

Earth Syst. Sci. Data Discuss., referee comment RC1
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Comment on **essd-2021-50**

Anonymous Referee #1

Referee comment on "Integrated water vapour observations in the Caribbean arc from a network of ground-based GNSS receivers during EUREC⁴A" by Olivier Bock et al., Earth Syst. Sci. Data Discuss., <https://doi.org/10.5194/essd-2021-50-RC1>, 2021

Review of "IWV observations in the Caribbean Arc from a network of ground-based GNSS receivers during EUREC4-A, by Bock, Bossler, Flamant, Doerflinger, Jansen, Fages, Bony and Schnitt

GENERAL

This is a nice paper on the quality of ZTD and IWV estimates, related to both processing speed, in the processing and type of auxiliary observations to reach to IWV. There's also a small part discussing the relation between IWV levels and patterns versus the occurrence of specific cloud patterns in the region.

The quality of the presentation is high. In fact I found only one thing that really ought to be changed: There is a lot of information about how various approaches to the processing impacts ZTD and IWV quality, but reading the title potential readers will not appreciate that. The remedy is to either come up with a longer more precise title, or split the material up in two. In the latter case with a short description of the processing and the discussion with respect to clouds patterns, leaving the detailed accounting about quality versus processing for another manuscript.

SPECIFIC

Early on tell that Grantley Adams airport is on Barbados.

Refer to BCON and BCOS already in section one, in order that all readers understand where Barbados is when you refer to fig 1.

Mention the proximity of BCO and the airport with the additional radiosone early on.

On page 6, move the sentence starting in line 153 up above line 150. Consider if you later uncertainty assessment requires the text in line 150-153, and if so, the text should be placed elsewhere.

Line 199: Restrict the comment about ecmwf quality to the location. As you mention yourself later, ecmwf is grossly off wrt. topography at several of the other GNSS sites.

Line 253: Would it be healthy to relax the constraint?

page 17 and further. Several places you mention subpages of page 13 and 14, but they are not indicated on the figures. It should be OK just to refer to fig 13 and 14, otherwise introduce the a, b, c.. division somehow.

Section 5 appears to be partly discussion and partly conclusion.

Line 618 Antenna phase center models can result in a global bias I think. At least we saw a change in biases between GNSS and meteorological ZTDs when a significant change was made some years back.

fig 9 Consider adding the location names

fig 14 Enlarge the GNSS circles to make the figure easier to read.

Table 2: It would be good to introduce a blank row before the IWV part of the table.