Earth Syst. Sci. Data Discuss.,
https://doi.org/10.5194/essd-2020-148-AC3, 2021

Earth System Science Data Discussions

Interactive comment on "The global forest above-ground biomass pool for 2010 estimated from high-resolution satellite observations" *by* Maurizio Santoro et al.

Maurizio Santoro et al.

santoro@gamma-rs.ch

Received and published: 13 January 2021

Global biomass maps, such as the GlobBiomass dataset, try to address the demand for better knowledge of the distribution of biomass pools. By benchmarking the GlobBiomass dataset against the FAO FRA statistics, we have identified regions where the map improves current estimates that are based on only a few measurements and default reference values. By cross-comparing existing data products with an extensive database of plot inventory measurements (even if opportunistic), we provided indications of where knowledge about the biomass distribution on Earth is most uncertain. This is a substantial advance embodied in our dataset and provides potential users

with a guide to the reliability of the biomass spatial patterns reproduced by currently available global datasets.

This paper also notes that the GlobBiomass dataset has deficiencies that were identified by comparing against in situ observations. For regions where such data were available, we were able to relate errors to sub-optimal remote sensing data to estimate biomass, simplified models, assumptions and generalizations, etc. In most cases, errors did not arise from a single cause, as shown by the regional scatterplots comparing estimated and reference AGB (Figure 3). For this reason, we refrained from providing global error statistics (e.g., root mean square error). However, the in situ dataset is opportunistic and we may have missed regions with considerable errors, so a comprehensive standardized global ground dataset would be extremely valuable in providing a more complete assessment.

From these observations, it is clear that the provision of advice to potential users on how to use current global biomass maps has multiple facets. It is clear that stronger interaction between map producers and users would is needed (a) to better understand user requirements and criteria that must be met for them to find the products useful, and (b) to provide guidelines to users on which aspects of the data set can be treated as reliable and which contain pitfalls (see e.g., the replies to SC1, SC6 and SC7).

Beyond addressing the needs of the users, maps such as the GlobBiomass dataset set the stage for future mapping endeavours, which will use more robust retrieval methods and, more importantly, rely on a wider range of observations from space capturing different aspects of "biomass". As a result of this comment, we have added a note in the Conclusions of the manuscript.

Interactive comment on Earth Syst. Sci. Data Discuss., https://doi.org/10.5194/essd-2020-148, 2020.