A Greenhouse Gas Budget for Mexico During 2000–2019

Science Question

- What is the greenhouse gas budget for Mexico over the past two decades (2000-2019)?
- What are the emissions and removals of CO_2, CH_4 and N_2O by natural and anthropogenic sectors?
- Where are main discrepancies and uncertainties in datasets and integration?
- The work is carried out as part of the REgional Carbon Cycle and Processes study (RECCAP2).

Analysis

- Data from the Mexico National Greenhouse Gas Inventory (NGHGI), land-surface models, and atmospheric inversions were combined to estimate greenhouse gas emissions and removals.
- The data included estimates for natural sources (i.e., terrestrial ecosystems and wetlands) and anthropogenic sectors (fossil fuels, agriculture, waste, land-use and land cover change).

Results/Significance

- Mexico is a source of GHG emissions, ranging from 695-910 $TgCO_2$-eq yr^{-1}.
- Seventy percent of emissions are attributed to CO_2, 23% to CH_4 and 5% to N_2O.
- There is good agreement across anthropogenic sectors and less agreement for the land carbon sink.
- NGHGI estimates were much larger removals than other modeled estimates.
- Lateral fluxes and outgassing processes from aquatic systems remain problematic for double counting and for helping reconcile bottom-up and top-down budgets
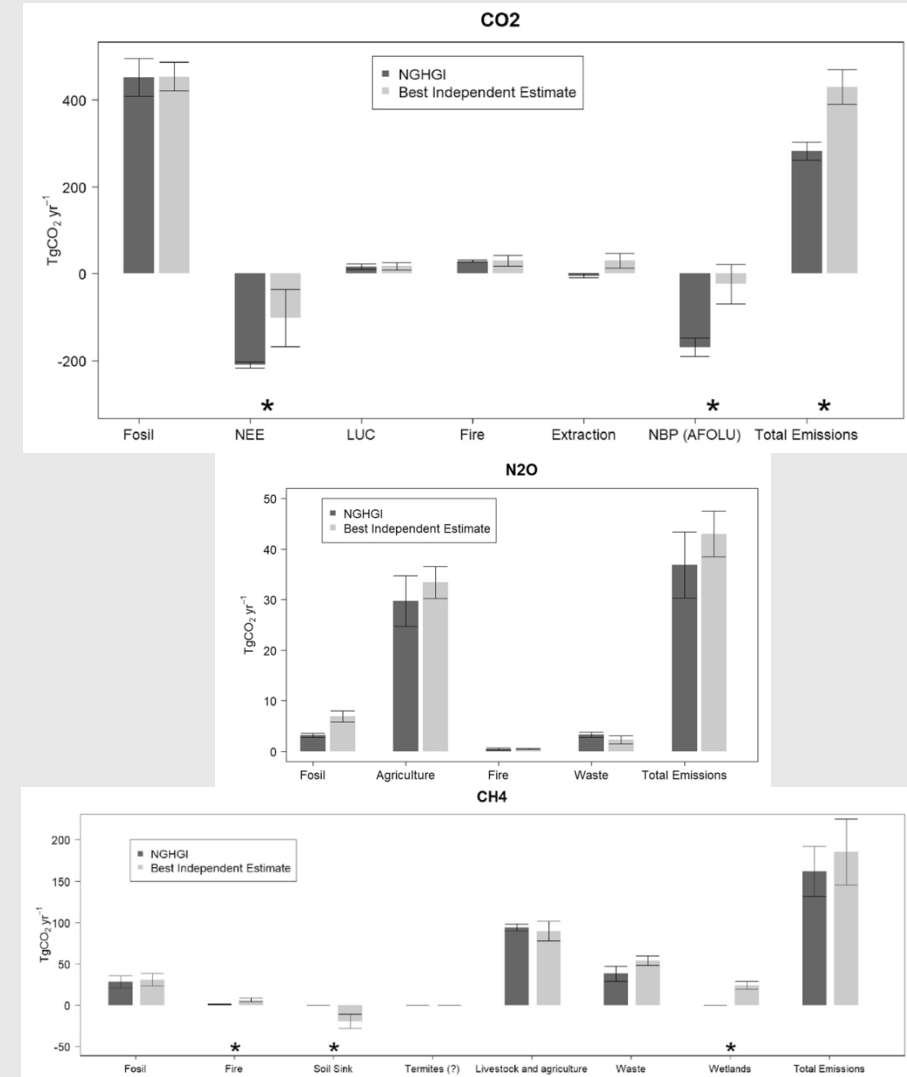
Acknowledgements

Figure 1: Emissions and removals of CO_2 (top), CH_4 (middle) and N_2O (bottom) by natural and anthropogenic sectors.