

Burning of Traditional Biofuels and the Global Methane Budget

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Introduction

- Purpose: provide an updated set of data for global methane emissions from traditional biofuel use between the years 2001-2015 in order to improve understanding of the methane budget.**
- Understanding biomass burning is important for understanding atmospheric carbon budgets.
- Two types of biomass burning: wildfires and traditional biofuel use



- Burning traditional biofuels produces methane, among other gases.
- Methane is a powerful greenhouse gas that contributes to human caused climate change.

Methods

- Methane emissions were calculated using the equation to the right.
- E- methane emissions [Tg]
- CE-unique to each material; depends on smoldering or flaming
- AF- final energy consumption for each material, country, and year [kg] (from UN Data Portal)
- EF- unique to each material and specific to methane [g/kg]
- The pictures below show the sources considered in equation.

$$E = CE \times AF \times EF$$

Methane Emissions [Tg]

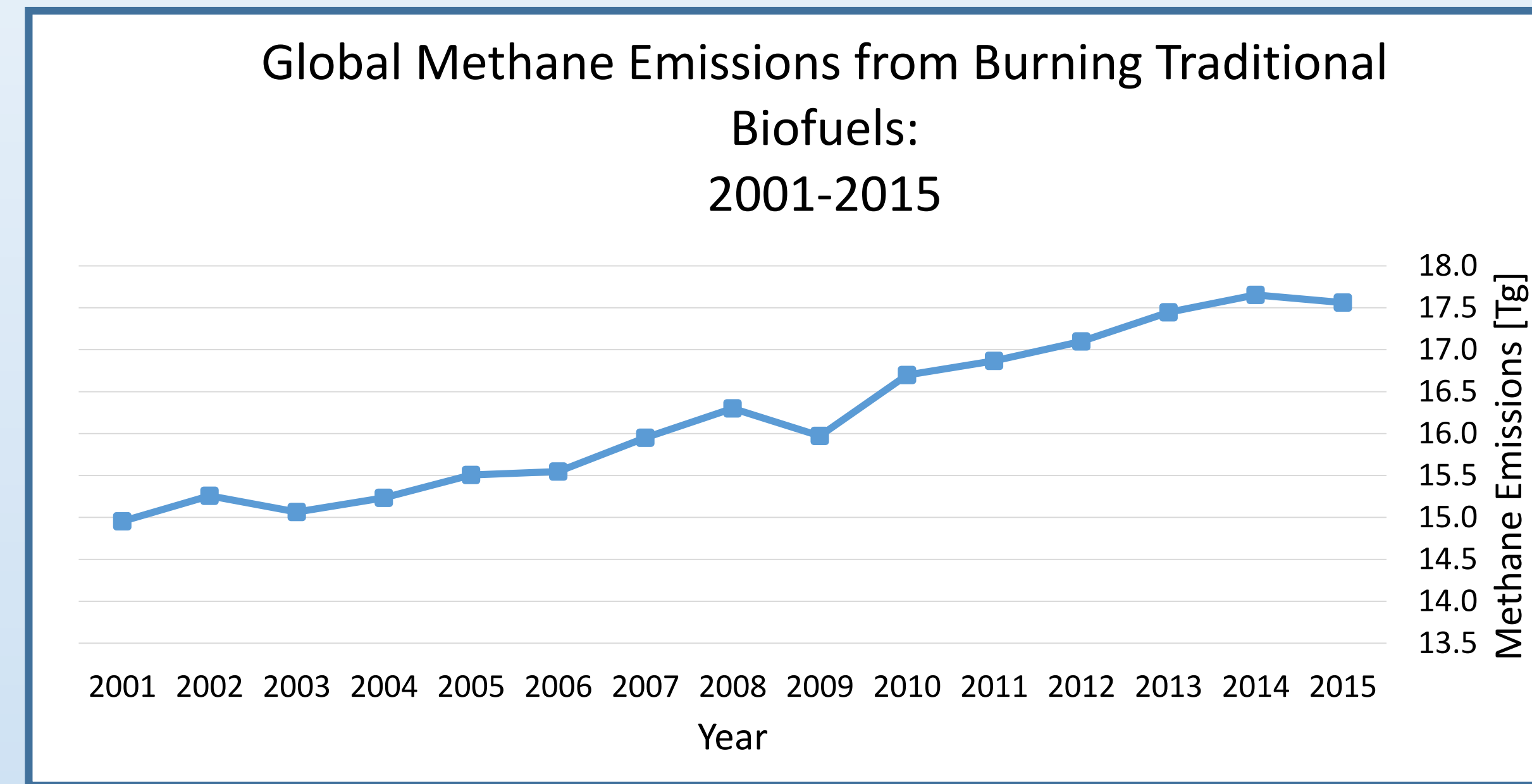
Conversion Efficiency

Activity Factor

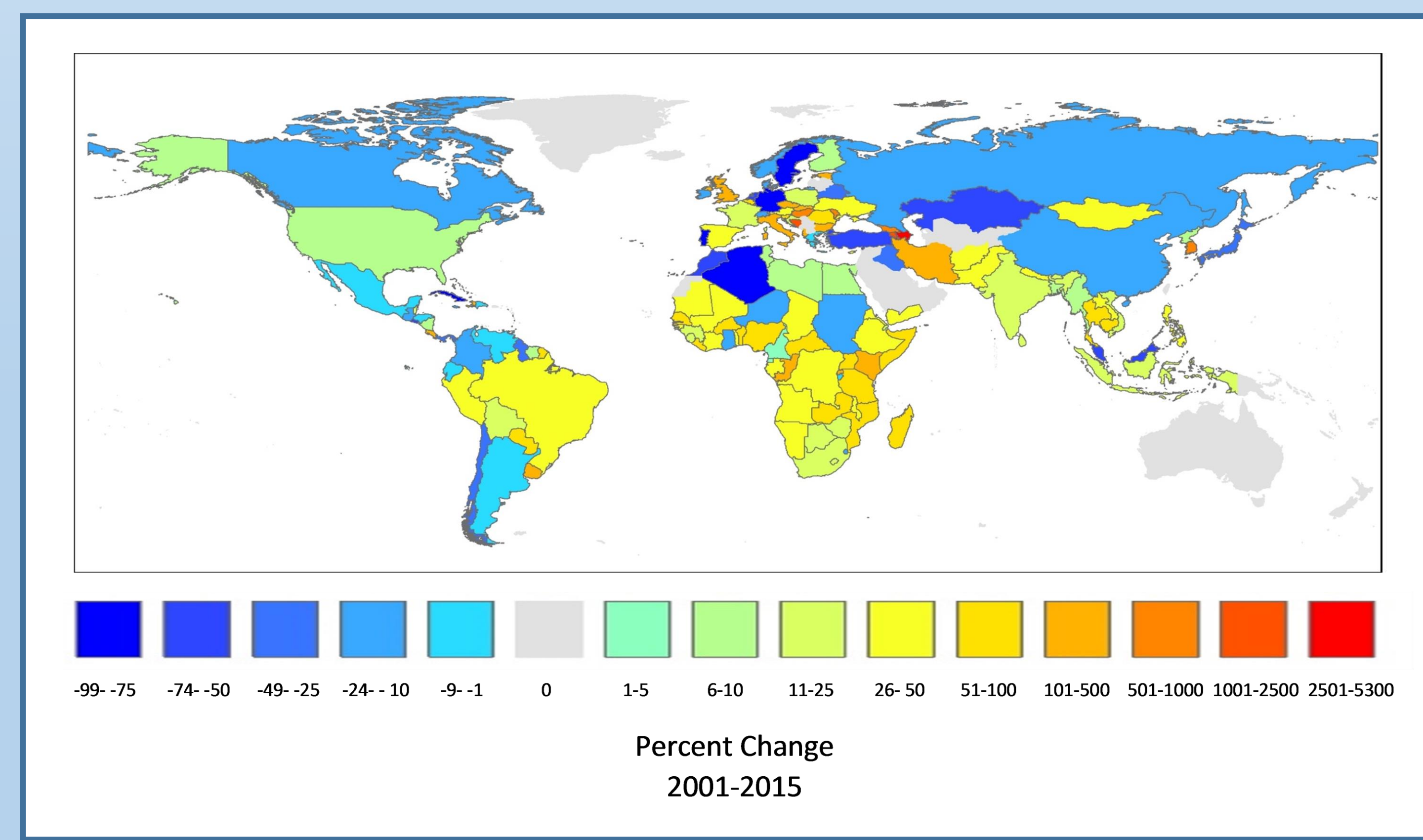
Emission Factor for Methane



Results



Upper limit estimate of global methane emissions from the burning of traditional biofuels. This upper estimate has limitations such as missing data and changing the reporting process. These estimates are the best upper estimates possible with the given data.



The above graph shows the percent change in methane emissions from the burning of traditional biofuels from 2001-2015.

Conclusions

- From 2001-2015, there was a 17.5% increase in global methane emissions from the burning of traditional biofuels.
- Charcoal Consumption and Charcoal Production were the greatest contributors to this change.
 - Charcoal Consumption = 61% increase
 - Charcoal Production = 58% increase
- With a global total of 17.5 Tg by 2015, it is evident that methane emissions from the burning of traditional biofuels are not negligible.
- This information is critical when assessing methane emissions from microbial sources and fossil fuels.

Next Steps

- Is there a correlation between population increase and the increase in methane emissions from the burning of traditional biofuels?
- Is there any connection to this data and the changing GDP of developing nations?
- How do these results compare to other emissions datasets?
- What does this information reveal when assessing relative contributions to global methane emissions from fossil fuel production?

References

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Overall percent change of methane emissions from the burning of traditional biofuels from 2001-2015: 17.5% global increase