

# Informing IPCC accounting of forest carbon using the global forest carbon database (ForC v4.0)

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## 1 Introduction

*(Importance of forests for climate change mitigation)*

20     *(Need for good data in international carbon accounting)*

*(Introduce EFDb & forc)*

Example citation (Anderson-Teixeira et al., 2018)

Here, we: (1) clarify C cycle terminology (2) describe mapping of ForC to IPCC’s EFDB, (3) describe updates to ForC (ForC v4.0) (4) summarize the data in ForC that’s relevant to EFDB, identifying gaps (5) provide recommendations for improving

25     data collection, analysis, database, and accounting

## 2 Defining carbon stocks and incremenets

For quantifying forest role in global C cycle, we ultimately care about: (1) C stocks –stores of C that would be released to the atmosphere upon and use change (2) C increments – changes in those C stocks.

### 2.1 Carbon stocks

30     Forest ecosystem C stocks may be parsed into pools in various ways. IPCC parses into biomass (aboveground and below-ground), dead organic matter (dead wood and litter), and soil organic matter (Table 1). Quantifying these requires a one-time measurement.

pool	pool	definition	major sources of estimate variation	IPCC guidance
biomass	aboveground	all biomass of living vegetation, both woody and herbaceous, above the soil	allometry, min dbh	acceptable to exclude understory
	belowground	all biomass of live roots	allometry, min dbh, assumed ratio of belowground to aboveground biomass (IPCC table 4.4)	fine roots may be excluded when they cannot be distinguished empirically from soil organic matter or litter
dead organic matter	dead wood	all non-living woody biomass not contained in the litter, either standing, lying on the ground, or in the soil	min dbh, ...	default min dbh = 10cm, but may be chosen by country
	litter	all non-living biomass with a size greater than the limit for soil organic matter and less than the minimum diameter chosen for dead wood, lying dead, in various states of decomposition above or within the mineral or organic soil	min dbh for dead wood , ..	
soils	soil organic matter	organic carbon in mineral soils to a specified depth	sampling depth	default sampling depth = 30cm, but may be chosen by country

**Figure 1.** Table 1

**Table 1.** This is a start at table 1 using the template format.

pool	subpool	definition	major sources of estimate variation	
biomass	aboveground	all biomass of living vegetation, both woody and herbaceous, above the soil	allometry, min dbh	accept

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**Table 1: variables with definitions and measurement methods.** Definitions from IPCC Table 1.1. (See Table 1.1 in IPCC guidance). *(Currently adding this as a figure (generated from original draft) because kableExtra doesn't seem to work in this template, and I can't quickly get the template format to work. Table that we want here is "figures\_tables/C\_pools.csv")*

## 2.2 Carbon increments

C increments are defined as the change over time, in annual increments, in each C pool. These may be estimated as the difference between C stocks at two time points, or as the difference between inputs and outputs to the pool (i.e., fluxes). Quantifying these requires at least two measurements.

40 Fluxes are the inputs and outputs to each pool.

**Figure: schematic illustrating fluxes in and out of each pool**

## 3 Conclusions

The conclusion goes here. You can modify the section name with `\conclusions[modified heading if necessary]`.

*Code and data availability.* use this to add a statement when having data sets and software code available

45 *Sample availability.* use this section when having geoscientific samples available

*Video supplement.* use this section when having video supplements available

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*Author contributions.* Daniel wrote the package. Josiah thought about poterry. Markus filled in for a second author.

*Competing interests.* The authors declare no competing interests.

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## References

Anderson-Teixeira, K. J., Wang, M. M. H., McGarvey, J. C., Herrmann, V., Tepley, A. J., Bond-Lamberty, B., and LeBauer, D. S.: ForC : A Global Database of Forest Carbon Stocks and Fluxes, *Ecology*, 99, 1507–1507, <https://doi.org/10.1002/ecy.2229>, 2018.