Response to comments by anonymous reviewer #3 on: The Community Cloud retrieval for CLimate (CC4CL). Part II: The optimal estimation approach

Greg McGarragh and coauthors

February 16, 2018, 16:35

1. **RC:** Please add a short description on how the cloud phase (water or ice) is determined.

   AR: We stress that this paper was written to be independent of the cloud phase determination, which is described in detail in Part I. It is mentioned in section 2 that a cloud phase classification is a required input and that it is used to determine the appropriate cloud model. The reader is also referred to Part I for details on the cloud phase determination.

   AC: Nothing was changed.

2. **RC:** In the abstract, please, combine the statements from lines 8-9 and 11-14 to avoid the repetition.

   AR: In the abstract lines 8–9 and lines 11–14 describe results from two different analyses. Lines 8–9 describe results from the forward model validation. Lines 11–14 describe results from an evaluation of retrieval performance.

   AC: We left these lines unchanged.

3. **RC:** P2, line 1: Please, add "characteristics of the instrument".

   AR: We believe that "types of measurements used" covers instrument characteristics.

   AC: We left these lines unchanged.

4. **RC:** P19, line 31: Please, introduce the Stokes vector elements.

   AR: Is the reviewer referring to P9, line 31 (not P19)? If so, we feel that since this is a scalar forward model and since intensity I is introduced a few lines down, to save space we will leave introducing the whole Stokes vector out.

   AC: Nothing was changed.

5. **RC:** P11, line 15: "=" is missing.

   AC: This has been fixed.

6. **RC:** P12, line 21: Which type of interpolation is used?

   AC: We added "linearly".

7. **RC:** Figures 3 and 4: I suggest to use the opposite color scale (red for positive and blue for negative numbers).

   AR: If this was done it of course would have to be done in the retrieval simulation figures as well but the coauthors have discussed this and there was no consensus.

   AC: Nothing was changed.

8. **RC:** Please, specify (R) and (L) in figure caption.

   AC: We clarified the description of $\Delta(R)$ and $\Delta(L)$ in captions of figures 3 and 4.