

Interactive comment on “Integrated water vapour content retrievals from ship-borne GNSS receivers during EUREC⁴A” by Pierre Bosser et al.

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General comments: This paper describes how to use the GNSS signal obtained on board a going ship to retrieve atmospheric water vapor content, and compares the GNSS IWV retrievals with IWV estimates from the European Center for Medium-range Weather Forecast (ECMWF) fifth ReAnalysis (ERA5), from the Moderate-Resolution Imaging Spectroradiometer (MODIS) infra-red products, and from terrestrial GNSS stations located along the tracks of the ships. The structure of the paper is reasonable, and the description of data processing is very detailed. I think the manuscript is good, and the only flaw is that the paper needs to add some mathematical formulas, which are how to calculate the atmospheric water vapor content.

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Specific remarks:

1. Lines 122-124: “The GNSS observations were initially processed with the GIPSY-OASIS II v6.4 (herefater GIPSY) software in kinematic PPP mode (Zumberge et al., 1997) using standard options similar to the static mode used in Bock et al. (2020a). The software uses the Jet Propulsion Laboratory (JPL) fiducial-free and high rate (30 s) final products 3.0 for satellite orbits and clocks.” It is best if you can list the key mathematical formulas used in the software below. This way we can more clearly understand the method.

2. Line 249-250: “These variations are therefore more likely related to the sea state during this period.” Please explain how the sea surface will affect it. For example, the receiver also receives the reflected signal from the sea surface?

3. The comparison between different water vapor products, the error caused by the scale effect needs to be more explained or discussion.

In general, this manuscript gives a very detailed description of data testing and processing, and did a lot of comparative verification analysis. I suggest that it be published after minor revisions.

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