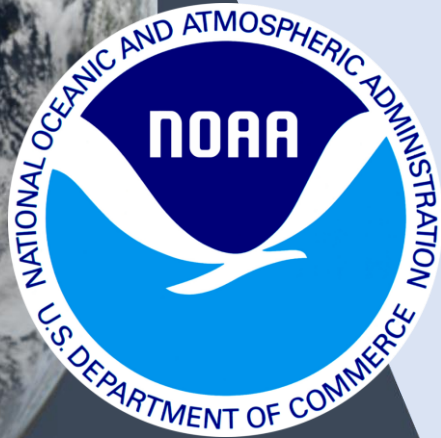


(Disclaimer: The scientific results and conclusions, as well as any views or opinions expressed herein, are those of the author(s) and do not necessarily reflect those of NOAA or the Department of Commerce.)



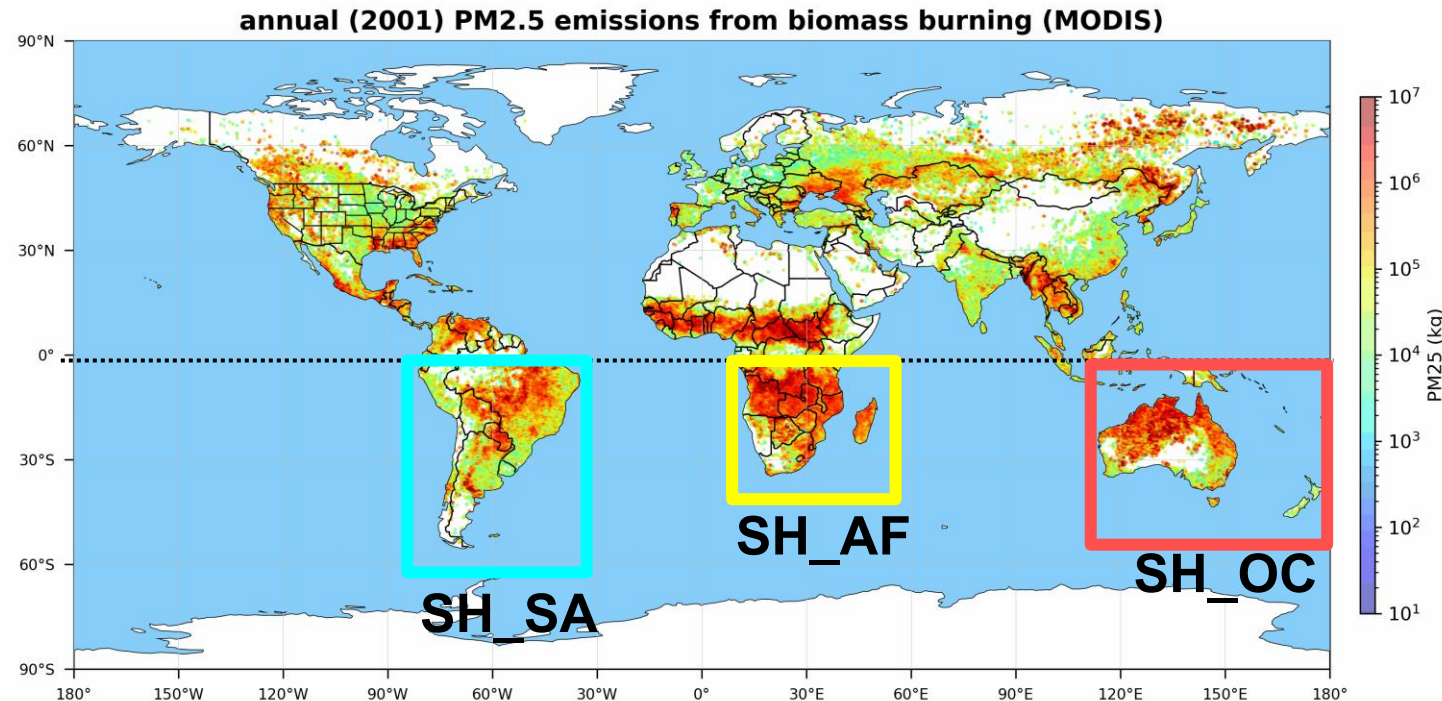
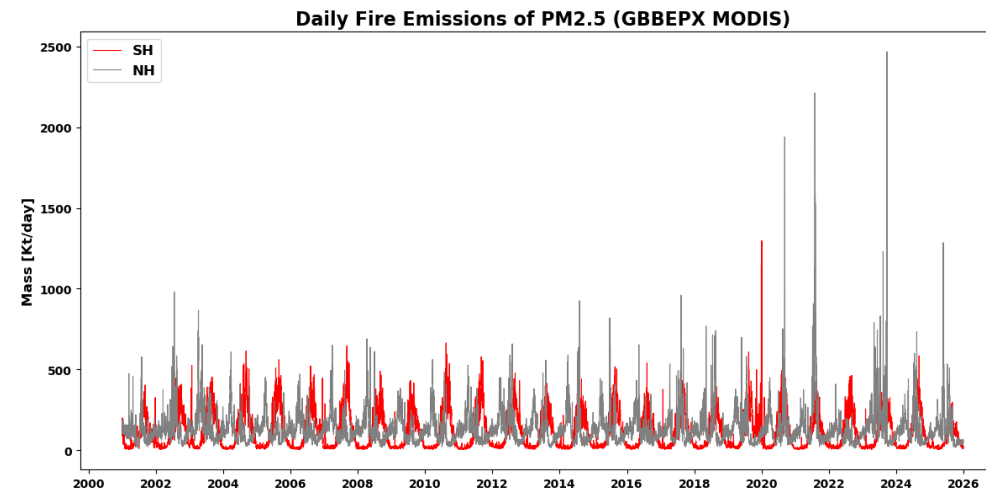
National Environmental Satellite,
Data, and Information Service

CEOS AC-VC#22, 1 June, 2026

Fire Emissions in the SH

Aihua Zhu (aihua.zhu@noaa.gov) (STC for NOAA)
Shobha Kondragunta (NOAA/NESDIS/STAR)

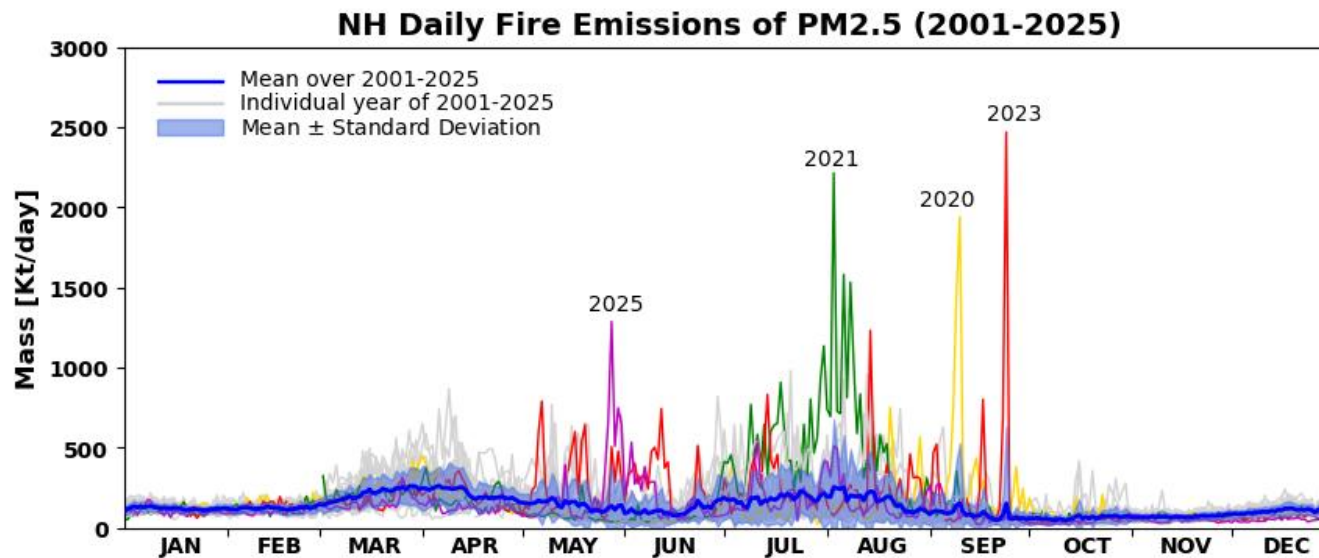
- In this study, we analyzed 25 years of NOAA and NASA satellite-derived fire emissions data record to compare the differences between SH and NH and how pollution from fires compares to pollution from anthropogenic sources.
- Fine particle pollution (PM_{2.5}), Carbon Monoxide, Nitrogen Dioxide are some of the species we analyzed. We focused the analysis on the “unmonitored regions in the SH”.



Hemispheric Disparity in Fire Emissions

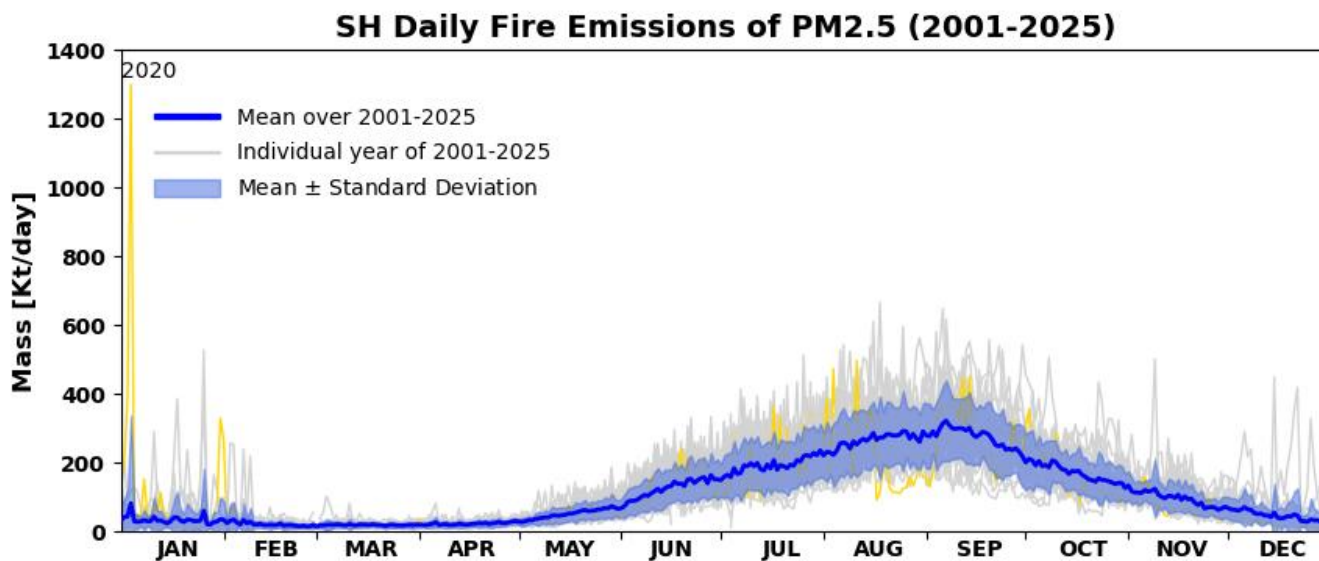
NH:

- Variable
- Bimodal



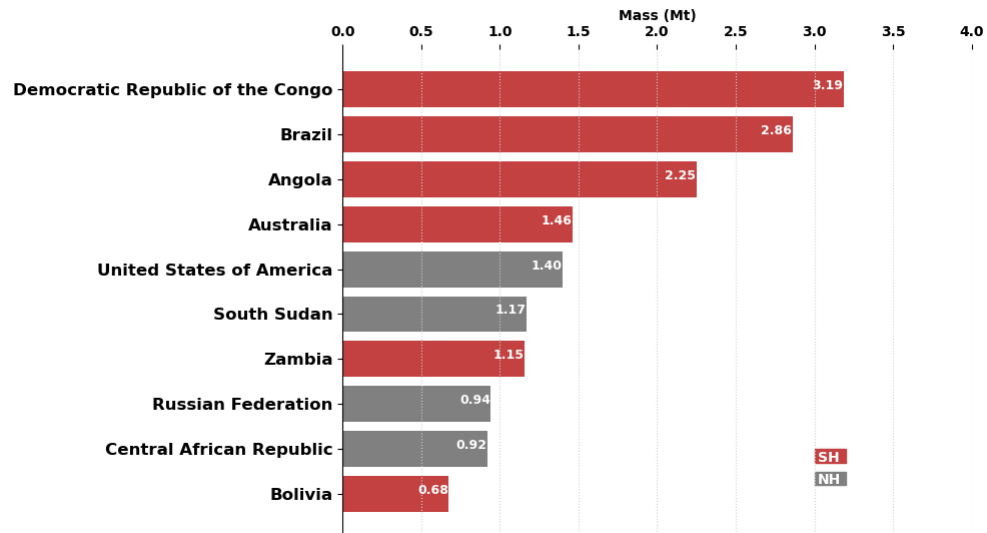
SH:

- Stable
- Unimodal

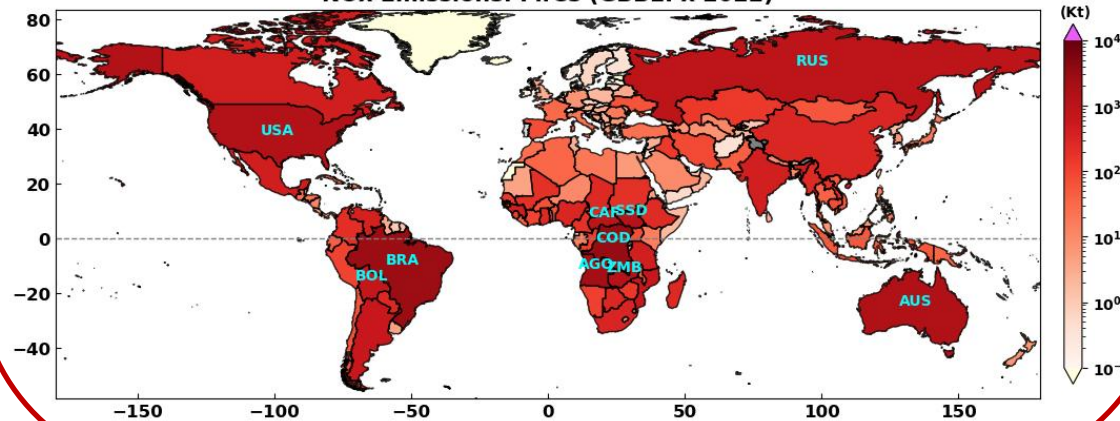


Fire Emissions: SH Dominates

Top 10 Countries for Fire Emissions of NO_x (2022)

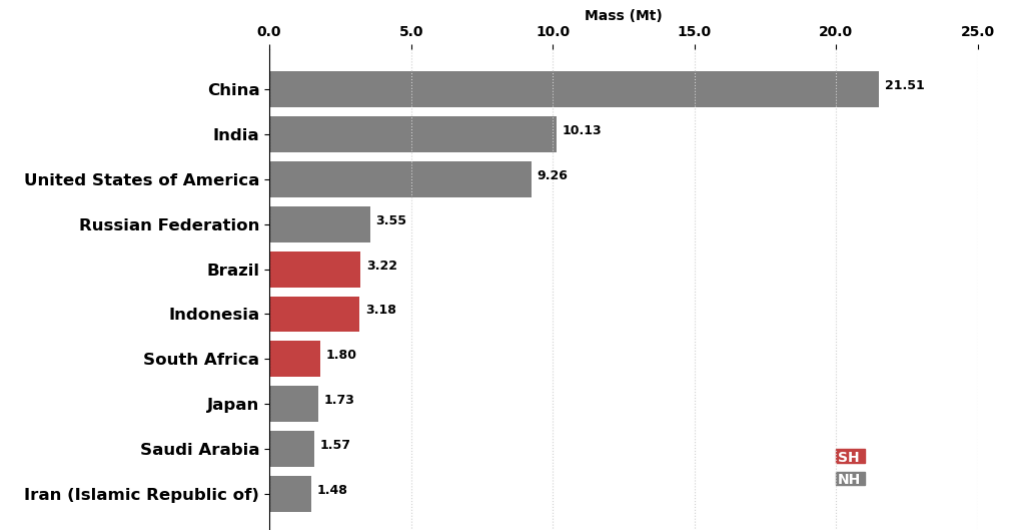


NO_x Emissions: Fires (GBBEPx 2022)

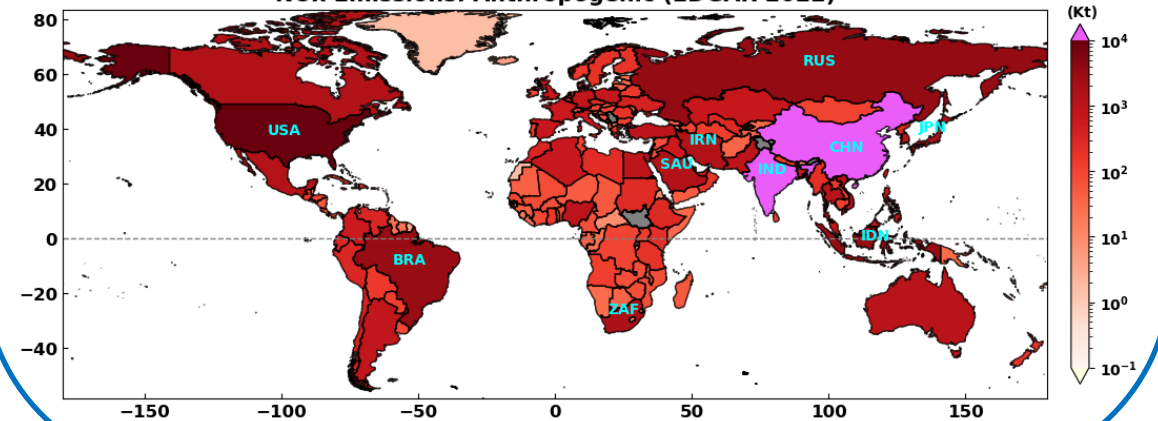


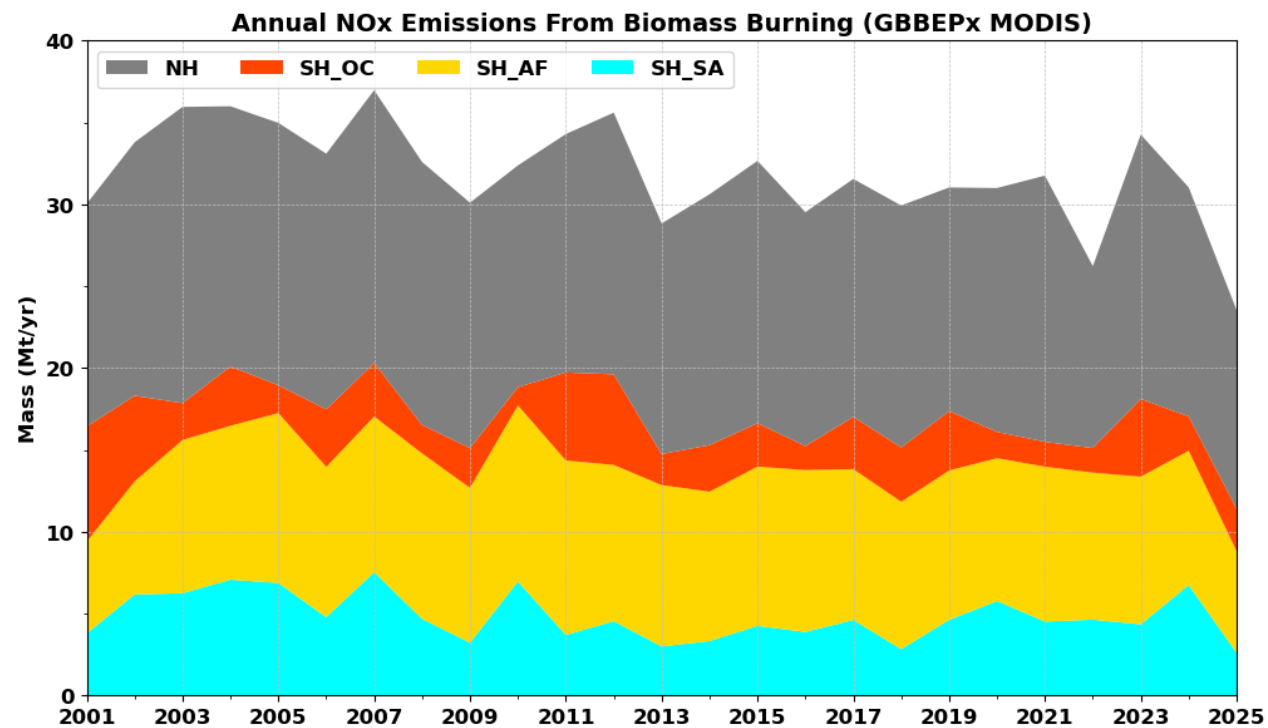
Anthropogenic Emissions: NH Dominates

Top 10 Countries for Anthropogenic Emissions of NO_x (2022)

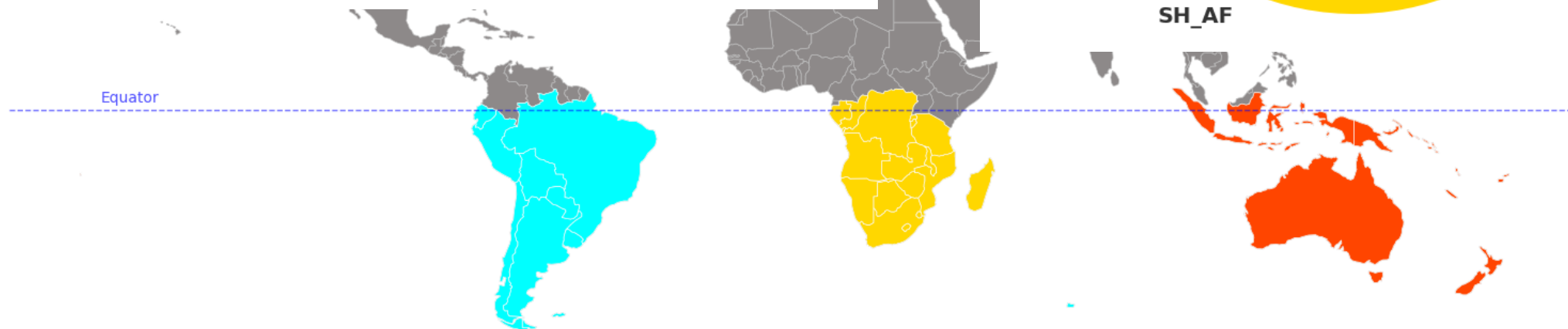
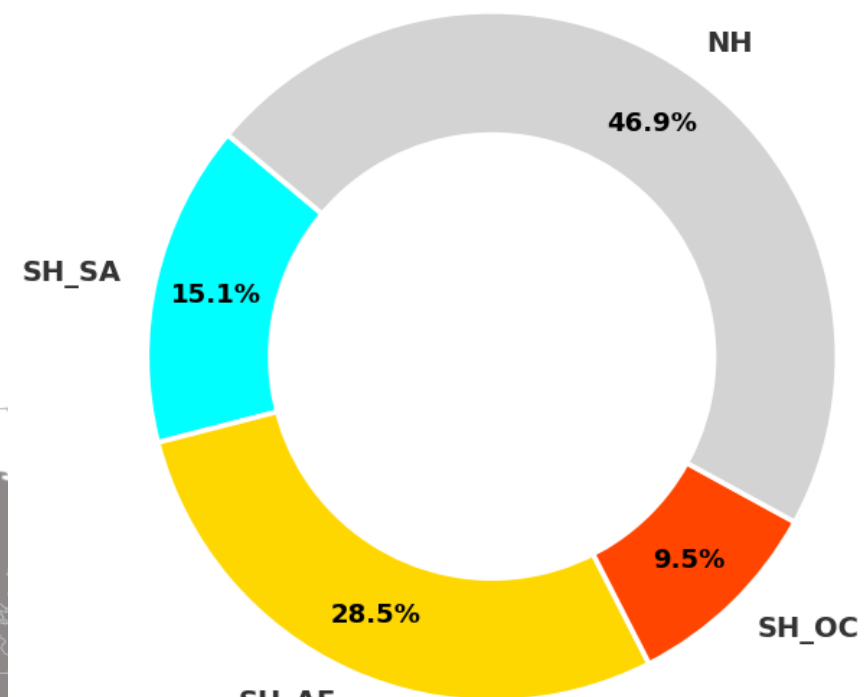


NO_x Emissions: Anthropogenic (EDGAR 2022)



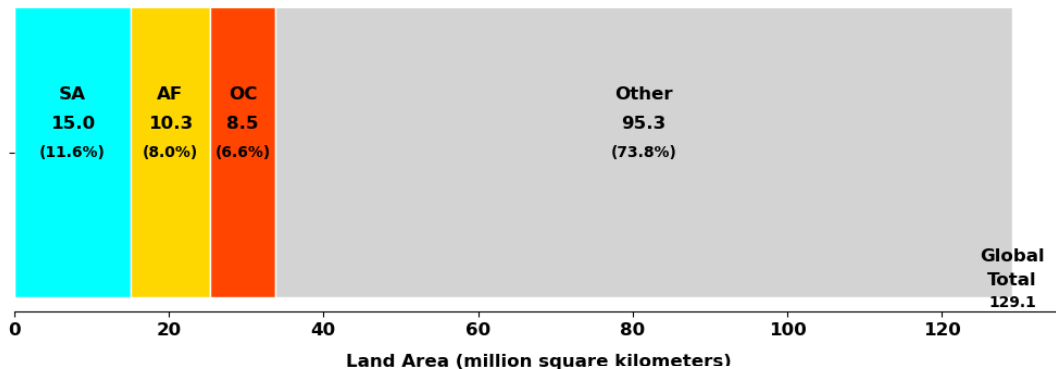


Fire Emissions (NO_x)

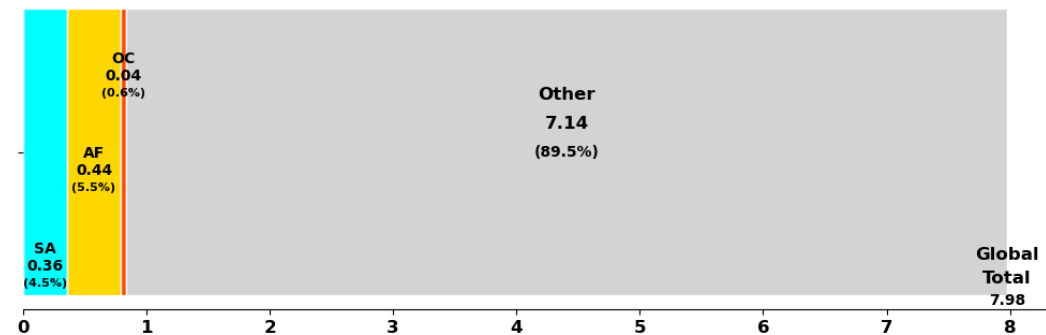


Pollution from Fires is Disproportionately Large in the SH

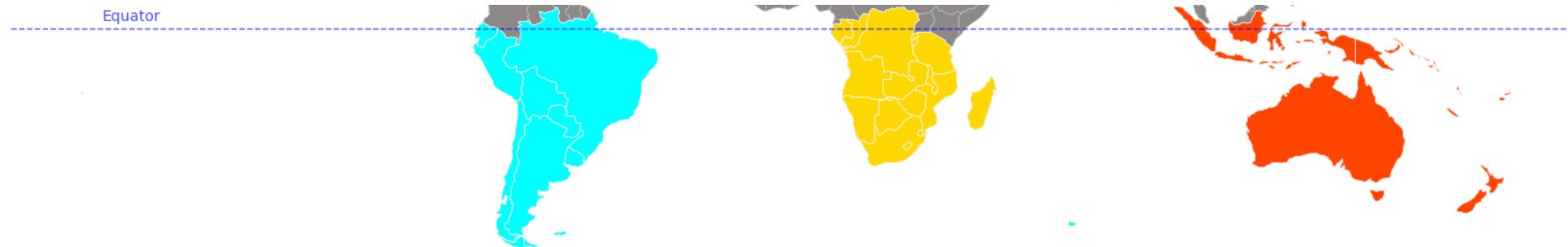
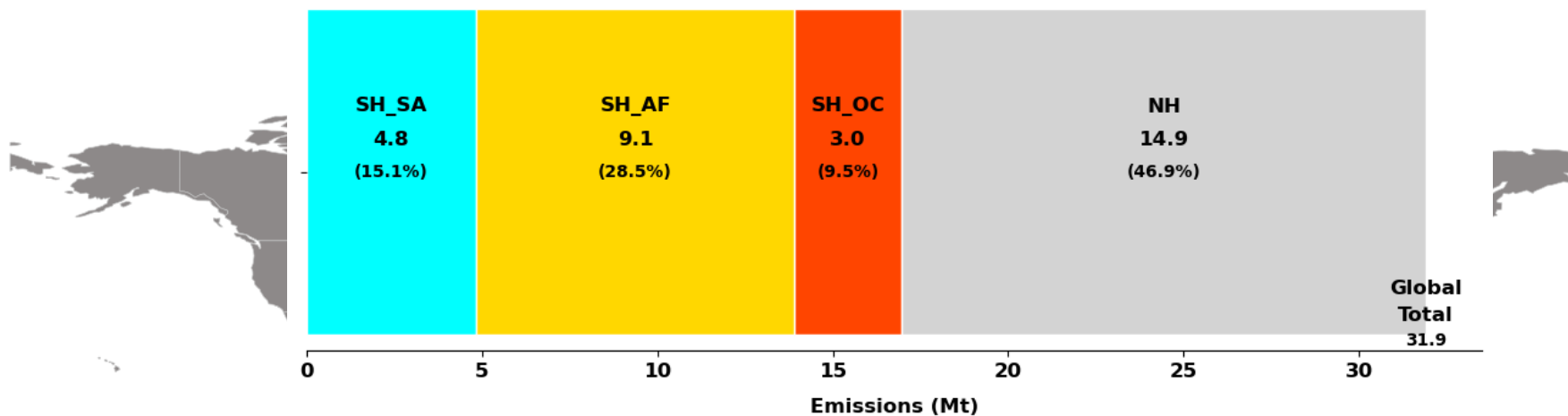
Regional Contribution to Global Land Areas



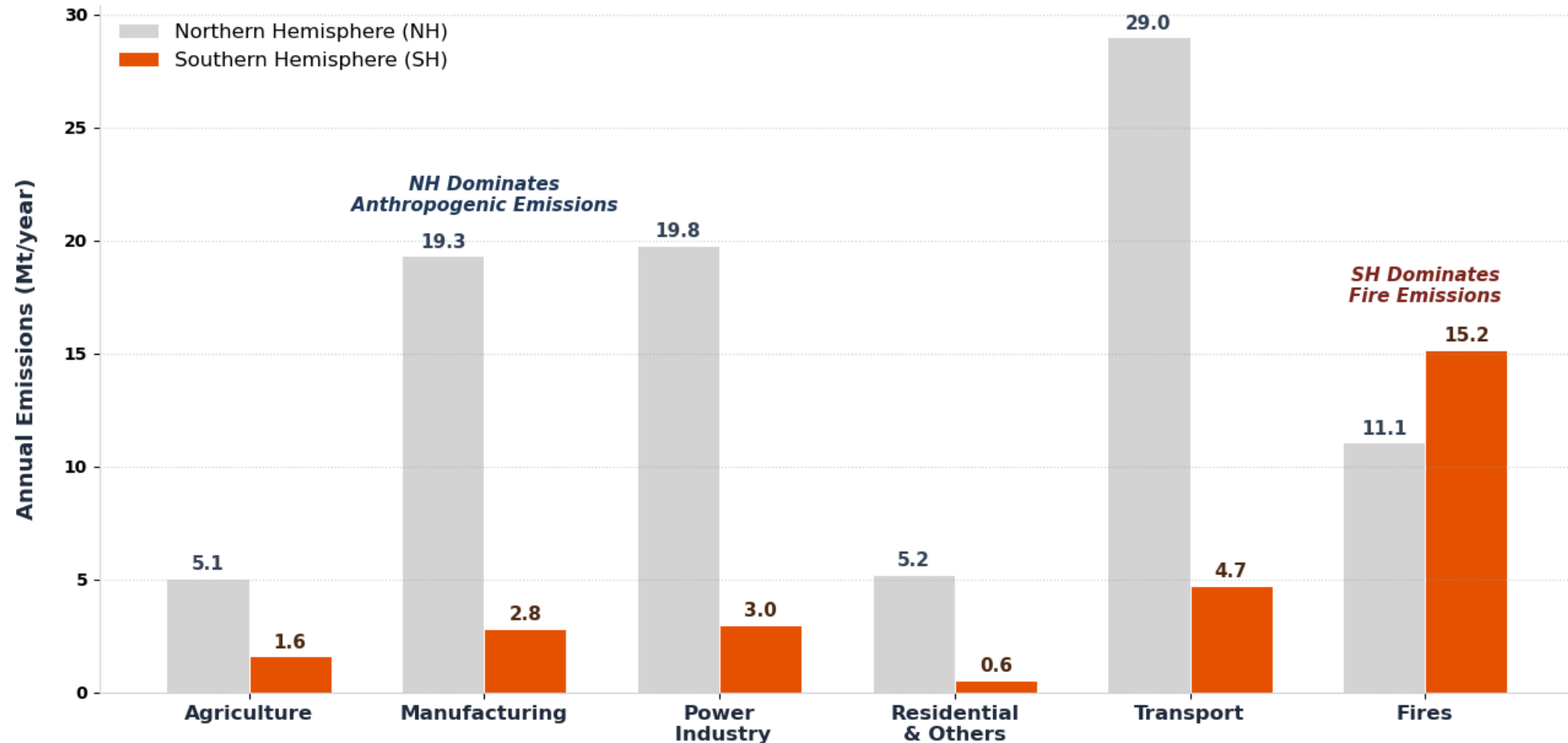
Regional Contribution to Global Populations



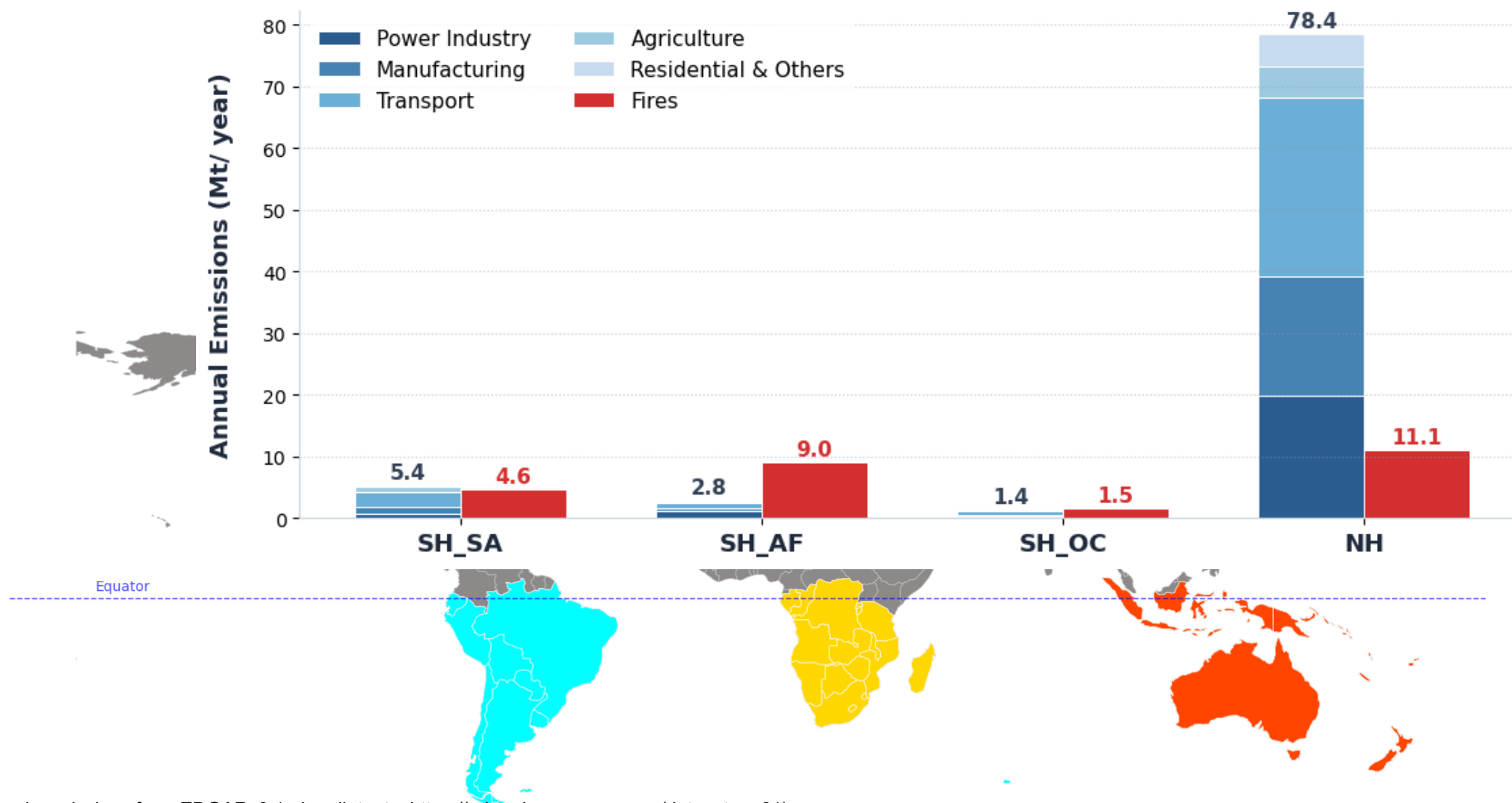
Regional Contribution to Global Fire Emissions of NOx



Hemispheric Sectoral NO_x Emissions (2022): SH vs NH



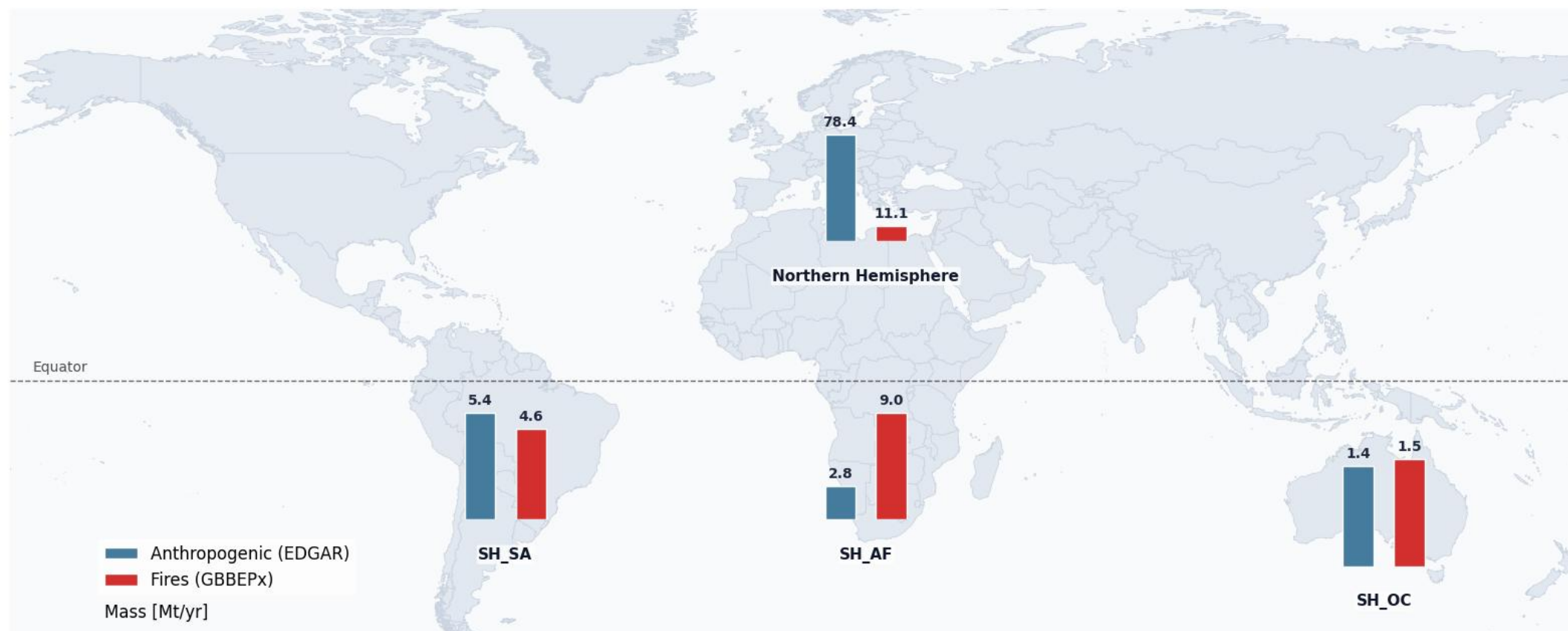
NOx Emissions (2022): Anthropogenic vs. Fires





Hemispheric Disparity: NH drives anthropogenic, SH dominates fires

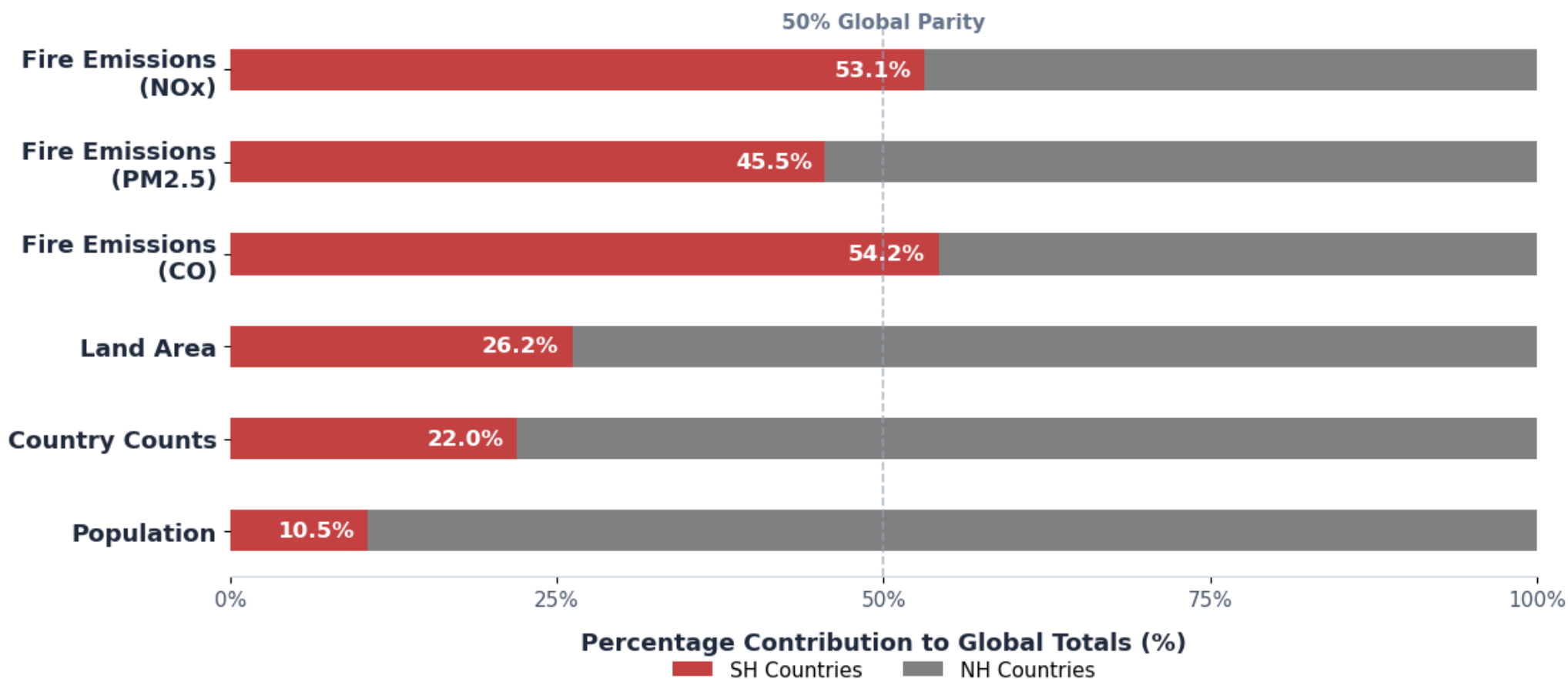
NO_x Emissions (2022): Anthropogenic vs. Fires





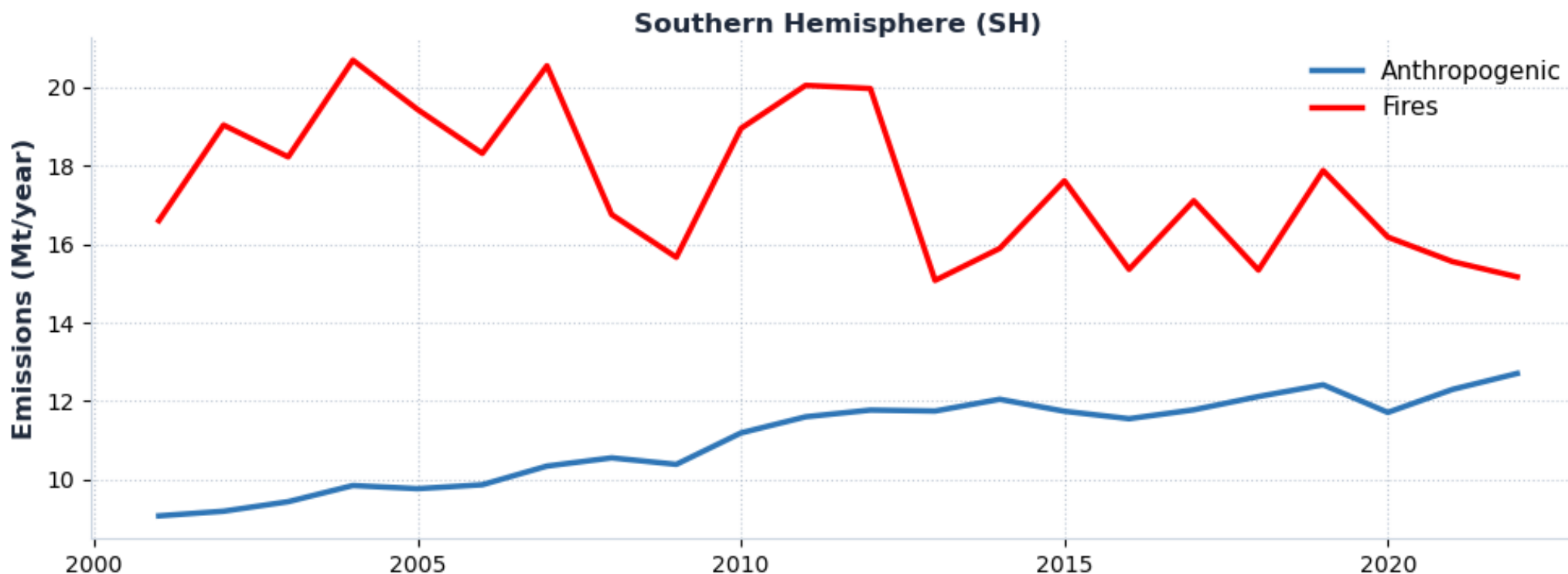
Disproportional Scale: SH has small global footprint, massive fire emissions

Global Structural Footprint of the Southern Hemisphere





Deteriorating Trend: Anthropogenic emissions in SH are increasing





Hemispheric Disparity:

NH drives anthropogenic,
SH dominates fires



Disproportional Scale:

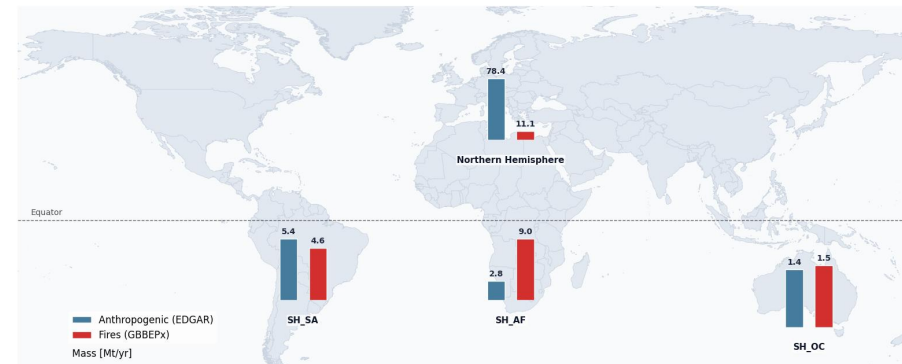
SH has small global footprint,
massive fire emissions



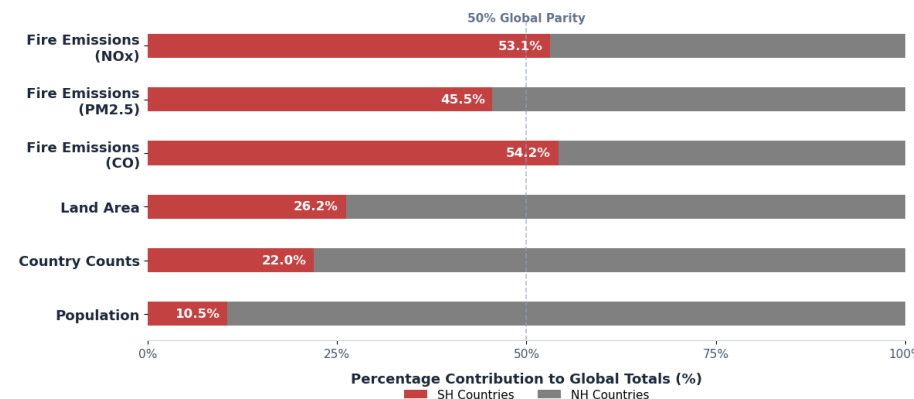
Deteriorating Trend:

Anthropogenic emissions in
SH are increasing

NOx Emissions (2022): Anthropogenic vs. Fires



Global Structural Footprint of the Southern Hemisphere



Southern Hemisphere (SH)

