



EGUsphere, referee comment RC2
<https://doi.org/10.5194/egusphere-2022-1266-RC2>, 2023
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Comment on egusphere-2022-1266

Anonymous Referee #2

Referee comment on "Efficient collocation of global navigation satellite system radio occultation soundings with passive nadir microwave soundings" by Alex Meredith et al., EGU sphere, <https://doi.org/10.5194/egusphere-2022-1266-RC2>, 2023

GENERAL COMMENTS:

This paper presents a claimed novel technique for finding collocations between measurements from RO and passive nadir sounders. As the introduction highlights, these types of collocations have proven useful for various applications in the weather/atmospheric science community over the past years, thus this type of work presented is important and valuable to the community. The paper is well structured, clearly written, and has well placed/formatted figures. Results in the paper support their conclusion. I recommend it be accepted with minor revisions. Some of the specific comments below are just suggestions the authors can consider.

SPECIFIC COMMENTS:

Introduction – Is there any other publicly known/available code out there that does these sort of collocations – e.g. between different satellite tracks as referenced in your conclusions? This could be noted in the Introduction.

Line 33 – Sentence starting "Intercomparison of RO ...". It's not exactly correct to say "for the sake of validating the calibration of the infrared sounders...". It would be more exact to say "for the sake of validating the retrieved temperature products of the infrared sounders". The uncertainties involved with the radiative transfer model used to go between radiance and physical temperature doesn't (yet, from what I've seen) allow the RO to assess the calibration of the IR sounding instruments. If you have a reference for this it could certainly be included.

Line 75 (Intro of Section 2/2.1) – delta t and delta d should be more clearly defined, i.e. what time is used to define the "time" of the RO measurement (begin or end time)? What lat/long is defined as the location of the RO profile (perigee point)?

Table 3 – is a great way to show your results. Very organized and makes it easy to compare results from your collocation methods. You could consider adding the time match criterion in your table caption.

Section 4.5/Table 4 – what time tolerance was tested to get the numbers for this Table? In hindsight I see it's the same as previous section, but maybe state again for explicitness.

Section 5 – You might consider making a comment about the geographic distribution of the collocations missed by the rotation method – your maps in previous sections illustrate this nicely for given days. However, adding a statement about the random geographic distribution of occultations (if true, which it looks like it is?) could (for some users) significantly strengthen the argument to use the rotation method.

TECHNICAL COMMENTS/CORRECTIONS:

Line 68 – “define” should be “defines”

Line 95 – should Section 2.1 be 2.1.1?

Line 146 – define ECI acronym

Line 252 – “four collocation-finding methods” – only 3 lines shown in Fig 2(a)

Line 347 – “non” to “none”?

Line 433 – get rid of “that”?