The authors would like to thank Bastian Kern for providing comments on this manuscript. Our responses are in blue, just below the referee comments.

The manuscript describes version 2 of the CFMIP Observational Simulator Package (COSP). Especially enhancements in the software structure to disentangle the diag-nostic modules, the coupling interface and the host model.

The manuscript is well written and easy to follow. The developments of the software to enhance modularisation is appreciated and should facilitate integration of the diagnostics in numerical models, as well as the integration of novel diagnostic modules in COSP itself. As a technical paper, describing developments of a novel version of the COSP, it fits in the scope of the journal and should be published, subject to few minor comments.

Focusing on the novel interface is a good choice and keeps the manuscript at reasonable length. I assume measurements of computational demands vary over a wide range, depending on the complexity of the simulator package, and thus would not be very beneficial. Details of COSP and on the simulator modules can be found in a previous paper on version 1, this may be stressed a bit more (yes, I know it is cited on p.2 I.14).

We added a sentence into the text guiding readers to the COSP1 paper for more information on the diagnostics available in COSP1/COSP2.

There are several acronyms of satellite platforms and sensors (especially p.2 ll.4ff.). All the references are given and the acronyms are well known (at least in parts of the community), but maybe you could include the acronyms "decryption" (in-line, table, or list of acronyms?).

Very good point. In the text (see p.2. l.5-14) we added the acronym definitions for the various instruments.

Specific comments

I have only one specific comment, the second part is more a suggestion on how to support developers integrating the COSP in their numerical models (and is a bit beyond the publication of the paper).

On p.4 l.10ff:

It seems clear to me, that for a coarse resolution general circulation model, one has to sample some kind of subcolumns, to reach a horizontal resolution compatible with the simulator modules. What, if using a high resolution model (1km or smaller)? Can columns be passed directly and "column-scale" properties have to be aggregated to a resolution suitable for the simulators (ISCCP)? Of course, you write, "it is the host model's responsibility to generate subcolumns and map physical to optical properties consistent with model formulation". So, it should be the responsibility of the developer integrating the interface in a numerical model to provide the proper input fields, but maybe you could add some hints on that.

Just as in previous versions, when using a high-resolution model, model-columns can (and should) be passed directly to into COSP. This was something we did not stress in the text,

but should have, as it's in the COSP1 paper. We added a few sentences (see p.4 l.31) in the text explaining this.

It may be beneficial to have more details on the interface routines and the in- and output fields, which have to be used in the host model. If you do not want to bore the reader with too technical description, maybe you could think about a user's manual in the repository or as a supplement to the paper.

That leads me to an additional comment, which is not crucial for publication of the pa-per: I also retrieved the code from github and managed to compile it and run the provided test routines. This was more or less straightforward (it took me some time, because I had to compile CMOR2 first).

However, there are some minor inconsistencies in the README(.txt) files (some changed filenames, cosp_interface_v1p5.f90 mentioned in README not available).

We've updated all of the README files throughout COSP.

It is very good, that you include examples and testing routines in the repository. With the README files and the code examples, I think, I might be able to include the interface in a numerical model. For me it is fine to have the documentation in the README files and in the code. But maybe it would be more convenient to have an overview of the interface routines and details of in- and output fields in one place. So, you may think about a small user's manual as pdf in the repository or as supplement to the paper (there seems to be one for COSP 1.3.1) also including more technical details on the interface routines. It might ease the integration of COSP in numerical models.

Technical corrections

p.1, l.20:

Please include the acronym CMIP here, as it is used later in the text.

Corrected in text.

p.2, l.16:

Please update the reference Webb et al., 2016 to Webb et al., 2017 (see also below) p.6, l.19: Corrected in text.

Please include the section: Code availability

Added new section to text. Previously the code was described in the summary section and not in its own section.

p.7, l.18:

Please change Geosci. Model Dev. Disc. to Geosci. Model Dev.

Corrected in text.

p.8, II.20ff.:

The final revised version of this article is published:

Webb, M. J., Andrews, T., Bodas-Salcedo, A., Bony, S., Bretherton, C. S., Chadwick, R., Chepfer, H., Douville, H., Good, P., Kay, J. E., Klein, S. A., Marchand, R., Medeiros, B., Siebesma, A. P., Skinner, C. B., Stevens, B., Tselioudis, G., Tsushima, Y., and Watanabe, M.: The Cloud Feedback Model Intercomparison Project (CFMIP) contribution to CMIP6, Geosci. Model Dev., 10, 359-384, doi:10.5194/gmd-10-359-2017, 2017. Corrected in text.