

## ***Interactive comment on “Multi-year satellite observations of instability waves in the Tropical Atlantic Ocean” by A. C. V. Caltabiano et al.***

**A. C. V. Caltabiano et al.**

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We would like to thank the two anonymous reviewers who made an excellent contribution to the paper.

Regarding the point that the paper does not provide a multi-year analysis of the instability waves in the Tropical Atlantic Ocean, but of the SST signature of the tropical instability waves, it is clear that the paper does not aim to show the baroclinic and barotropic modes of the TIWs. This is an observational paper which focus on the baroclinic mode as seen by satellite SST. The necessary changes will be made in the revised version to make it more clear to the readers.

However, we do address and explain in the paper that the regions of high activity of the TIWs are related with the position of the SST front, rather than with the amplitude of the cold tongue. We appreciate that from an oceanographic point of view, TIWs may exist even in the absence of a clear signature in the SST field. As mentioned above, this

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paper does not address the barotropic component of the TIWs as this is not observed from satellite SST.

One of the main objectives of this study is to provide an analysis of the year-to-year variability of the TIWs in the tropical Atlantic and its year-to-year influence on the atmospheric fields observed by satellite. Figs 10-13, if compared with Fig. 8, will provide an overview of the strength of the interaction that the TIWs have on the ITCZ from year-to-year. In order to make it clear, some numbers (in terms of percentage of the variability) are included in the text. Regarding the analysis of fully coupled processes. As mentioned before, this is a observational study made with satellite data only, and cannot address questions of fully coupling processes between atmosphere and ocean. This is not the objective of this paper. As much as we are aware, there is no coupled modelling studies for the tropical Atlantic that address the interaction between TIWs and the above atmosphere, which clearly needs to be done. Our paper intends to make an important contribution towards the understanding of the variability of the TIWs, and suggest the impact it might have on the atmosphere in the tropical Atlantic.

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