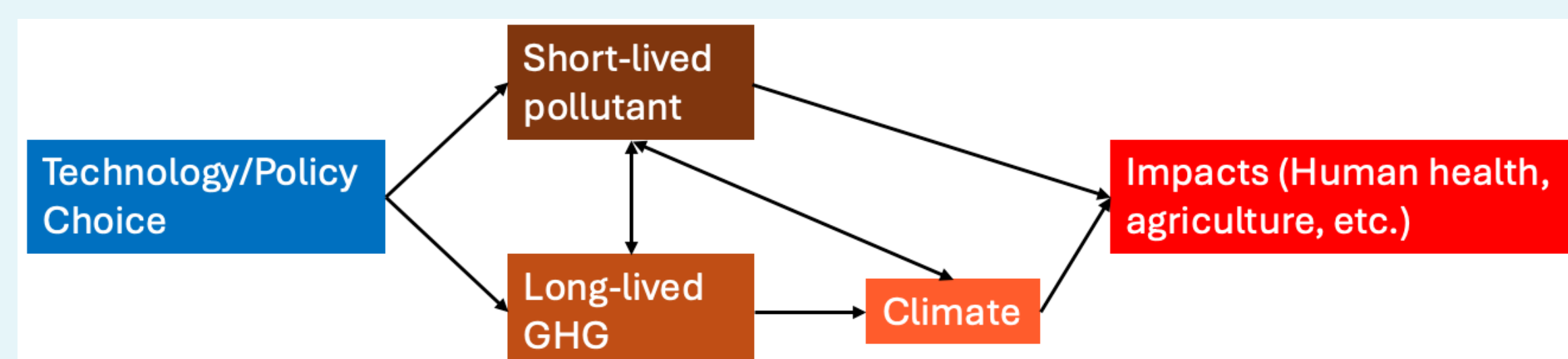


Tackling Sustainability Challenges with Atmospheric Chemistry - Air Quality and Climate Perspective

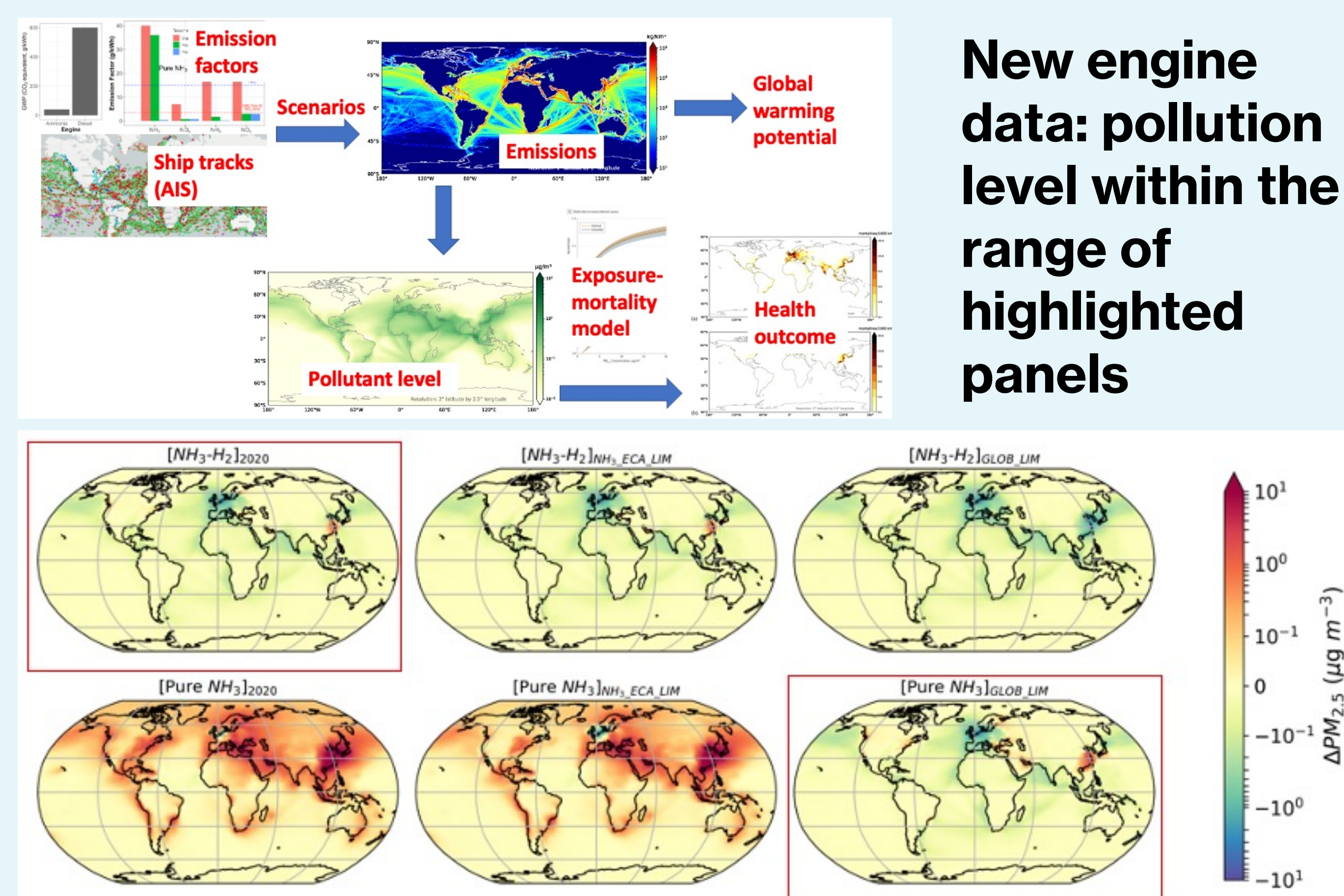
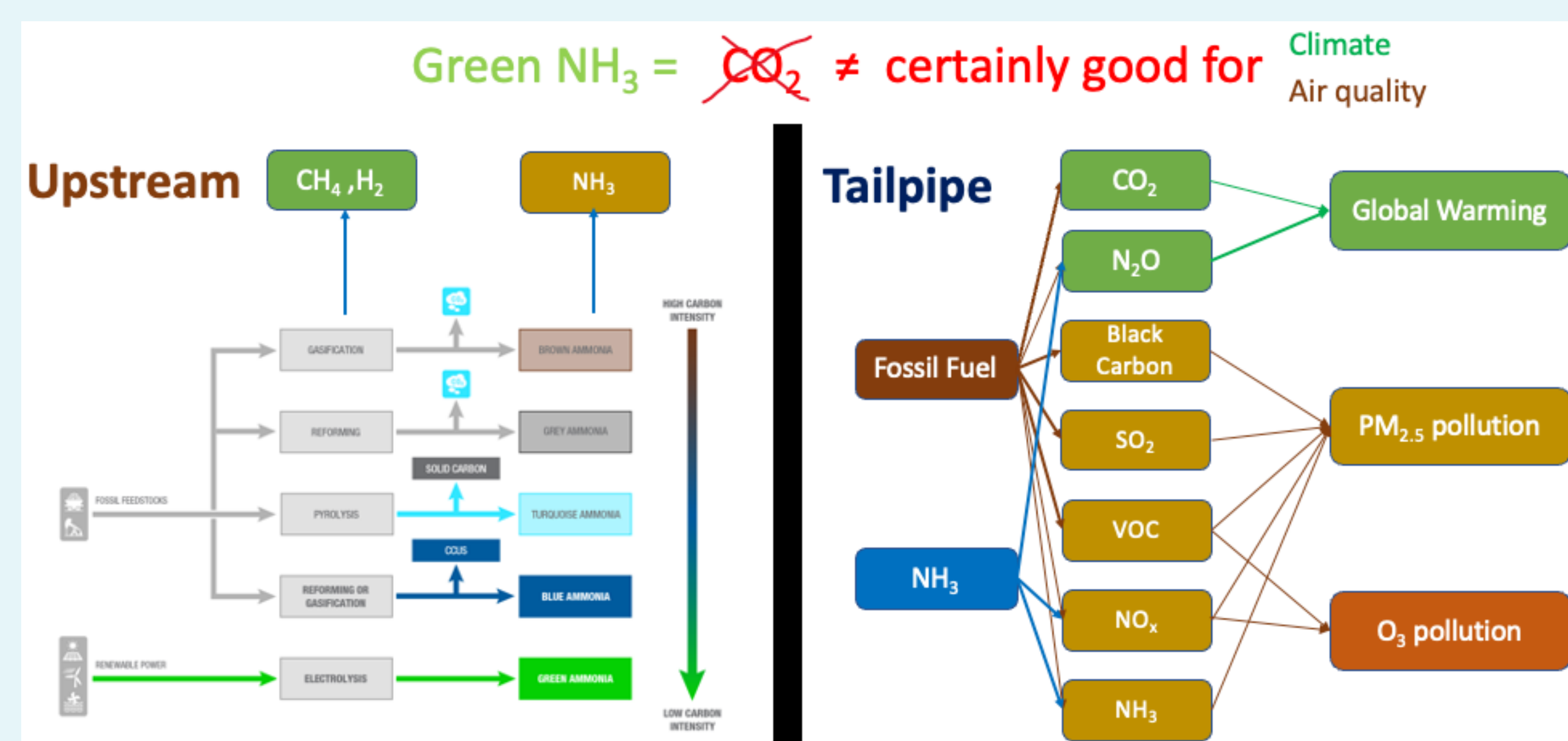
Anthony Wong, Noelle Selin, Adam Schlosser, Sebastian Eastham

Research theme and approach

Apply atmospheric chemistry to explore climate and air quality co-benefits, trade-offs and interactions in sustainability decision making, by building new tools and detailed case studies

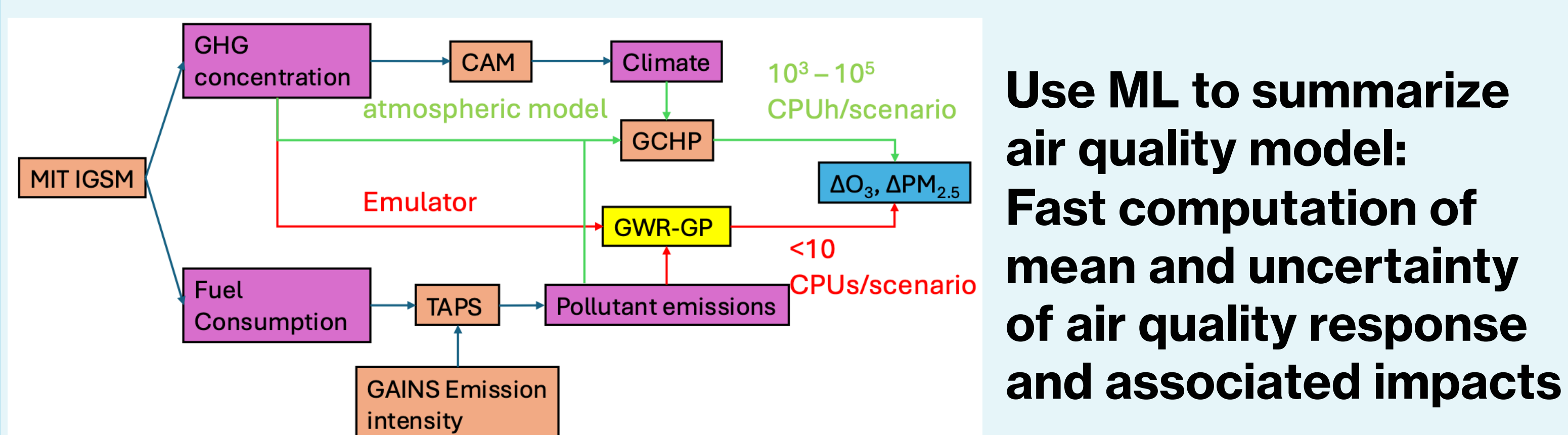
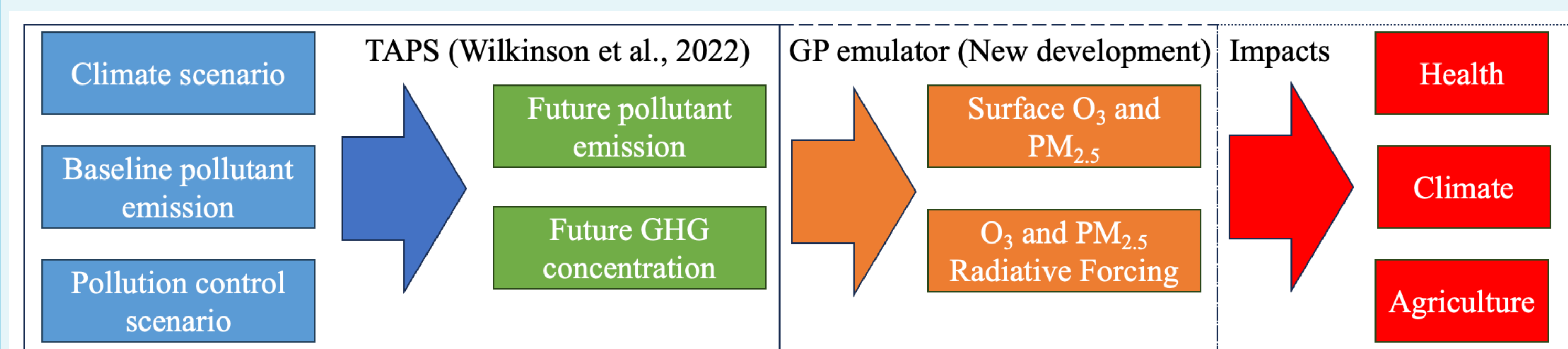


Ammonia provides air quality co-benefits as shipping fuel, with appropriate policy and technology

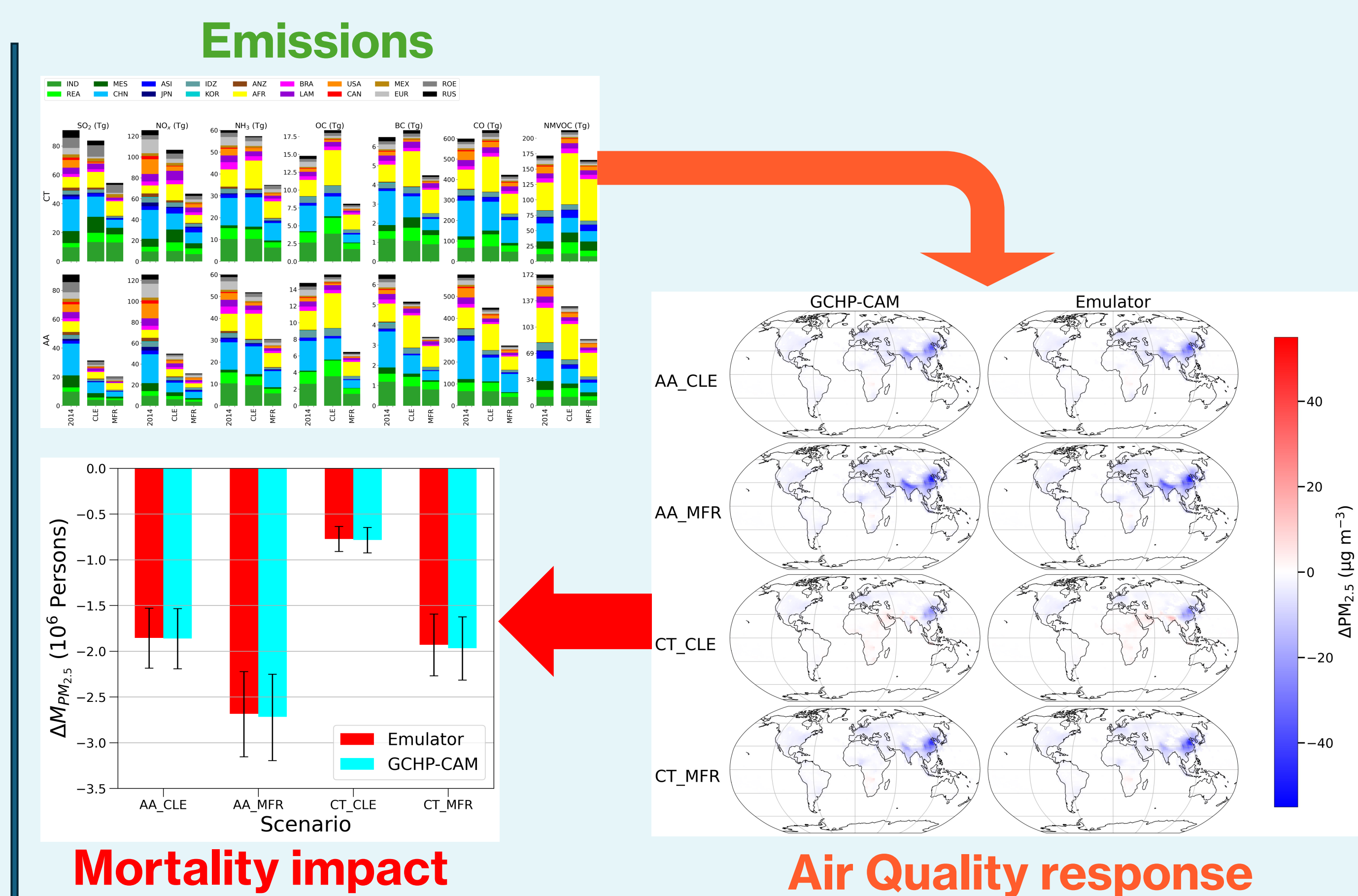


Still can worsen PM_{2.5} air quality in East Asia/coastal US

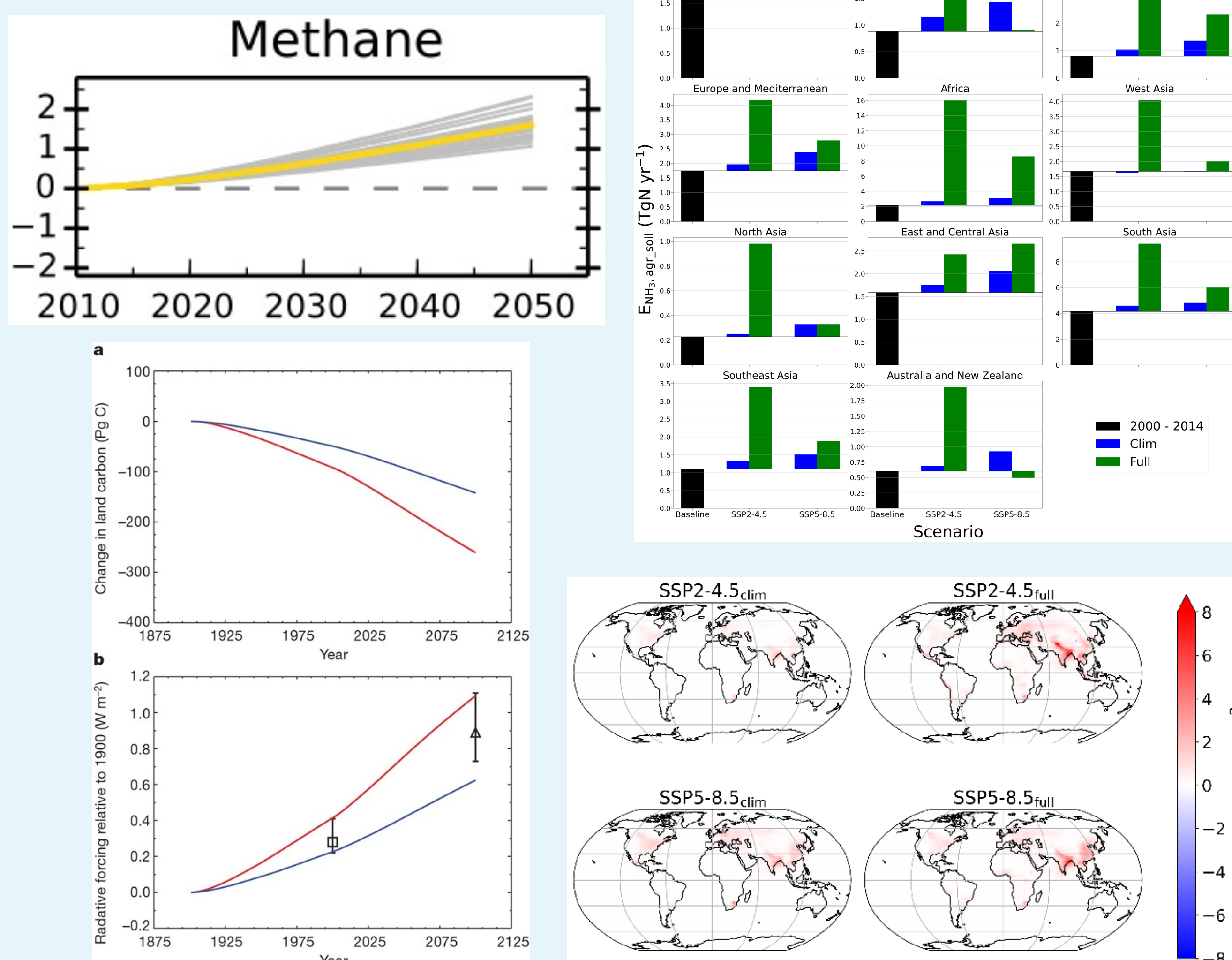
Fast and accurate ML tool for air quality impacts in climate scenarios



Use ML to summarize air quality model: Fast computation of mean and uncertainty of air quality response and associated impacts



Land system, air quality and climate

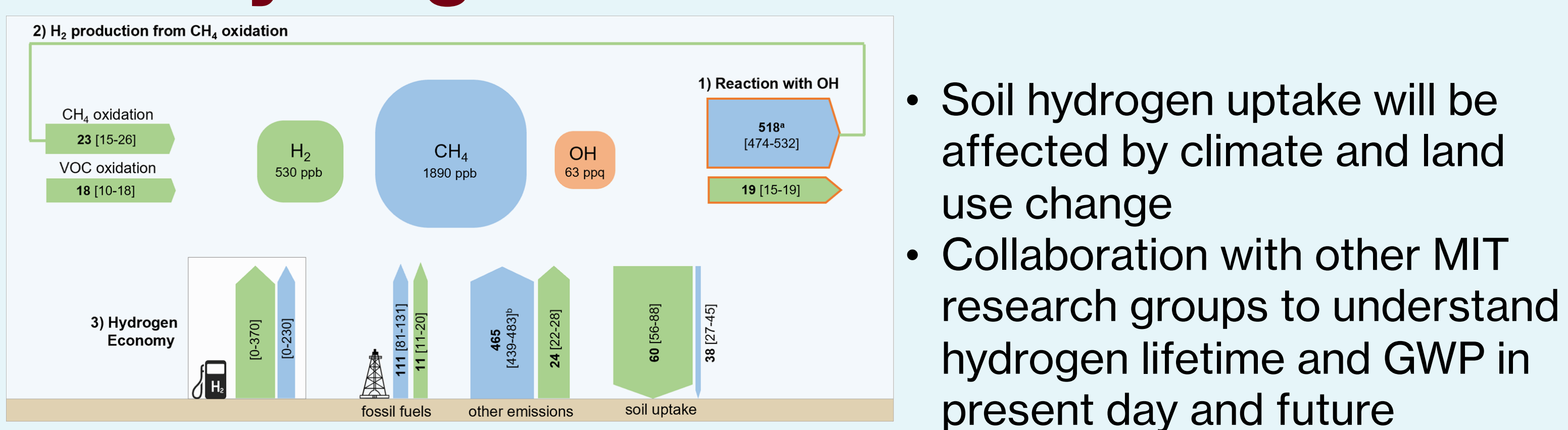


Quantifying CO₂ emission due to methane impact on O₃ change worsens PM_{2.5} through increasing NH₃

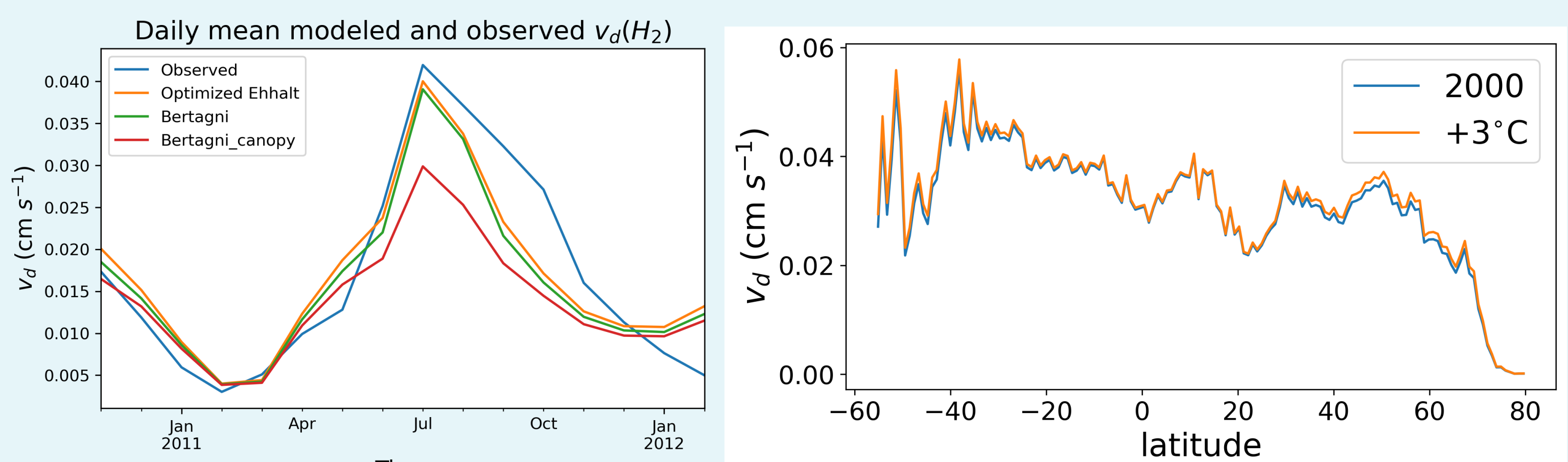
Further application: climate and air quality impacts from specific drivers of land system change (e.g. agriculture, biofuel, nature-based solution)

Ongoing Projects

Soil hydrogen sink in the future



- Soil hydrogen uptake will be affected by climate and land use change
- Collaboration with other MIT research groups to understand hydrogen lifetime and GWP in present day and future



Developing model to simulate soil hydrogen sink

Warming slightly increases soil hydrogen uptake

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