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Interactive comment on "Extratropical cyclone induced sea surface temperature anomalies in the 2013/14 winter" *by* Helen F. Dacre et al.

Anonymous Referee #1

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The paper documents the sea surface cooling by extratropical cyclones and its impact on the 2013/2014 winter SST in the mid North Atlantic. The conclusions and interpretations are adequately supported for the most part. The paper is well written and conclusions are concise and clear.

Specific comments

1. Does the warming tendency in the warm sector has any effect on SST? In Section 4.1, the cyclone mask is creased so as to encompass the cold front and the cyclone center. Does this method include the warm sector properly?

2. The authors focus on the 2013/2014 winter, but I expect that cyclones could play an important role even in other years. The authors might want to estimate cyclones

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contribution to the winter climatology of the net heat flux using your cyclone masking technique. It would develop a much deeper understanding of the cyclones role.

3. In addition to the strength and number of cyclones, the propagation speed is probably also important for the cooling. The high fraction of time of cyclone mask in 2013/2014 around the UK seems to be partly due to the stagnation of cyclones (Fig. 8).

4. Is the anomalously zonal storm track in 2013/2014 associated with the westerly jet?

5. The distribution of the Qn anomaly in Figure 8f is different and shifted from that of the cyclones in Figure 8d. Why are they different?

6. The anomalous Qn not associated with cyclones in Figure 11b still has a tripole pattern. So do you think that the tripole pattern has basically nothing to do with cyclones?

7. L153-164. It is difficult to identify the position of the cold front and warm section in Figure 4. How about plotting the cold and warm fronts? These fronts could be delineated based on Figure 5 or the map of relative vorticity of wind.

Technical corrections

L38. of the wind driven currents

L128. over 6 K over the winter

L135. The density of sea water 1000 kg/mˆ3 might be acceptable, but the more practical value (like 1024 kg/mˆ3) should be used.

L143. figure 3(a)?

Figure 4. What do contour lines show?

L246. the conclusion does not

L250. the anomalous Qn

L250. figure 8(f)

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