We thank the referee for very helpful and valuable comments, to which we hope to have responded appropriately. A list of comments including our response is given below.

Response to anonymous referee:

1.) *Flight descriptions should be moved from Introduction to Methodology section or similar (Starting from P7950, L22).*

Large parts of this text have moved to a new section entitled “Flight description and observed visibilities” (section 2 of the revised paper). In this section, the aircraft track and observed visibilities during the flight are described together with visibility observations from manned meteorological stations in south-western Iceland. A new Figure has been included (Figure 4 in the revised version) which shows the location of these stations.

2.) *If available, black carbon data could give an additional confidence in the absence of contribution from anthropogenic sources, either from aircraft or observation stations (P7953, L18).*

Unfortunately, measurements of black carbon were not carried out during this flight. Furthermore, we don't know of any black carbon data from observation stations on or in close proximity to Iceland. However, the carbon monoxide measurements shown in the paper (Figure 7 of the revised version) seem to be a good indicator for anthropogenic pollution as carbon monoxide is much less affected by wet scavenging compared to black carbon. A low pressure system was located to the south of Iceland on 22 February 2007. This means that any aerosols transported by this system could have been easily washed out by precipitation.

3.) *To my opinion, correct representation of a vegetation mask for Icelandic vegetation is an important result (P7955,L10-14) and should be mentioned in the abstract or/and conclusions.*

The PCASP measurements have now been corrected to account for the optical properties of dust particles sampled during the flight (this was suggested by Joseph Prospero in his review of the manuscript). Phil Rosenberg (University of Leeds) who applied the corrections is now a co-author of the paper. The corrections are described in section 3 of the revised paper and the Figures showing PCASP data as well as the results section were changed accordingly. The corrected PCASP particle mass mixing ratios (Figure 12 of the revised version) show much larger values compared to the uncorrected data. The magnitude of the model simulations of particle mass mixing ratios now agrees less well with the measurements compared to the old version of the paper. However, the magnitude of particle number concentrations, as well as the shape of particle mixing ratios and number concentrations, have not changed much. The sentence addressed by the reviewer "These α values, which were chosen for MPR, can be used as a reference for future numerical modelling studies on Icelandic dust storms" (section 3.1.1 of the old version of the paper) is not appropriate anymore and has therefore been excluded from the manuscript.

4.) *P7960, L5 true only for the 400m height.*

Added “At 400 m height, ...” to the beginning of this sentence.

5.) *P7964, L7 An improvement of MPR over OPR should be stressed rather than a good agreement, as while reviewer acknowledge the significant improvement, the agreement is still not good, especially for the heights more than 400 m.*

The corresponding sentence has been excluded. Instead, it is now described that the changes applied to the dust and sea salt parameterisations improve simulations of these aerosol types near Iceland.

6.) *P7951, L6 missing date in Ref.*

Corrected.

7.) *P7956 L23 diameters should be between 0.1 and 1 micron.*

Changed, but to " between 0.1 and 1.1" which is the size range as described in Nilsson et al. (2007).

8.) *Fig. 11 and 12 Additional information on how particle mass mixing ratios were found should be provided in the ''Aircraft data".*

Done.