Anonymous Referee #3
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Thank you very much for adding the comment that was incomplete.

Looking into the response from the authors to my comments, they've pointed out that one of my comments was incomplete. The complete comment is the following:
P9L20-26: This part of the study produced the expected results, which is good, but it can go beyond that. What the composites are showing are the 80% ECs associated with ARs and the 60% NECs not associated with ARs.

Figure 4 and Figure 5, are showing the composites for the entire EC and NEC dataset respectively. The reviewer is right to assume that the composites are dominated by the 80% ECs associated with ARs (Figure 4) and the 60% NECs not associated with ARs (Figure 5).

What is more interesting is to find out why there are some EC that are not associated with ARs. Why these cyclones still develop explosively? Or why are there NECs that are associated with ARs? Why these cyclone do not develop explosively? These questions could be at least partially addressed by separating the cyclones in four categories, namely EC-AR, EC-nonAR, NEC-AR, NEC-nonAR, and producing composites for each one of these. Are there noticeable differences between EC-AR and NEC-AR, or between EC-nonAR and NECnonAR? Changing this analysis will also require changing the last bullet point in the conclusions (P11L10-11).

The questions raised by the reviewer are relevant, but difficult to assess in a "climatological framework" such as the one we are developing here. However we agree with the reviewer that such an analysis is a very pertinent suggestion. Therefore, we have decided to try to address partially the problem. With this aim, we have separated the cyclones in four categories, namely EC-AR, EC-nonAR, NEC-AR, NEC-nonAR and produced the composites for each case for both **Atlantic basin** (Figure A.1 and A.2) and **Pacific basin** (not shown, but the results are very similar) using the results obtained with GUAN2015 (results obtained with EIRAS2016 database are again similar). The results presented on Figure A.1 and A.2 are only for the time frames MPD+36, MDP and MDP-36 but they illustrate well the differences between the EC-AR, EC-nonAR (Figura A.1), NEC-AR and NEC-nonAR (Figure A.2).

As could be expected, there is a considerable difference in the composites between EC-AR and EC-nonAR, with high values of IVT being found on the EC-AR and considerable lower values in the case of the EC-nonAR.

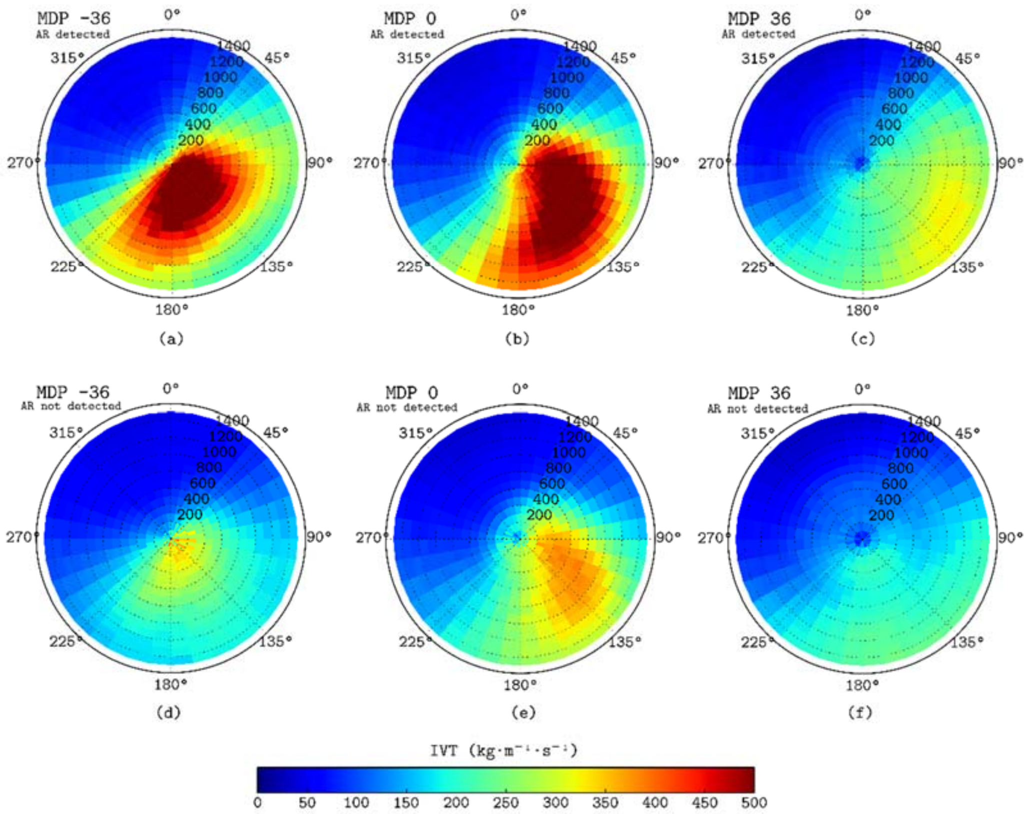

Figure A.1. Composite of the integrated vapour transport (IVT, colours, $kg.m^{-1}.s^{-1}$) within a 1500km radius around the cyclone core for EC-AR (upper panel) and EC-nonAR (lower panel) for the <u>North Atlantic basin</u> for the period 1979-2011 for +36 hours do the MDP, for the MDP and for -36h of the MDP. These results are based on the AR database developed by GUAN2015 (see Figure 3 of our manuscript).

Regarding the NEC-AR, NEC-nonAR (Figure A.2.) the composites reveal that for the NEC-AR the presence of relatively higher IVT when compared with the NEC-nonAR. However when compared with the EC-AR and even with the EC-nonAR (Figure A.1) these values are much lower (EC-AR) or relatively lower (EC-nonAR).

This apparent contradiction when comparing the NEC-AR and the EC-nonAR (since higher values of IVT are found for the EC-nonAR) results in our opinion from two main effects:

1) the detection of the ARs is based on the IVT percentile threshold climatology, with means higher values of IVT are required in the south than in the north (GUAN2015 and EIRAS2016), therefore the position (latitude, longitude) of the bomb will have influence of the value of IVT required in the detection of the ARs.
2) The sample of the cyclones in the NEC-AR and the EC-nonAR is very different, being considerably higher in the NEC-AR than in the EC-nonAR (see Figure 3 and supplementary Table S1), therefore the IVT composite is very smoothed in the NEC-AR.

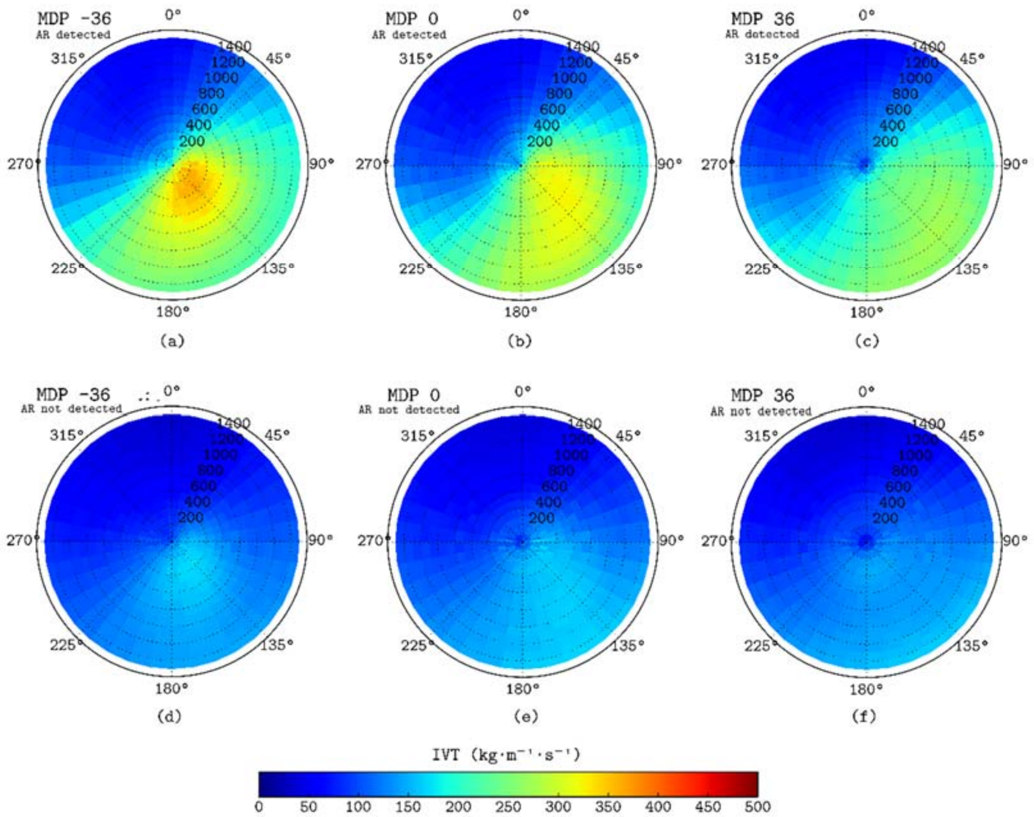

Figure A.2. Composite of the integrated vapour transport (IVT, colours, kg.m^{-1}.s^{-1}) within a 1500km radius around the cyclone core for NEC-AR (upper panel) and NEC-nonAR (lower panel) for the North Atlantic basin for the period 1979-2011 for +36 hours do the MDP, for the MDP and for -36h of the MDP. These results are based on the AR database developed by GUAN2015 (see Figure 3 of our manuscript).

Taking these into account, when analysing the EC-AR, EC-nonAR, NEC-AR, NEC-nonAR composites, and despite they are some noticeable differences between them, we do not think that they were unexpected. Thus, we do not think that this additional analysis leads to new / different conclusions. Still, we have decided to include a short reference to the differences between EC-AR and EC-nonAR in section 3 and include Figure A1. in the supplementary material (new supplementary Figure S3 . A more detailed analysis is left for future work.

"While the EC samples are dominated by systems associated with an AR (cf. Fig. 3), this is not always the case. In order to evaluate this in more detail, we analysed additional composites by separating the EC cyclones in two categories, namely EC with AR (EC-AR) and without AR (EC-nonAR; Supplementary Fig. S3 for the North Atlantic Ocean). As expected, results show that there is a considerable difference in the composites between EC-AR and EC-nonAR, with high values of IVT identified for EC-AR and considerable lower values for EC-nonAR. The figures for EC-nonAR are more similar to NEC systems (not shown)."