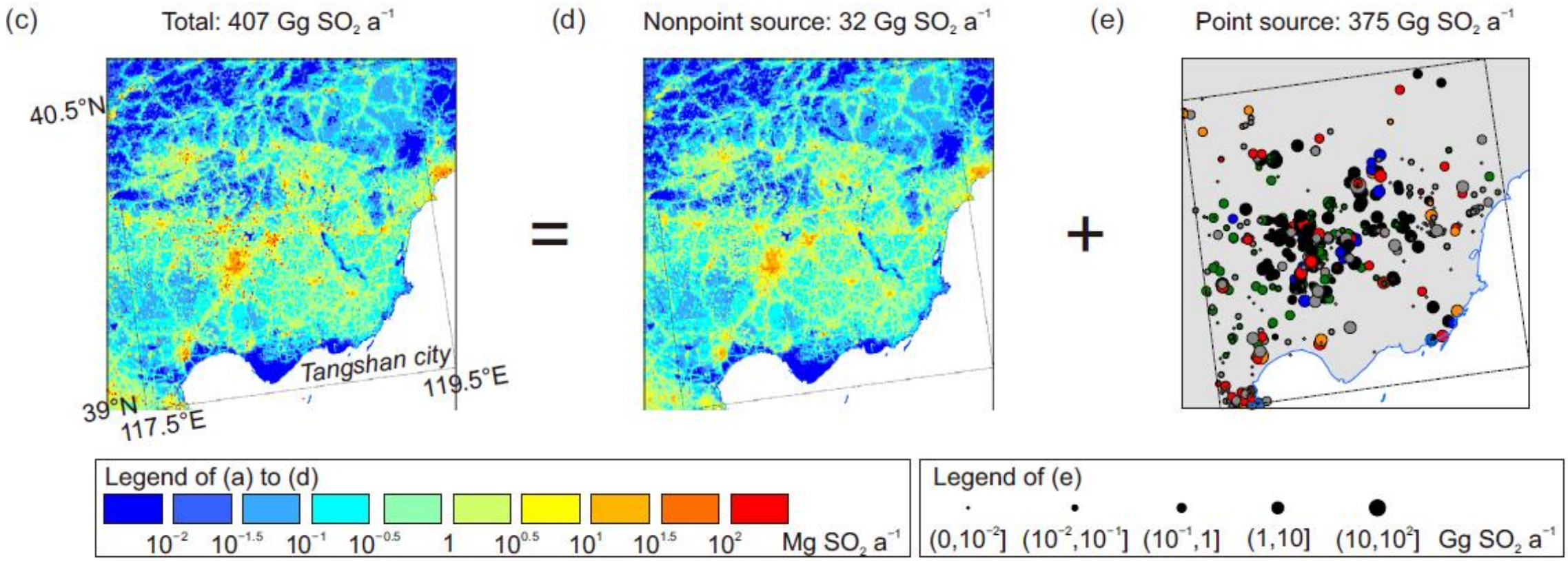
中国分部门BC排放



中国分部门OC排放

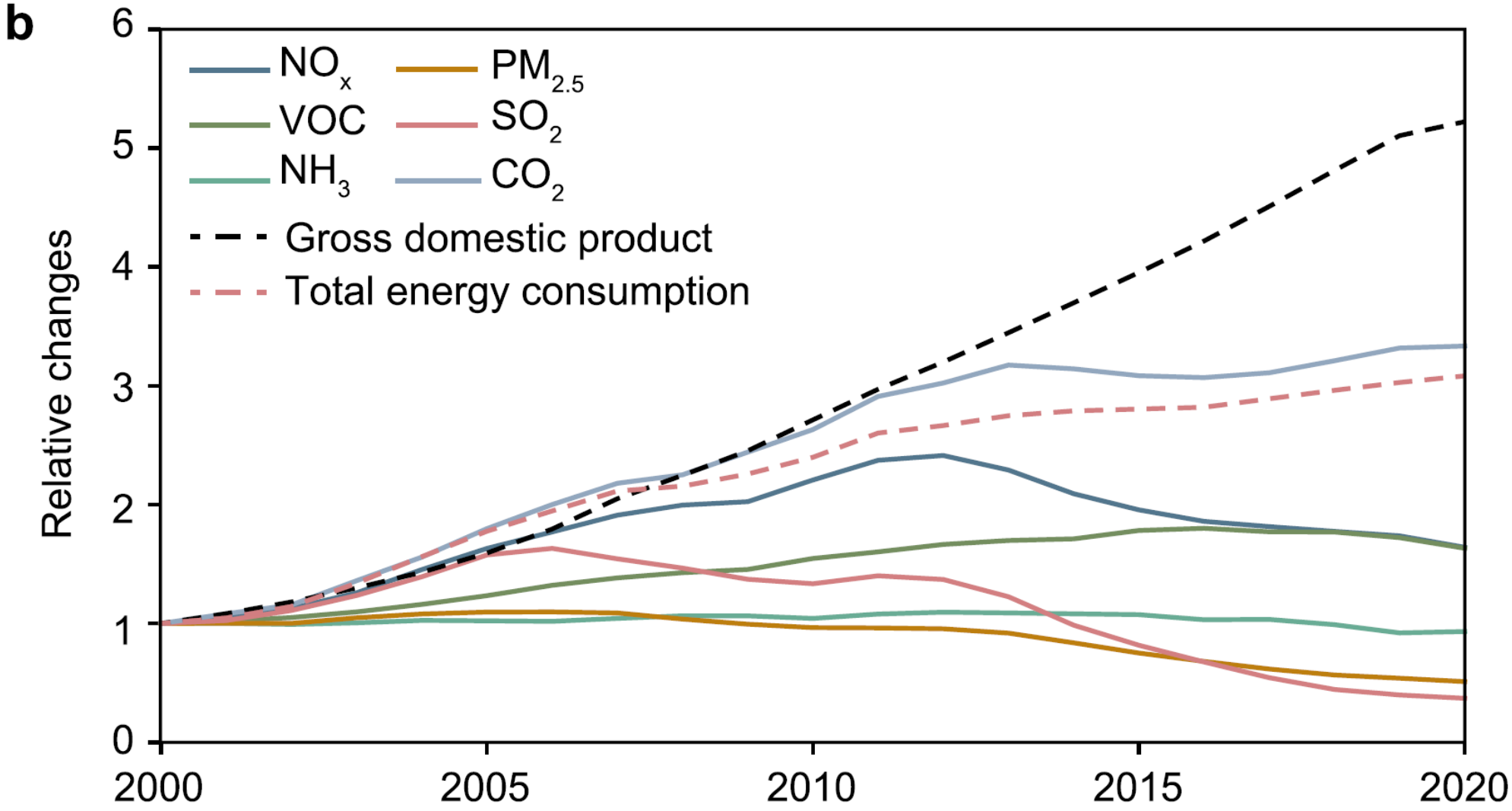


High-resolution mapping of anthropogenic emissions



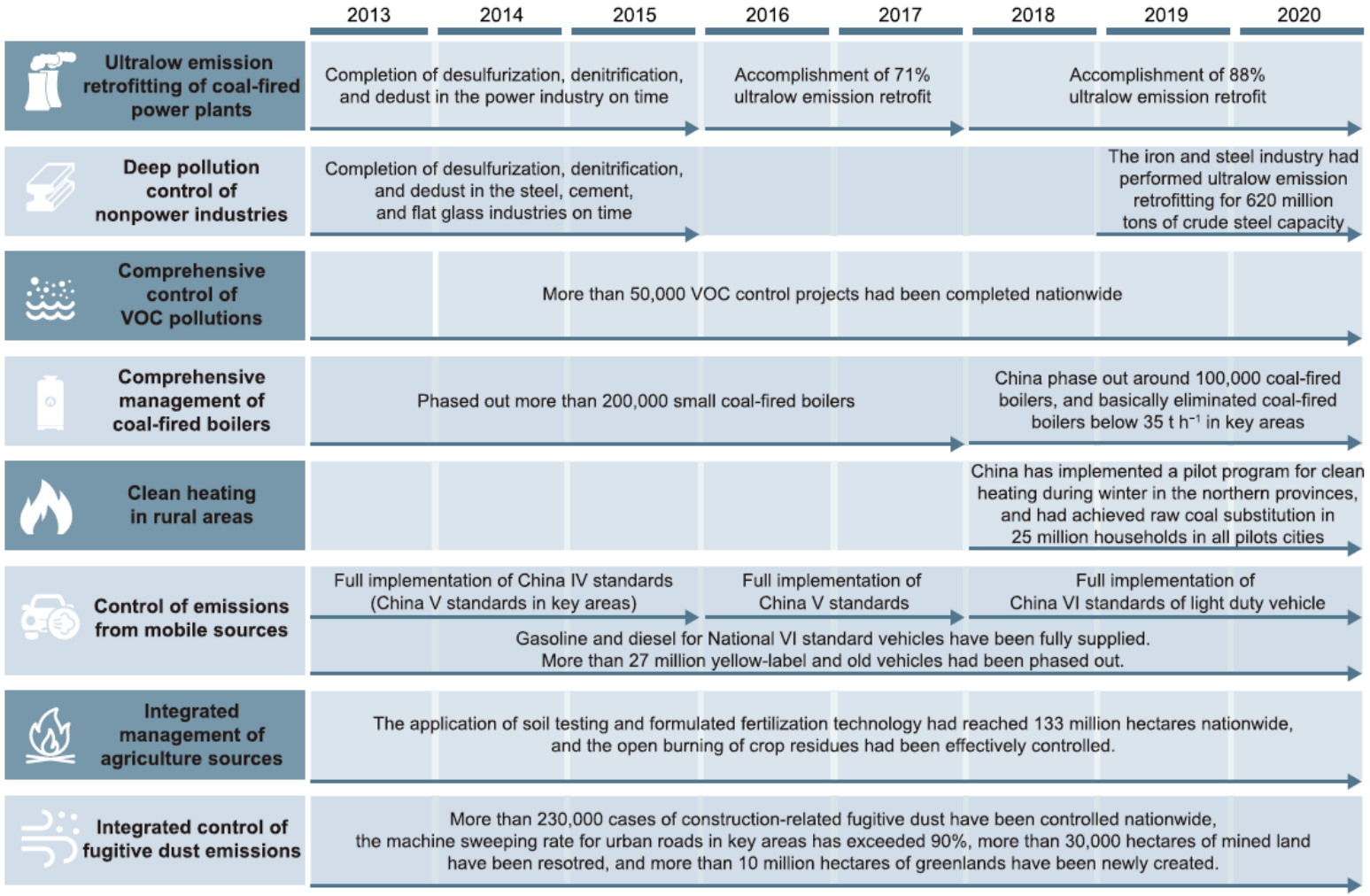
High-resolution SO_2 emission maps at the horizontal resolution of 1km

Relative changes in anthropogenic CO_2 and air pollutant emissions 2000-2020



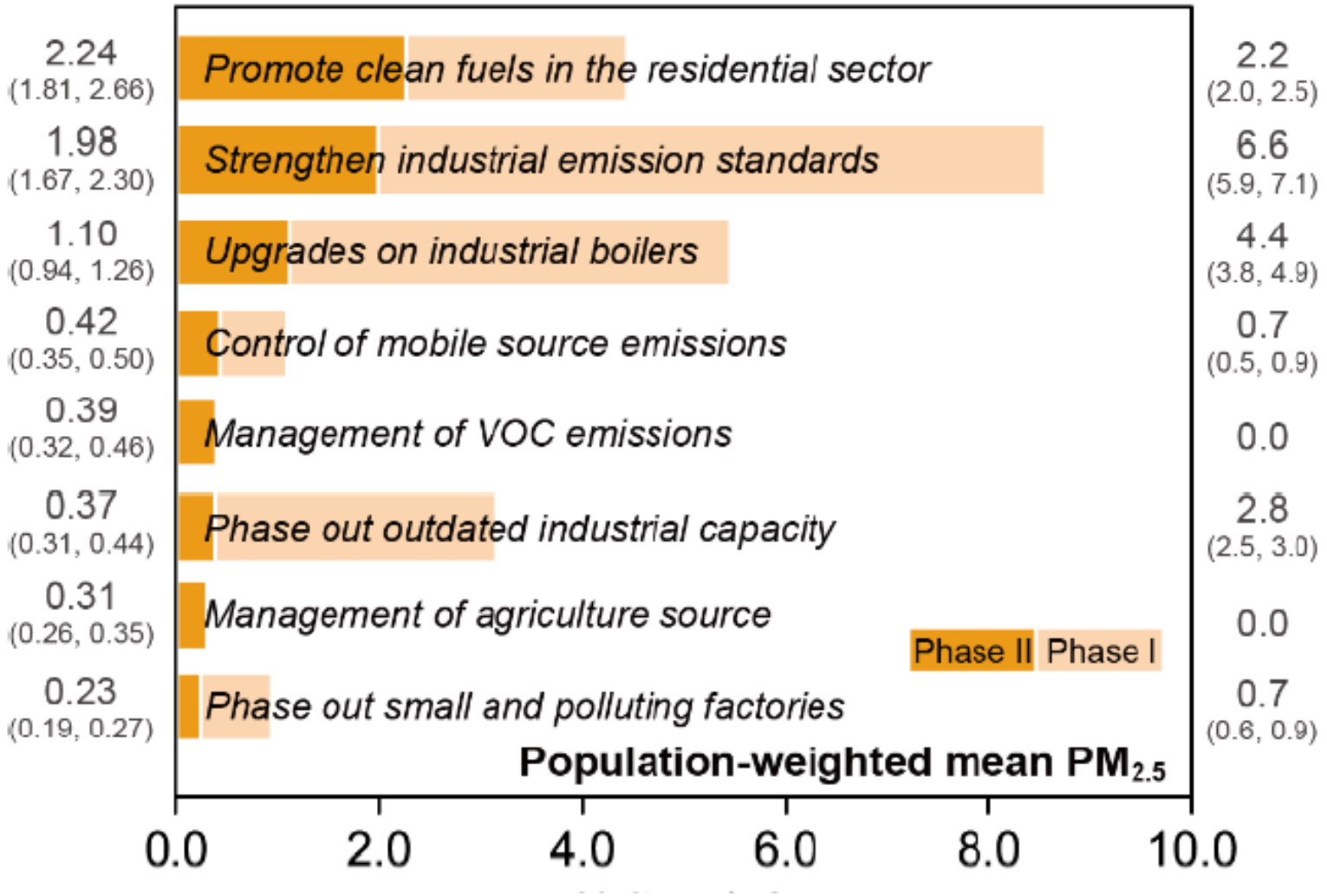
Zhang et al., ESE, 2023

Progress in PR China's air pollution control 2013-2020



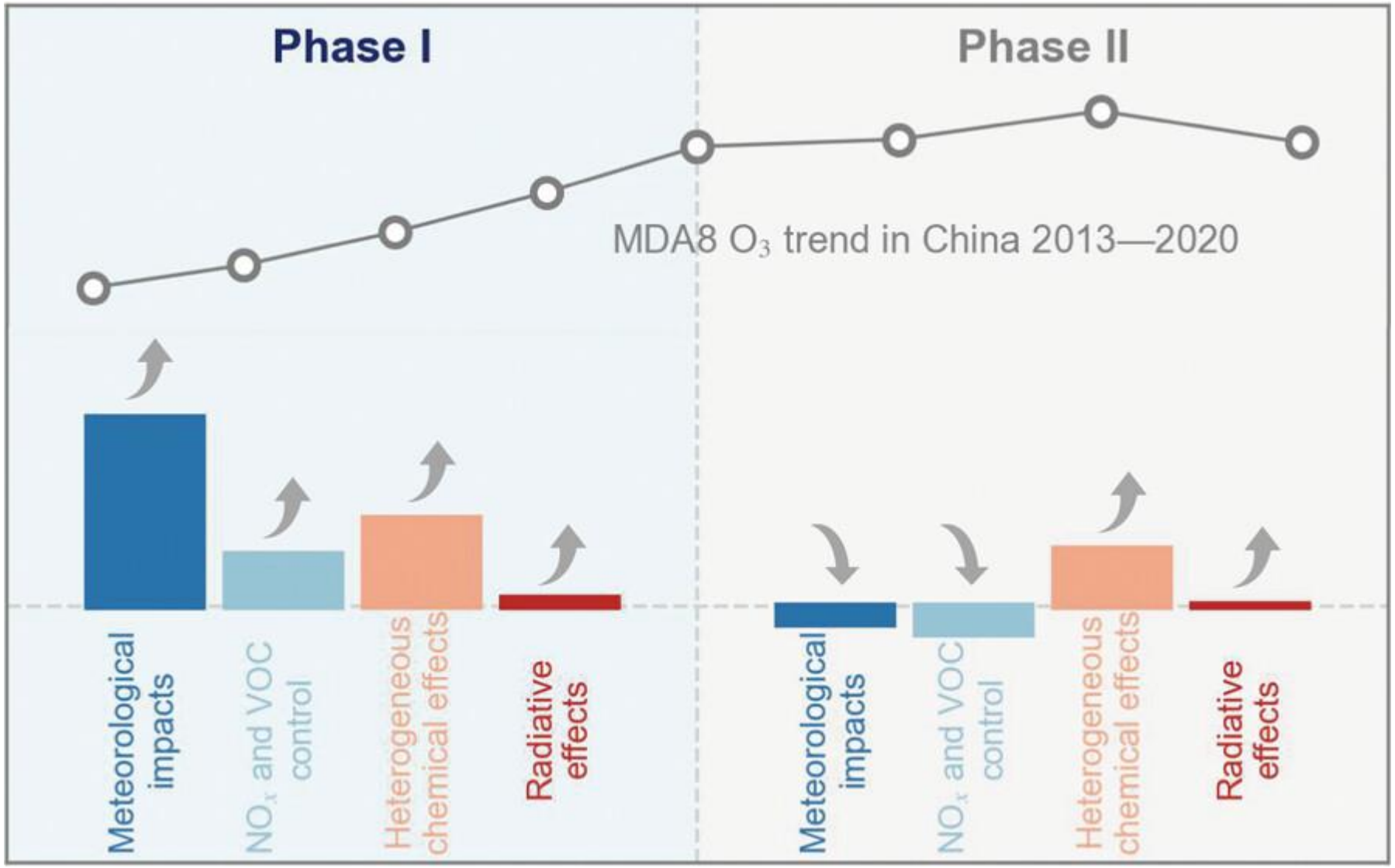
Zhang et al., ESE, 2023

Measure-specific contribution to $PM_{2.5}$ reduction during 2013-2020



Geng et al., in review

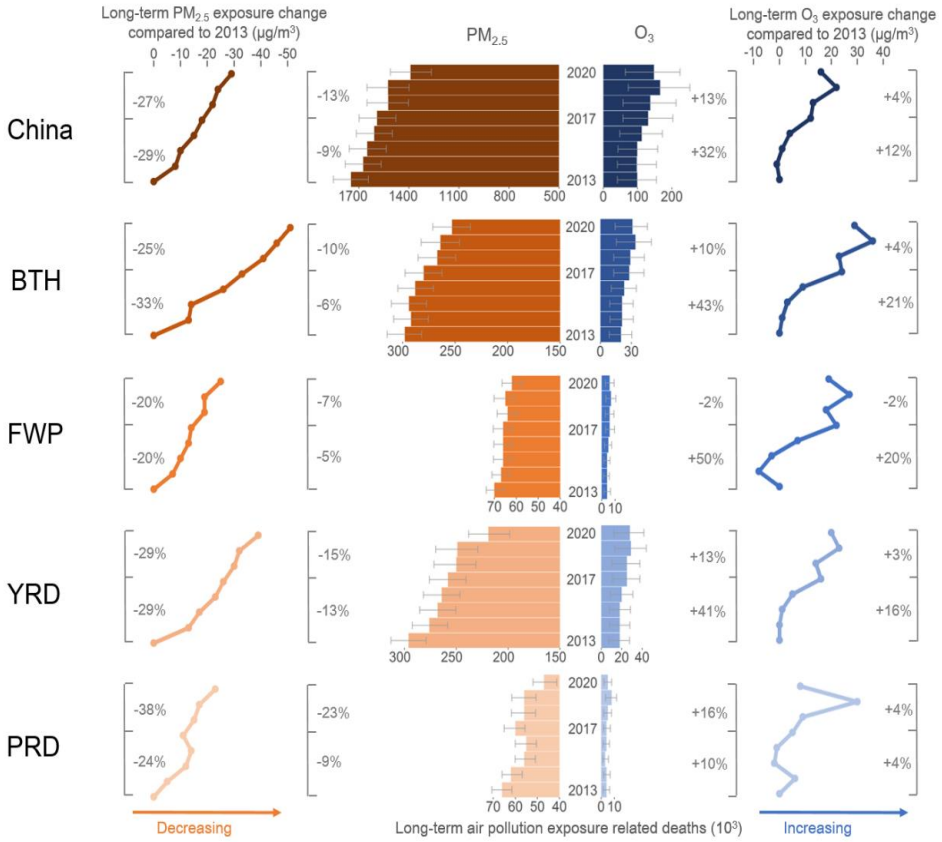
Drivers of increasing ozone during the two phases of clean air actions



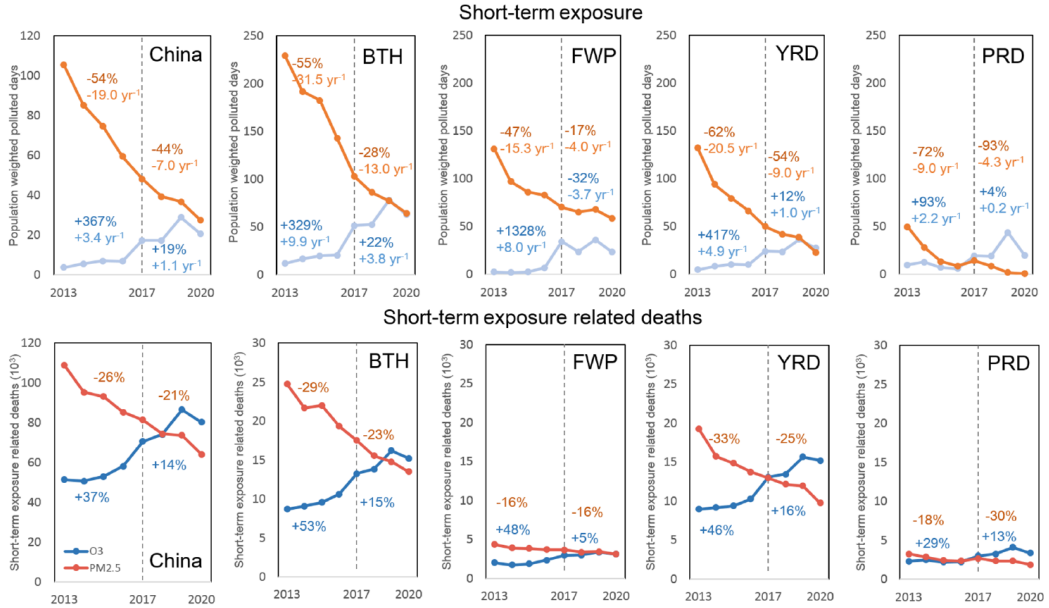
Liu et al., *Environ. Sci. Tech.,* 2023

Health impacts of $PM_{2.5}$ and O_3 pollution during 2013-2020

Health impacts of long-term exposure

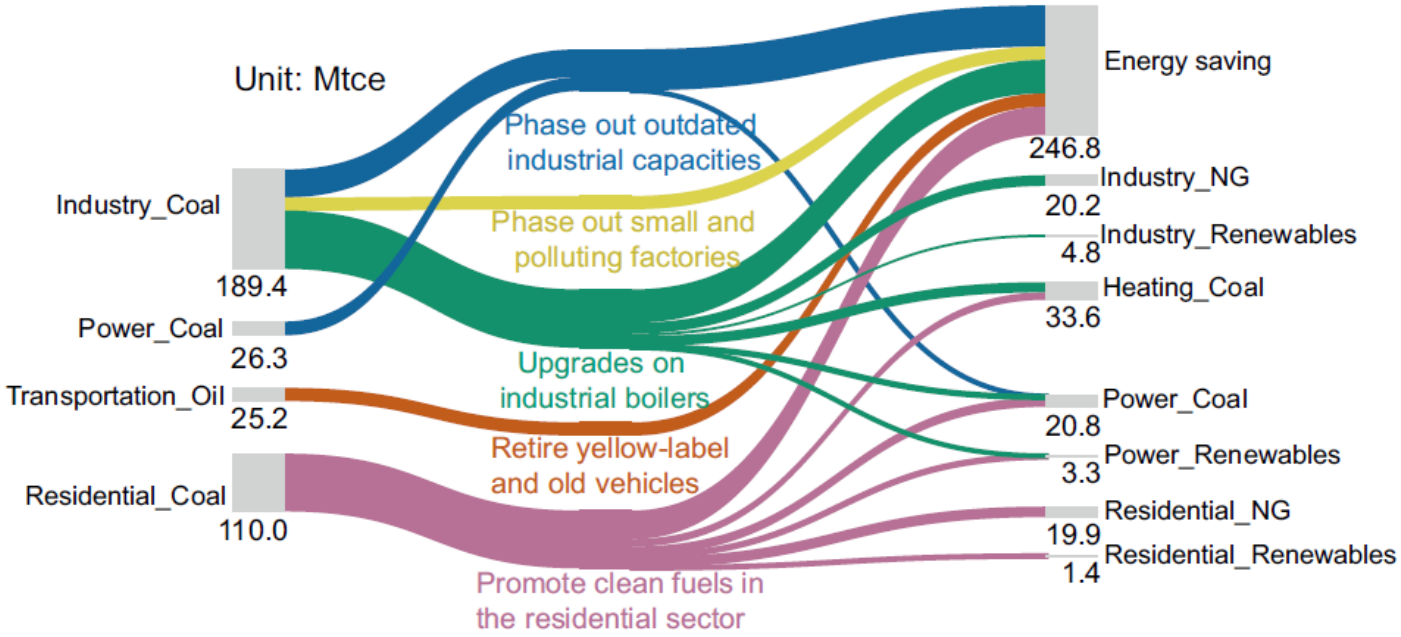


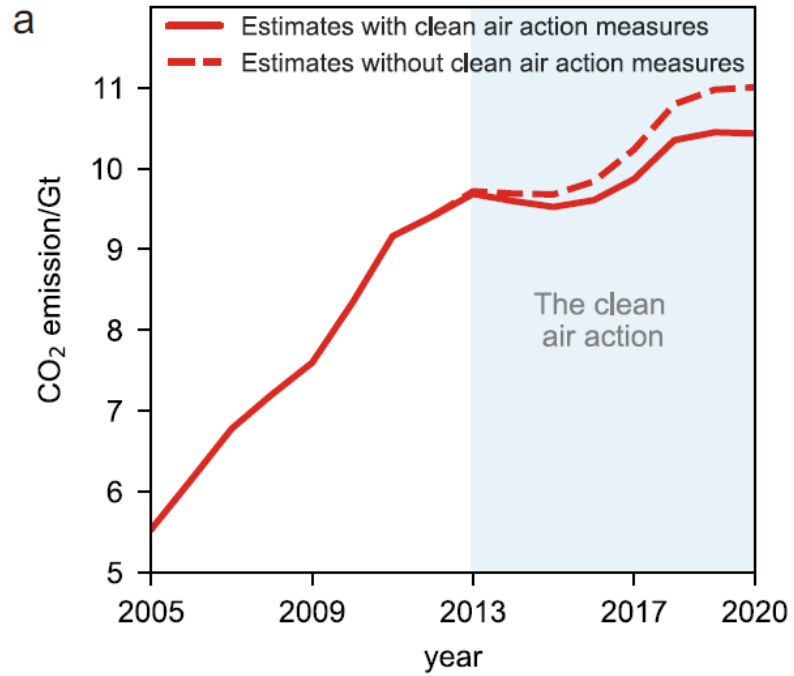
Health impacts of short-term exposure



Xiao et al., *Environ. Sci. Tech.*, 2022

Co-benefits of CO_2 emission reduction from PR China's clean air actions

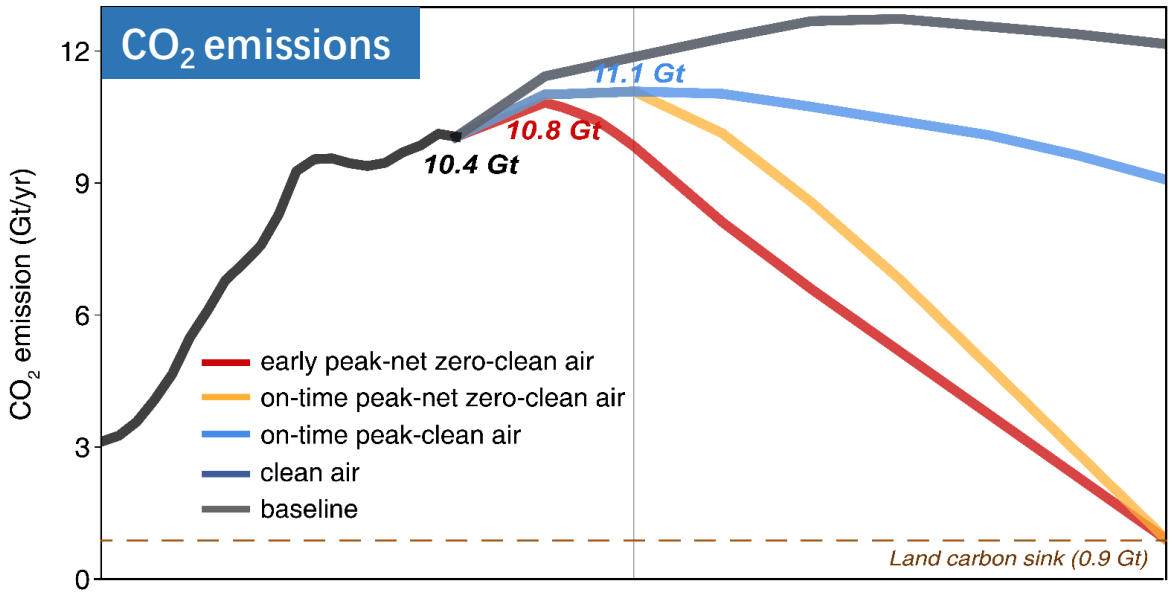




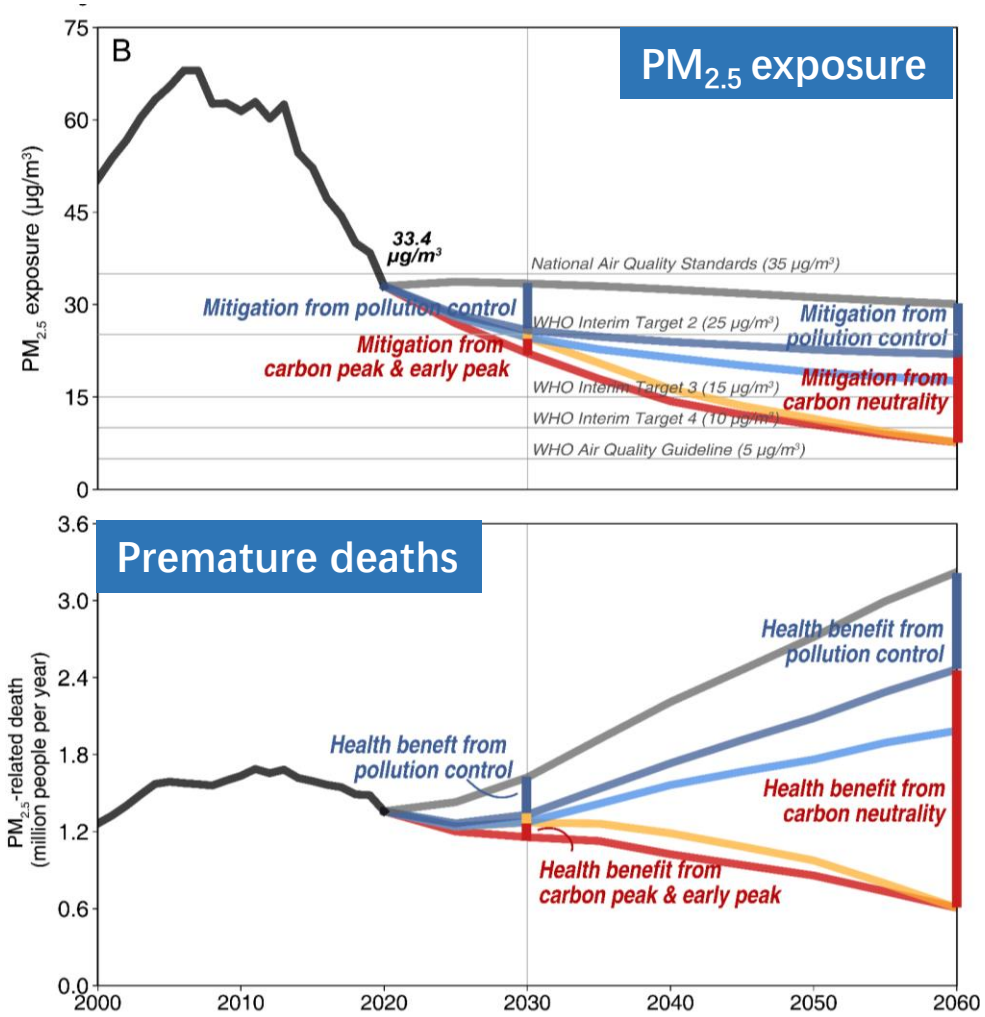
- Accumulative energy saving: 1.06 billion tce
- Accumulative CO_2 emission reduction: 2.43 billion tons

Shi et al., *Nat. Comm.*, 2022

Carbon mitigation as the key driver of future air quality improvement



PR China's commitment to transform its energy system and goal to achieve carbon neutrality by 2060 is considered a great opportunity to further improve air quality and the public health of PR China.



Cheng et al., *One Earth*, 2023

Thanks!

http://meicmodel.org.cn

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