Atmospheric Measurement Techniques Discussions

Atmos. Meas. Tech. Discuss., referee comment RC1
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Comment on amt-2022-143

Hartwig Deneke (Referee)

Referee comment on "The Education and Research 3D Radiative Transfer Toolbox (EaR^{3}T) – towards the mitigation of 3D bias in airborne and spaceborne passive imagery cloud retrievals" by Hong Chen et al., Atmos. Meas. Tech. Discuss., https://doi.org/10.5194/amt-2022-143-RC1, 2022

The article describes a Python project for 3D radiative transer, the EAR3T toolbox. While somewhat technical in scope , the article is generally well written, likely of interest to a wider scientific audience, and falls within the scope of AMT. There are however a few aspects which could be improved., which I list below Hence, I recommend publication of the article after minor revisions.

* For reproducability, I strongly recommend to obtain a DOI for the described version of the code in the github repository, e.g. via zenodo, see https://docs.github.com/en/repositories/archiving-a-github-repository/referencing-and-citing-content . While the article mentions “in the current version”, no clear information on versioning of the code is given, this needs to be rectified, in particular, the article needs to clarify which version of the code is referred to
.
* Usage of APP for application: why not App? Its used as an abbreviation, not as an acronym.

* As mentioned in the text , APP5 is not described, but it is included in Fig.1. I propose to also remove it from Fig.1. The description “four of which are described in this paper” at least for me raises the question why, maybe motivate this choice somewhat?

* Summary and Outlook: I do find the outlook somewhat too short / lacking a clear vision about future development of the code. The following sentence also raises some questions: “EaR3T will continue to be an educational tool driven by graduate students.” I did not find anything indicating which parts of the code so far have been actually written by graduate students (who of the authors is at that stage?), given that several co-authors are rather senior. I also would assume that it takes someone with significant experience to maintain such a project in the long term. Please ellaborate at least to some detail on these points.

Please also note the following minor language comments:
* L264: “MODIS is currently flying on …” I doubt this will change anytime soon, rephrase sentence?
* L265: “They are ...”: Please clarify “They”, I guess it refers to MODIS.