



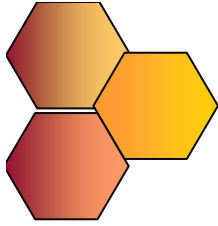
historic OC/BC global emissions

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Overview

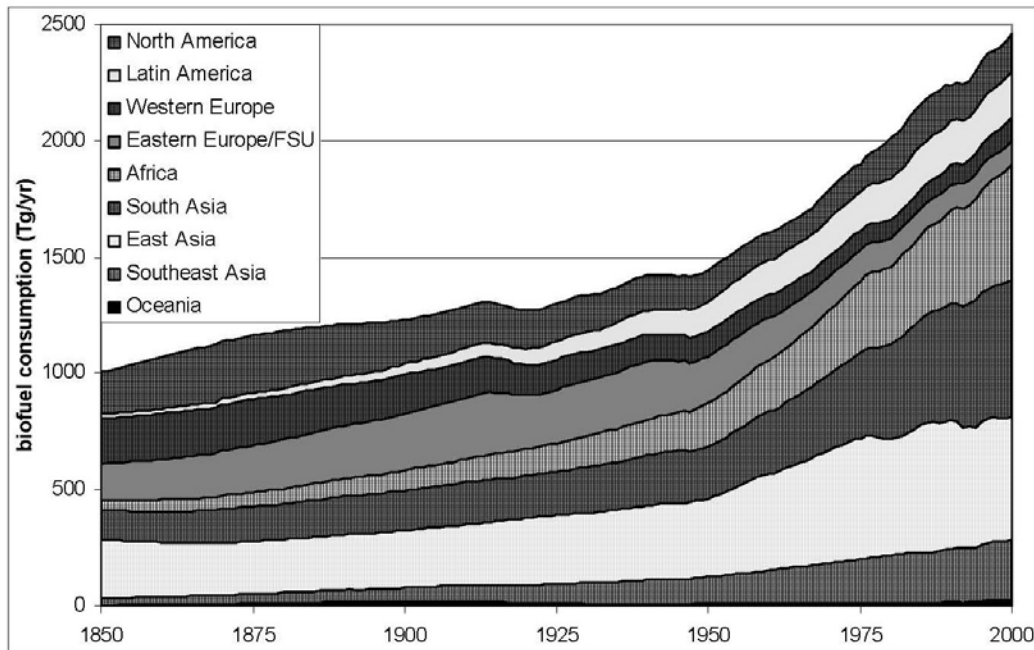
- **Anthropogenic past emissions**
 - BC and OC, 1850-2000, 1x1, decadal
- **Future emission projections**
 - Concepts
- **Future technology choices**
 - Sensitivities



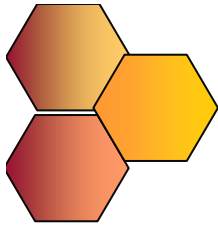
Biofuel reconstruction for past emissions

Goes beyond per-capita scaling, considering...

- *Urban/rural population*
- *Fuel scarcity*
- *Introduction of fossil fuels*



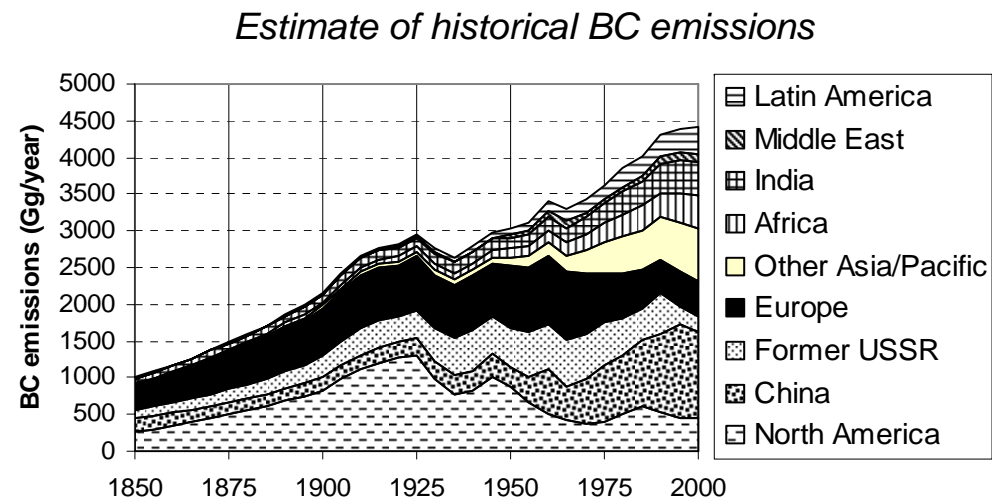
Fernandes et al (2007), Global biofuel use, 1850-2000, *Global Biogeochemical Cycles*, 21, GB2019, doi:10.1029/2006GB002836.



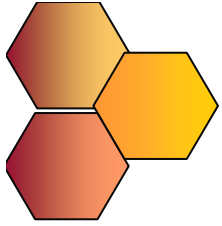
BC/OC emission history

Energy use reconstructed by sector & end-use

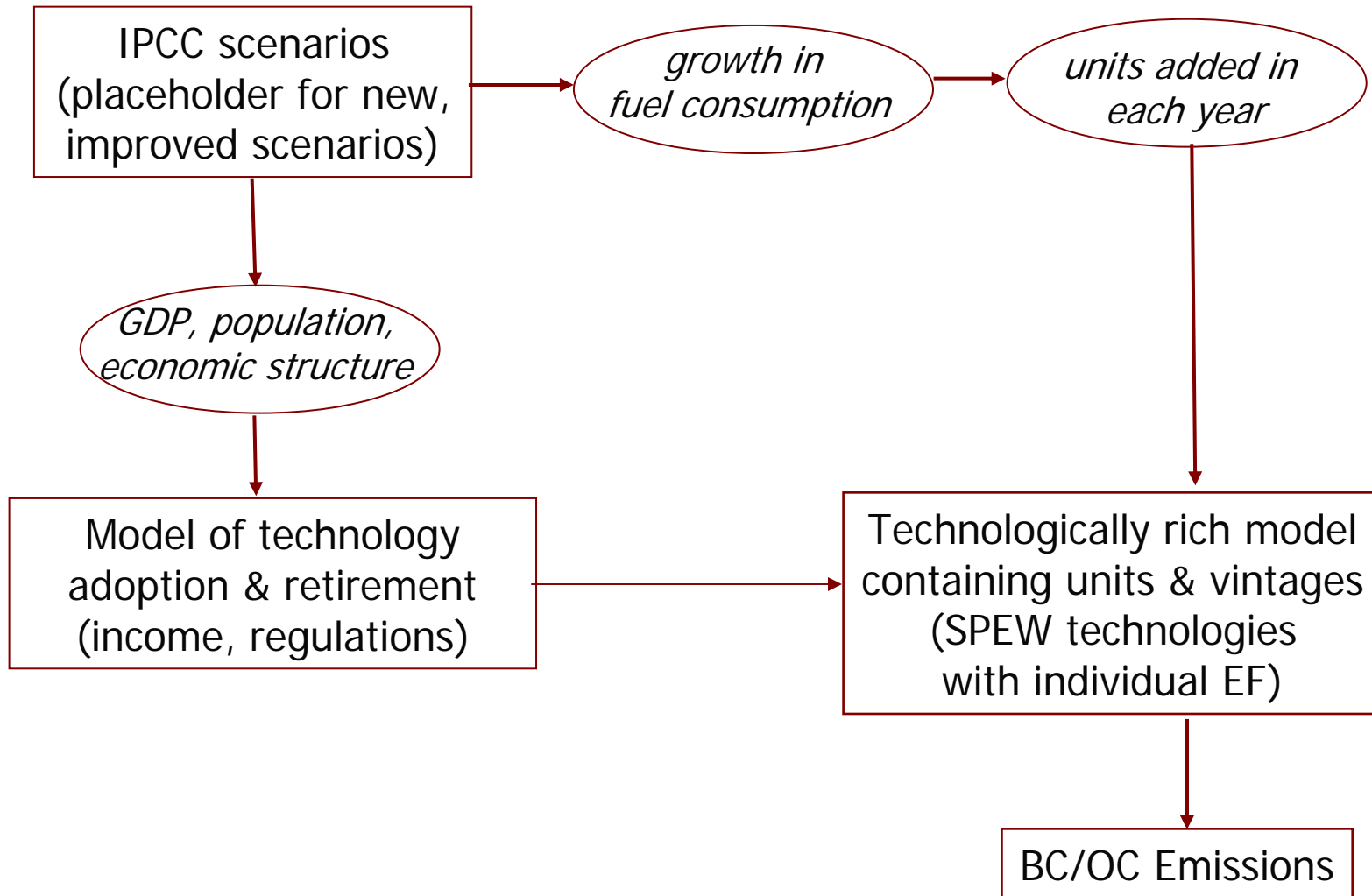
- Sectors: Electricity production, industry, domestic & "other", transportation
- End uses: road, ships, rail, changes in firing & control technology
- Could be used for any emission (not just BC/OC)
- 1x1 grids every 10 years (RIVM population)

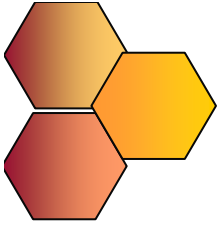


Bond et al (2007), Historical emissions of black and organic carbon aerosol from energy-related combustion, 1850-2000, *Global Biogeochemical Cycles*, 21, GB2018, doi:10.1029/2006GB002840.



Projection modeling underway





Example of sensitivities

Why is technology stock modeling important?

