



EGUsphere, referee comment RC2
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Comment on egusphere-2022-736

Anonymous Referee #2

Referee comment on "Evaluation of the spectral misalignment on the Earth Clouds, Aerosols and Radiation Explorer/multi-spectral imager cloud product" by Minrui Wang et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-736-RC2>, 2022

General Comments:

The manuscript is well written and structured. Basic information about the mission, instruments and retrieval algorithms is provided, such that also readers not familiar with the mission or instrument can follow. For details about the retrieval algorithms, sufficient references are given to allow the interested reader to get the necessary background information where needed. The methodology and approach for data analysis is well explained and the results are presented in a clear and concise manner. Limitations and areas for further development are also stated clearly. The research topic addressed is relevant to the remote sensing community focused on cloud retrieval. I recommend the publication of this manuscript after some minor corrections as suggested in the specific comments and technical corrections below.

Specific Comments:

Line 100:

"sunny" does not necessarily imply clear-sky. Therefore, I propose to replace the term "sunny" with the term "cloud-free" or "clear-sky".

Line 137, Table 2:

I assume the "393" in column D refers to the 393 km altitude of the mission orbit? I suggest to add this information in the Table caption or better to add it in Table 1 of the general mission characteristics.

Line 196, 198, equations (5) and (6):

Add an explanation what S_0 , n and g are

Line 209, equation (13):

The unit for FSW is missing. Please add.

Line 336, Figure 15:

There seem to be regions in the error distribution plots (b) and (c) at positions around $x=20-100$ and $y=850-900$ as well as $x=350$ and $y=450$ where no error is found but clouds are present according to panel (a). Does this mean that these regions are not shallow warm clouds or does that mean that the error is off the scale? A short explanation would be appreciated.

Line 363-365:

The structure of this sentence is confusing. Please try to reformulate. Also, the statement that $\Delta\tau$ on pix_BND1_min and pix_BND1_max are generally larger than on pix_BND3_min and pix_BND3_max seems contradictory to Tables 3 and 4. From there I read that the error $\text{pix_BND1_min} > \text{pix_BND3_min}$ but $\text{pix_BND1_max} < \text{pix_BND3_max}$ and vice versa for re. Please clarify.

Line 384:

What does "extreme" error mean here? Please clarify or quantify.

Line 388-389:

I would suggest to add here that this statement is only true for the water surfaces that were analyzed in this study. As indicated later on, the effect for scenes over land are not quantified yet and therefore the statement that an onboard correction is generally not necessary would probably require an analysis of the land cases too.

Line 390-397:

It is very good that the authors have pointed out that the impact of the smile effect for scenes over land might be much more difficult to quantify and will require more work. It should therefore be made clear in the abstract that the basic conclusion, i.e. that the impact of the smile effect is negligible, is true for water surfaces but needs to be investigated further for land surfaces.

Technical corrections:

Line 42:

...degrades the spectral information and reduces classification...

Line 93:

All resolutions --> All spatial resolutions

Line 93:

The algorithms calculate the MSI standard product --> The algorithms used to calculate the MSI standard product

Line 160:

It says dt/dL instead of $d(\tau)/dL$. Replace t --> Greek letter tau

Line 177:

in-cluding --> including

Line 236:

up to 150 m --> up to 150 μm

Line 249:

session 2.1.2 --> section 2.1.2

Line 251, caption of Table 3:

$r_e = 8 \text{ m}$ --> $r_e = 8 \mu\text{m}$

Line 261:

The red frames show the position of a typical shallow warm clouds --> The red frames show the position of typical shallow warm clouds

Line 338, caption of Figure 15:

There seem to be internal comments left over at the end of the caption: (change the "tau" "efr" to COT CDR) (boundary area = convective zone of cloud and clear sky). Please remove or integrate into the text.

Line 373:

"numerous works are settled to reduce errors..." is suggested to be reformulated to e.g. "numerous studies have been performed to characterize errors..."

Line 374:

our work based --> our work is based

Line 374:

calculation --> calculations

Line 375:

simulation --> simulations

Line 376:

futural --> future

Line 377:

quantity --> quantities

Line 376 -378:

I would suggest to break this long sentence into two, e.g.: "...affects the retrieval of cloud physical quantities. This provides a useful reference for the development of future cloud observation instruments."

Line 385:

special --> spatial

Line 387:

I would suggest to replace "appreciable" with "significant".

Line 400:

special --> spatial