

# Using remote sensing for live monitoring of pollutant emissions: prospects for democratic economic planning

*Tuesday 18 November 2025 14:05 (20 minutes)*

Satellites and ground-based monitors can measure pollutants in the air but cannot infer their sources directly; pollutants may have blown downwind or reacted away. Knowledge of emissions comes instead from inventories, which are maps of pollutant sources along with their expected emissions magnitudes, constructed from information such as infrastructure plans and economic reports. Inventories thus link pollution to processes, and processes can be made targets of mitigation efforts. However, inventory construction takes several years and is subject to error. In this talk, I will present methods which fuse observational data with the actionable information of inventories through Bayesian optimization. In particular, I will present open-source software I have developed called CHEEREIO, which simplifies the process of computing emissions using remote sensing data. CHEEREIO's wide-ranging capabilities have been used by groups internationally to study ethane from oil/gas fields in the Middle East, CO from Canadian wildfires, and methane trends in China —finding for the latter that benefits from closing small coal mines have been offset by growth in livestock emissions. I will comment on the prospects of integrating CHEEREIO and similar methods into mechanisms for democratic economic planning —and particularly in cases where accounting assumptions used for ecological resource planning are incorrect or have changed due to warming-induced emissions.

Please edit the title and abstract by November 20th 2025.

Presentation 20 min

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Q&A 5 min

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