Response to reviewer 2

This papers introduces a dataset focused on atmospheric deep convective cloud built using various satellite observations and a specific object-oriented methodology. Before going further it seems to me this is more a paper relevant for ESSD than for AMT. Indeed the method is not new but its application to MODIS is ! For with this in mind, and so assuming this is more a data paper than a method paper I have the following positive comments.

This study aims to provide process oriented observational data to help development and evaluation of numerical atmospheric models and possibly parameterization of deep convection. In this respect the paper is very convincing. The new dataset is a timely addition and a nice consolidation of previously available of existing equivalent geostationnary and polar oribter based datasets. The long span of hte proposed record is indeed a strong asset of the present dataset. The extension to the AMSRE 89GHz information is also a nice new features (that probably needs to be put more forward in the manuscript).

The paper is clearly written and well referenced. Indeed the selected illustrations , like the joint PDF of CAPE, shear and size for different regions are very convincing of the possibilities of the dataset for its endeavor. Yet I would welcome a little more cautionnary notes of the use of reanalysis based on assimilation and parameterized GCM for deep convection processes studies.

We thank the reviewer for their positive reception of our dataset and the goals behind its construction. The desire for additional cautionary discussion about the use of reanalysis in this work, mirrors the comments from reviewer 1. We refer the reviewer to the additional text (also summarized in the response to reviewer 1 where we have expanded upon some of the limitations of reanalysis data for the construction of the dataset and cloud and convection studies using the dataset and the addition of the supplementary figures on the correspondence of simulated convection to observed convection and the new methods we have outlined for quantifying the level of correspondence between the observed IR brightness temperatures and simulated outgoing longwave radiation in the reanalysis data..