

# Pantropical CO<sub>2</sub> emissions and removals for the FOLU sector in the period 1990-2018

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Alliance



## Introduction

- Previous studies find discrepancies of between 4 and 6.7 GtCO<sub>2</sub> in the Forestry and Other Land Use (FOLU) fluxes between global model estimates and national greenhouse gas inventories (NGHIs)<sup>1,2,3</sup>.
- NGHIs differ from FAOSTAT, with most of the differences stemming the forest sink in non-annex 1 countries<sup>4</sup>.
- Understanding the sources of the differences in the data sources is crucial for global reporting.

## Methodology

We compared FOLU emission estimates from the booking models (i.e., BLUE<sup>6</sup>, Houghton & Nassikas<sup>7</sup>, OSCAR<sup>8</sup>), FAOSTAT<sup>9</sup> and NGHIs<sup>10</sup>. FOLU fluxes were also disaggregated into deforestation, forestland, and other land use activities. Considering three time slices (1990-1999, 2000-2010, 2011-2018), the emissions were summed up for three sub-regions within the tropical region (Latin America, sub-Saharan Africa and southeast Asia).

## Results

Good agreement on the trend of global and tropical deforestation emissions between the models, FAOSTAT, and NGHIs. Model emissions were generally larger than NGHIs. The forestland sink in NGHIs is larger than in the models with smaller differences in the sink for the tropical regions (Fig. 1).

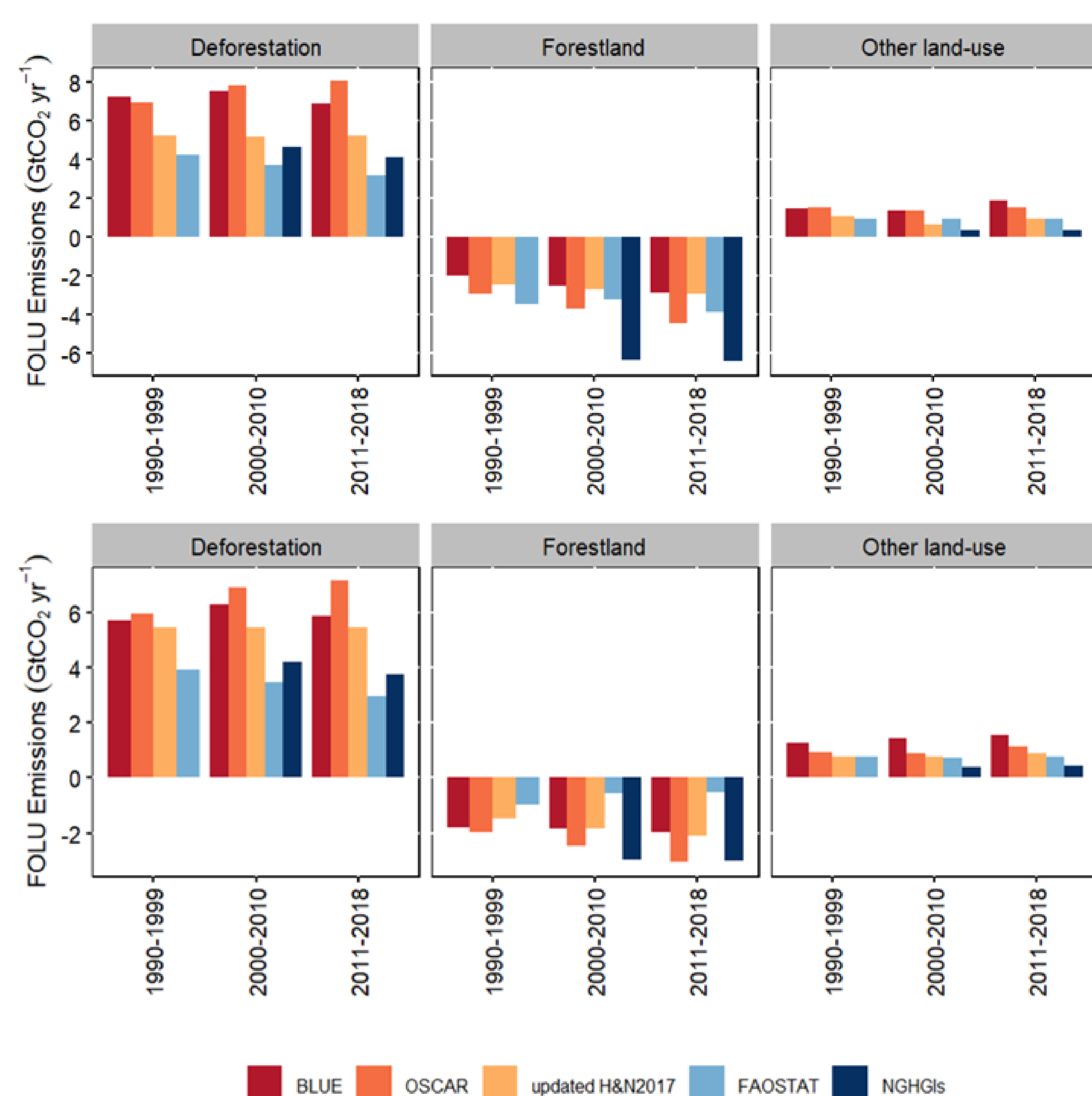


Fig. 1: Disaggregated total global (top) and tropics (bottom) deforestation, forestland and other land-use fluxes.

## References

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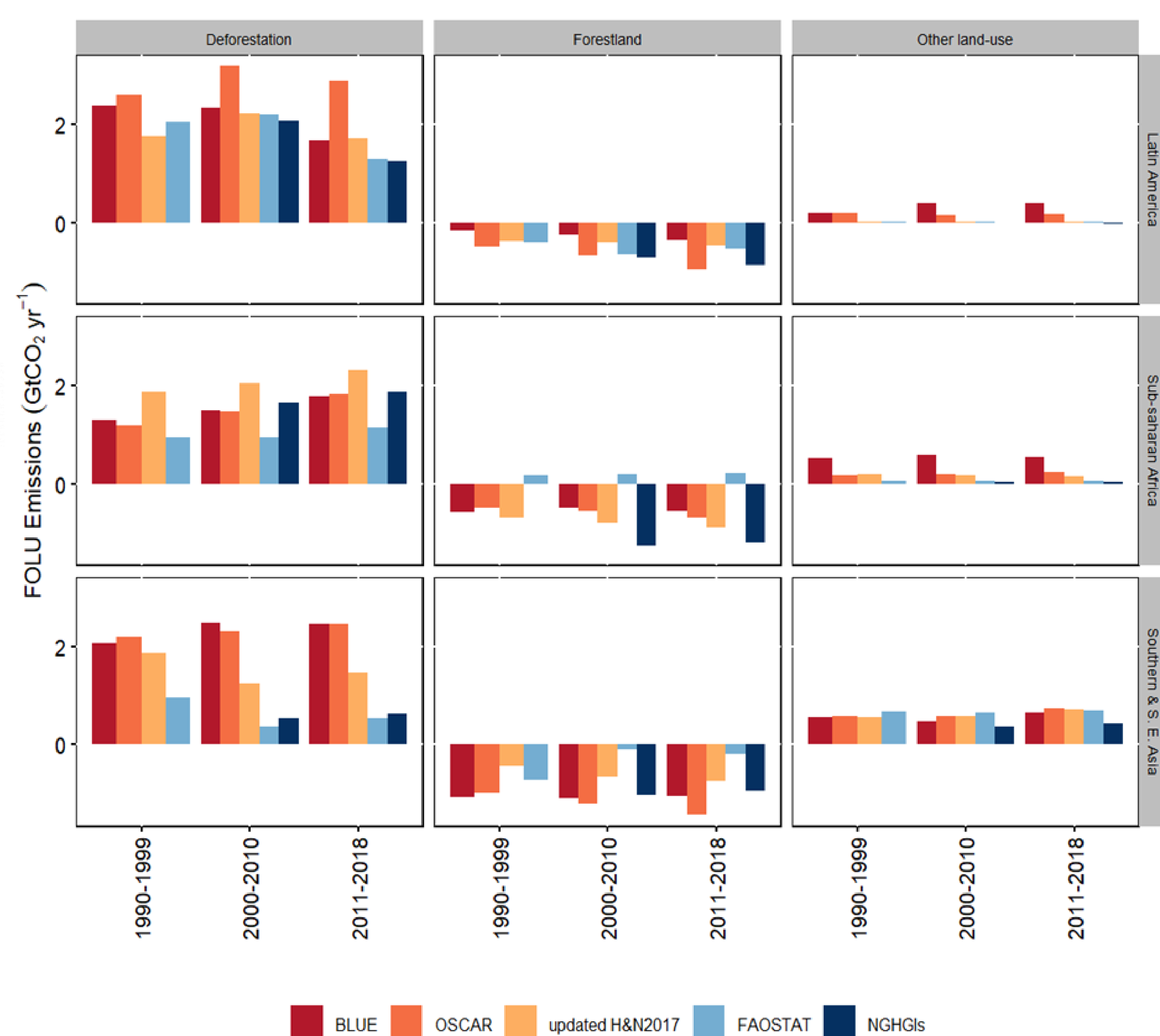


Fig. 2: Disaggregated deforestation, forestland sink and other land-use fluxes for three tropical regions

Good agreement on deforestation emissions in the three bookkeeping models, FAOSTAT, and NGHIs in Latin America and sub-Saharan Africa (Fig. 2). However, there is a larger discrepancy between the models and NGHIs in south east Asia. The larger source of discrepancy in the forestland sink for the tropics is mainly from sub-Saharan Africa.

## Conclusion

- NGHIs provide a good benchmark for global model estimates.
- The disaggregated regional FOLU emissions provide a good approach for identifying fluxes with large uncertainty.
- Incomplete accounting of all FOLU emissions (e.g., peatland and fire) still remains a major problem.