Editor review

While your manuscript has definitely improved during revision, several reviewer comments have not been addressed properly and at this point I cannot recommend publication of the manuscript. In agreement with the reviewers, I think the presentation of data is confusing in several sections and a clear message of your study is missing. I will forward your revised manuscript to the reviewers again in order to come to a final decision on your manuscript.

In addition, the manuscript still contains many language errors which might be the reason that some sections of the text are still hard to understand; note that I started correction the text of the abstract (see at the end of this file); in case of publication, I highly recommend that it is checked by a native speaker or a professional proof-reading service. Thus the manuscript as it is, does not meet the standards of ACP.
My main concerns are summarized below and refer to the revised version of the manuscript.

Structure and Section titles

- The discussion of aerosol measurements at other locations should not appear in Section 'Mode description' as you do not refer to individual modes but it deserves a separate section. The comparison is by no means complete and does not include any comparison to global model results (the data by Spracklen et al are the measurements but no model results) as it had been suggested by reviewers 2 and 3.

- Section 3.2 should include in its title also 'annual' since the comparison of Period B and C is the comparison of the same months but different ears.

- Section 3.3 should be entitled 'Diurnal patterns of the modal concentrations'. Try to avoid 'evolution' unless you really discuss the change of particle number concentrations over the course of a day. Note that use of this term has also caused some confusion by reviewer 2 (comment 2.17).

General comments

- The addition of air mass/trajectory analysis definitely helps improving the content of the study. However, no information on the vertical structure is given as requested by reviewer 1.

- Reviewer 3 had suggested to show correlations of N(nuc), N(acc) and N(Ait). While I appreciate that you refer to correlation coefficients and slopes, the corresponding figures would have been helpful, together with the variation (standard variation, ranges) of the slope parameters.

- Section 3.7: Some detail should be given on how the nucleation and growth rates were calculated even though the procedure was developed in another study.

- The conclusion section should be dedicated to highlighting the main findings of your study and not merely summarizing what you have done. E.g., the correlation of nucleation events and air masses (message of lines 732-742) and/or properties of size distributions should be discussed here.

Specific comments:

- Abstract, l. 19-21: the confusion about three or four modes as mentioned by reviewer 2 and 3 is still existent.
- Section 2.3, l. 208/9: Was the total coverage of data indeed only 4-5%? If so, why?
- Section 3.2, l. 292-294: This sentence is not clear.
- Section 3.2, l. 321: Why does a decrease in the accumulation mode lead to an increase in the nucleation mode? (I can see that the opposite is true). This whole paragraph should be improved.
- Section 3.2: Reviewer 3 had requested a more rigorous analysis of the variation of different modes. Your reply does not reflect whether indeed there were more nucleation event of whether nucleation of individual events was more efficient.
- Section 3.7.1, l. 634: "The 'banana' shape evinced that these events were quite homogeneous in a larger-scale airmass, (Birmili et al., 2003; Kulmala et al., 2004).: It is unclear what is meant by 'homogenous' here.
- Section 3.7.1: l. 668-674: Are you saying in the last sentence that in the other studies, no dependence of nucleation events on wind speed was observed?
- Section 3.7.1, l. 686-691: Text needs to be clarified.
- Section 3.7.2, l. 726- 731: Text needs to be clarified.

This study ~~is~~ focuses~~d~~ on the analysis of the sub-micron aerosol characteristics ~~at~~ in rural and coastal environments in Southwestern Spain. Particle number size distributions were measured in the size range (14-673) nm using a Scanning Mobility Particle Sizer (SMPS, Model 3936 - TSI), from 15 July 2004 to 31 July 2006 (604 days) at El Arenosillo Station. ~~M~~ The mean total concentration was 8660 cm^{-3} and mean concentrations, of the size limits, for the nucleation, Aitken and accumulation modes particles were 2830 cm^{-3}, 4110 cm^{-3} and 1720 cm^{-3} respectively. Mean geometric diameters of the four modes ~~particles~~, which characterized the mean monthly size distribution ~~per month~~, were about 16 nm, 42 nm, 103 nm and 237 nm. ~~Daily~~ Diurnal pattern concentrations exhibited an absolute maximum of the particle concentrations around noon. This was governed by the concentration for nucleation and Aitken modes during the warm seasons and only by the nucleation mode during the cold seasons. The evolution of the monthly mean total concentration showed a seasonal independence. This behaviour was ~~because there was a~~ due to a clear inverse ~~variation~~ relationship between the monthly mean concentration for nucleation and accumulation modes. ~~Moreover,~~ The monthly mean total concentration showed an incremental trend, which was primarily related to an increase ~~of~~ in the concentration ~~for~~ of the Aitken mode. Each day was classified according ~~to the existence~~ of a sea-land breeze flow or a synoptic pattern influence. ~~M~~ The median size distribution for desert dust and continental aerosol was dominated by the Aitken and accumulation modes, and marine air masses ~~airmasses~~ were dominated by the nucleation and Aitken modes. The accumulation of particles offshore, due to the land breeze had an impact on particle burden (or concentration/levels) ~~over the air quality~~, especially, when the wind was blowing from the NW sector in the morning. It increased the concentration of the nucleation and Aitken modes by ~~the~~ factors of 3.1 and 2.4 respectively. Nucleation events with the typical 'banana' shape were characterized by a mean particle nucleation rate of 0.74 cm^{-3} s^{-1}, a mean growth rate of 1.96 nm h^{-1} and a mean total duration of 9.25 h (starting at 10:55 GMT, ending al 20:10 GMT). They were observed during 48 days. Other nucleation events were identified as those produced by the emissions from the industrial areas located ~~at~~ in a distance of 35 km. They were observed during 42 days. Both nucleation events were strongly linked to the marine ~~airmasses~~ air mass origin.