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Supplement of

Moisture origin, transport pathways, and driving processes of intense wintertime moisture transport into the Arctic

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1 Example of trajectory starting points (Fig. S1)

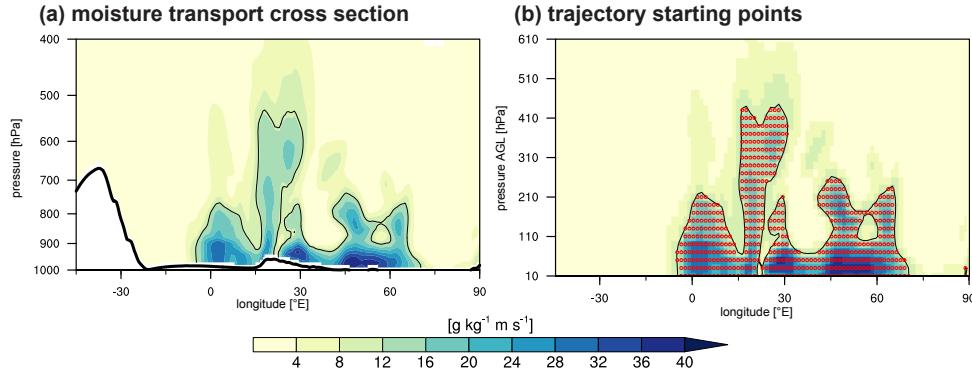


Figure S1: Vertical cross-sections at 70°N showing meridional moisture transport ($v \cdot q$) at 12 UTC associated with a moist-air intrusion on 17 January 1995. In (a) the moisture transport is shown as a function of longitude and pressure. In (b) it has been remapped to an equidistant grid (50 km vs. 20 hPa) with pressure AGL along the vertical axis. The thin black contour indicates the threshold of the meridional moisture transport used for selecting trajectory starting points. Selected trajectory starting points are shown in (b) by red circles.

2 Moisture uptakes within and above PBL (Fig. S2)

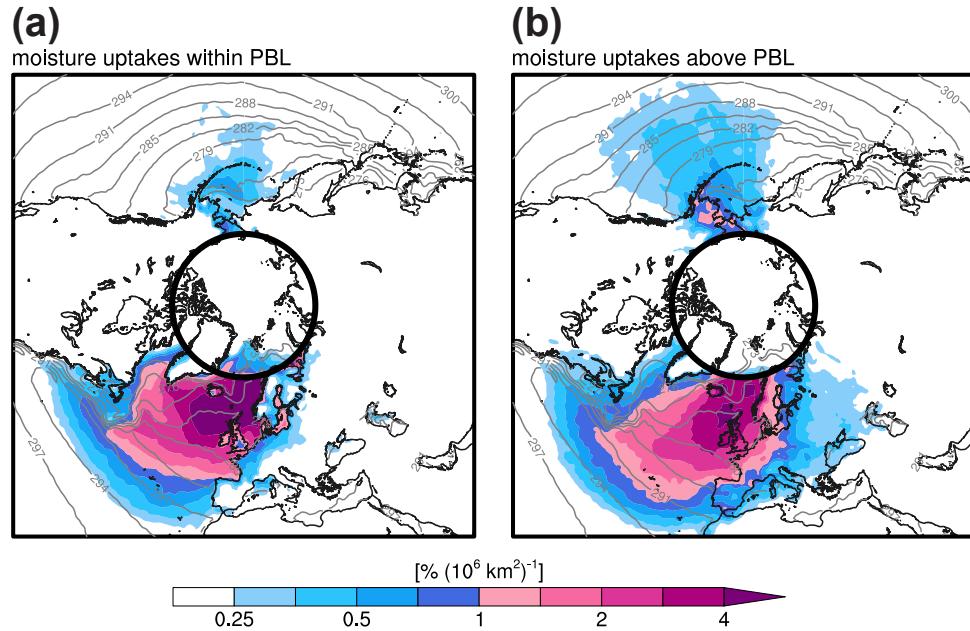


Figure S2: As Fig. 3 but for moisture uptakes (a) within and (b) above the planetary boundary layer, distinguished according to the boundary layer height provided by the ERA5 reanalysis. The fields are scaled such that the sum of (a) and (b) yields Fig. 3. Further note the different colorscale as compared to Fig. 3.

3 Dendrogram (Fig. S3)

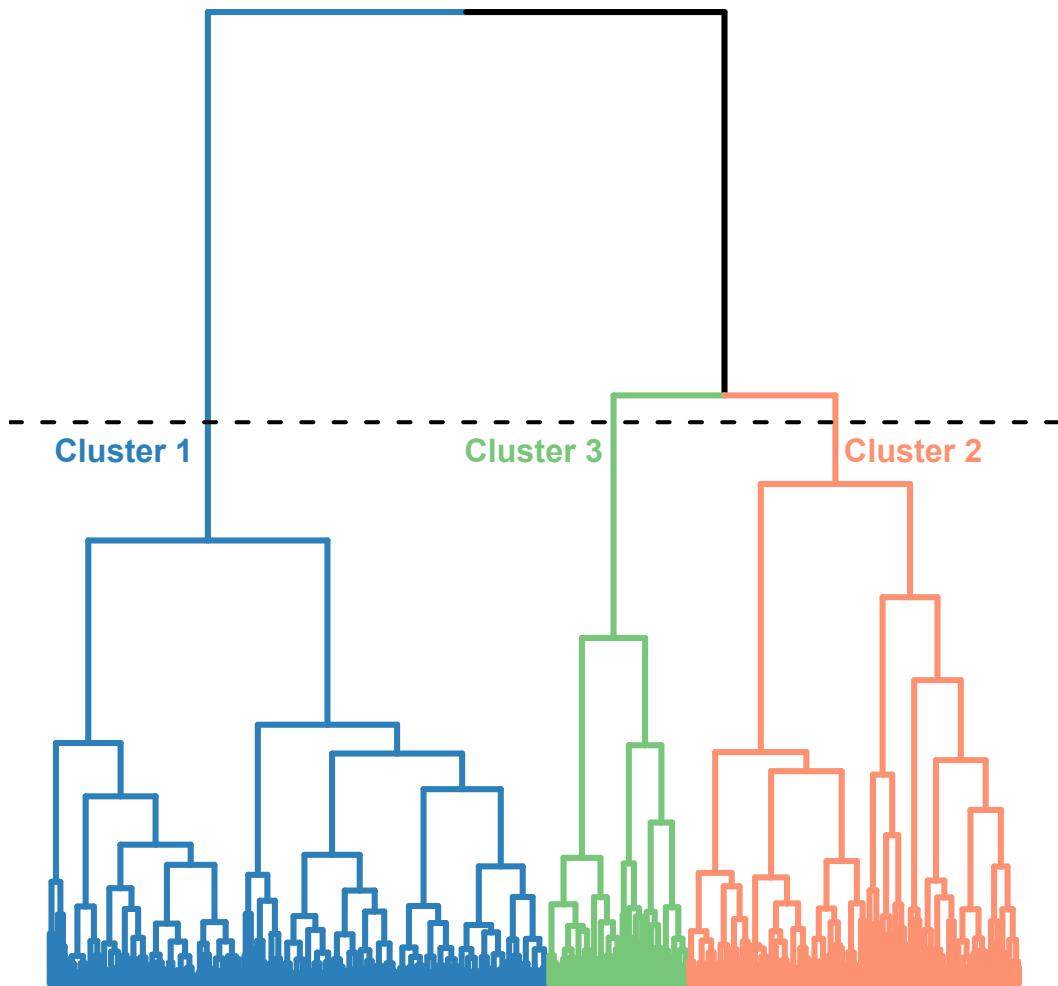


Figure S3: Dendrogram for the hierarchical clustering of moist-air intrusions in the North Atlantic. The dashed black line indicates the three clusters used in this study.

4 Sensitivity to number of clusters (Fig. S4)

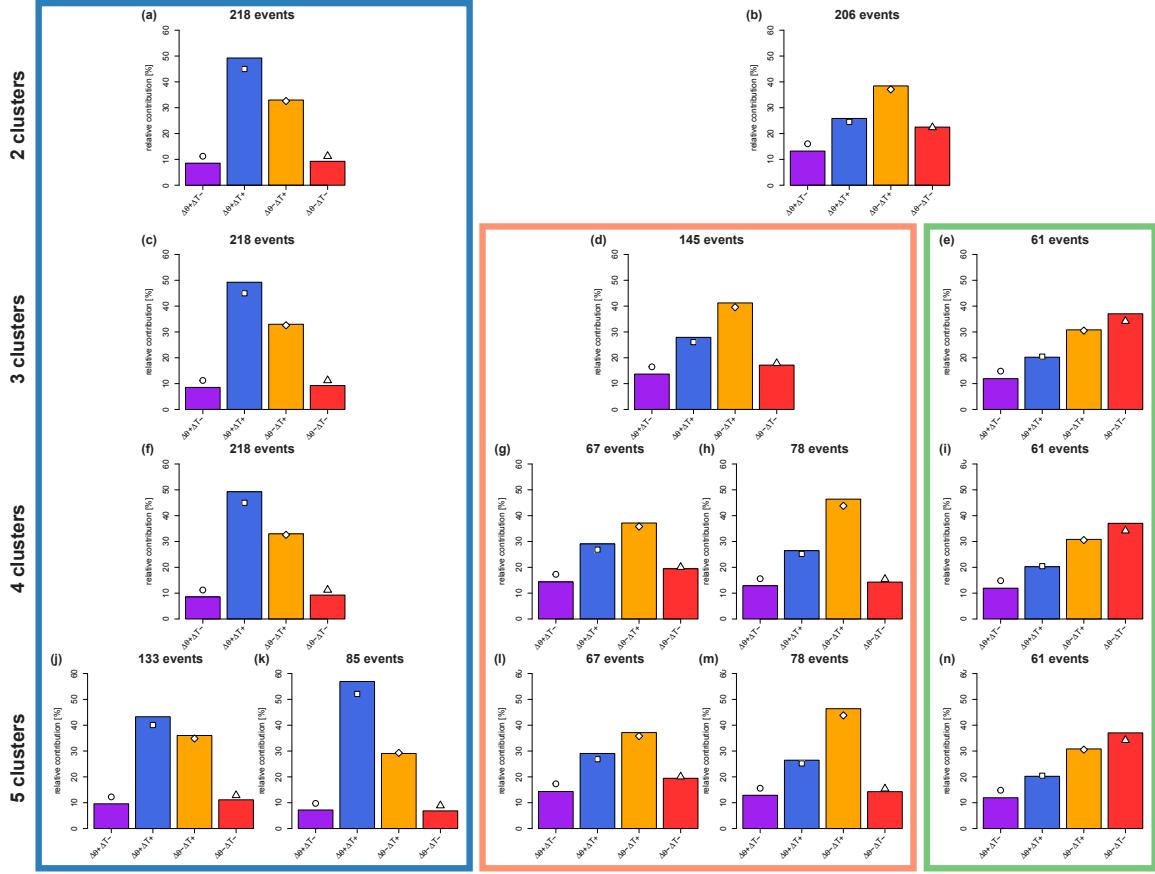


Figure S4: Relative contributions of the four trajectory categories to the moisture transport associated with moist-air intrusions in the North Atlantic for (a, b) two clusters, (c-e) three clusters, (f-i) four clusters, and (j-n) five clusters.