Author Response to Editor Comments:

Response: We thank the editor for these comments. We made the following changes in the manuscript:

Section 2.3.2: You use Haversine formula to calculate the distance matrix needed for the clustering. As you say, Haversine distance is calculated between two points in Earth. Are your final distances then based only to the endpoints of the trajectories or do you somehow average over the whole trajectory i.e., how is your final distance matrix constructed?

Response:

Distances between trajectories were calculated using the Haversine formula, which calculates distance between two points on Earth assuming they are on a great circle (Sinnott, 1984). The distance between any two trajectories was calculated as the sum of distances between trajectory endpoints. Subsequently, clustering was conducted based on the symmetric distance matrix, which includes the distances between all pairs of trajectories.

4.) As the key parameter used in the study is the accumulated precipitation along trajectories (APT) can the authors please provide some more details on how this was calculated/processed within the paper? Specifically, what does the precipitation diagnostic obtained from HYSPLIT-trajectories represent? Does it represent a precipitation rate that was converted to a total amount at each hour along the trajectory and then summed? Does it represent the precipitation at the height of each trajectory point, summed along the entire trajectory, or a column total precipitation at each point along a trajectory. If the latter, how did the authors process this data to ensure that the APT represents below cloud removal of aerosol? Some clarification is required here as if an individual trajectory is not at the height where the precipitation is occurring then this should be accounted for in the subsequent data processing.

Response: Precipitation data from GDAS are at the surface level thus APT values are the maximum potential level of wet removal experienced by trajectories. We explained our method for APT calculations in Section 2.3 as follows:

“Moreover, accumulated precipitation along trajectories (APT) was calculated by integrating surface precipitation data from GDAS throughout the transport to the receptor site. As GDAS precipitation data corresponds to the surface level, it should be noted that APT values presented in this study are associated with the potential maximum level of precipitation experienced by the air parcel through its transport journey. “