

Interactive comment on “New particle formation at urban and high-altitude remote sites in the south-eastern Iberian Peninsula” by Juan Andrés Casquero-Vera et al.

Anonymous Referee #2

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The MS mainly deals with investigating the aerosol size distributions in the diameter range of 4-500 nm measured simultaneously at two close locations with rather different altitudes in southern Spain during an intensive summer campaign to study the occurrence frequency and other characteristics of NPF events. It is a very complex and extended study. It is of interest for international research community, and I suggest that it is published in the ACP. There are, however, several issues to be improved or corrected.

1. A general comment. This MS is not easy to read since it contains a large variety of details, which are sometimes not well organized. The authors may want to improve

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several of its parts (e.g. P15, L26–P16, L14).

2. P12, L3–9 and L26–30: The discussions the roles and importance of H₂SO₄ and partially of CS in the formation process at the sites seem to be speculative. The authors should provide further firm evidence and additional explanations of their ideas, or they should reduce and simplify this part.

3. P5, L26–28 and later P6, L15–17: The association of the three modes in the size distributions to size fractions should be proved by showing a typical size distribution and the size ranges. Does the position of the modes change in time at the sites? The authors may want to explain why they did not use modal areas from fitting, which was performed anyway, instead of size fractions.

4. P5, L14–16: Further details on the “complete chemical analysis” should be given. What are the species measured, what are the analytical methods used and their performance properties?

5. P6, L15–19: It is not completely clear what size interval do CoagSDp and NDp represent, and how they were calculated?

6. P8, L18–19: How can you explain the high contribution of the nucleation mode (49%) to the total particle numbers on non-NPF even days?

Minor comments Abstract and P3, L30 and L32: Abbreviation a.s.l. should be resolved. P5, L6: Abbreviations RH and PSL should be resolved. P8, L32: Rewording is required (in aerosol nucleation mode aerosol concentration). P9, L10–11: Repetition; it should be removed.

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