

Interactive comment on “Mapping hydrological environments in central Amazonia: ground validation and surface model based on SRTM DEM data corrected for deforestation” by G. M. Moulatlet et al.

Anonymous Referee #1

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It is an interesting concept, the opposite of what I would have expected. Typically, the desire is to remove the canopy height from the SRTM DEM to obtain the ground height. Here, the authors are attempting to add back the canopy height to areas that are deforested. While this edited DEM is no longer reflecting the reality that the forest has been removed, it may provide a more uniform DEM for hydrologic analysis, and therefore in some ways makes sense to me, assuming that all areas that have low vegetation stature have been "reforested". This may be a more accurate approach than trying to remove the canopy height from the non-deforested areas.

However - there is still a limitation: SRTM is still measuring the canopy height. Some variations in the uncorrected SRTM DEM may very well be due to variations in canopy height rather than variations in ground topography, which is the relevant DEM when considering extraction of drainage networks.

Another limitation, and it is large, is that only a subset of the DEM was apparently corrected (only deforestation along BR-319?). It seems to me that all areas should be corrected (even natural savannas), or the data set will not have much value. One way to solve this problem is to only provide the data where the authors believe that the DEM is consistent with surrounding canopy heights and to eliminate those areas (zero them out?) where the authors are not confident of the consistency of of the dataset (ie - always canopy height). There are many places in this DEM where I see that the topography is varying due to the presence or absence of forest.

Another problem is that the river levels will appear in this edited DEM to be lower than actual relative to the edited elevation (by the canopy height). Perhaps river areas should also have the canopy height added to their values. I am not sure if it important that this DEM was acquired in February 2000 at a particular river level, and how that may impact the analysis of drainage networks.

As the authors mention, uneven regrowth of forest can make this correction tricky as well. it is not clear to me from the text how that was addressed.

If I were to use this data set, I would want to know more about how this reforestation to the DEM was implemented, so that I would better understand its limitations. The abstract describes this only generally. Is there a publication planned as to how this was implemented? Without a more complete description, I would be hesitant to use the data. However, I think the concept may be useful for a limited set of uses. I suggest that the authors expand their abstract with more details and examples of the effectiveness of this technique, or include in the abstract a link to a paper or technical report that describes the methodology and results in more detail.

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Please also include in the abstract typical range of height corrections that were made. One other matter is that the 1 arcsecond SRTM has now been released for all of South America. The increase in resolution may be quite valuable for some uses. With a pixel spacing of 3 arcseconds, this data set is now somewhat obsolete.

Interactive comment on Earth Syst. Sci. Data Discuss., 7, 441, 2014.

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