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Interactive comment on “Relation of air mass history to nucleation events in Po Valley, Italy, using back trajectories analysis” by L. Sogacheva et al.

L. Sogacheva et al.

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The authors would like to thank the Referee 2 for his/her constructive comments and suggestions that helped to improve the value of this manuscript.

Response to the General comments:

According to Referee comments, we improved the discussion part about the potential connection between the studied parameters and new particle formation. The references presented below have been used.

We agree with the Referee 2 about the key role of the condensation sink in particle formation. The dependence of the new particles formation on the condensation sink

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at SPC is presented by Hamed et al., 2007. The condensation sink studies with respect to air masses origin and history have been carried out at the time of the present manuscript preparations. However, the authors decided not to include the results in publication because no significant dependence of the condensation sink measured at SPC on the air masses history have been found.

Response to the Specific comments:

Page 11210, line 7 : changed to “from”

Page 11211, line 6 : changed to “trajectory analysis”

Page 11229, line 13 : changed to “from”

Page 11229, line 19 : corrected to “all”

References

Boy, M., and Kulmala, M.: Nucleation events in the continental boundary layer: Influence of physical and meteorological parameters, *Atmos. Chem. Phys.*, 2, 1–16, 2002.

Hellmuth, O.: Columnar modelling of nucleation burst evolution in the convective boundary layer -first results from a feasibility study Part III: Preliminary results on physicochemical model performance using two “clean air mass” reference scenarios, *Atmos. Chem. Phys.*, 6., 4231–4251, 2006

Hyvönen, S., Junninen, H., Laakso, L., Dal Maso, M., Grönholm, T., Bonn, B., Kerronen, P., Aalto, P., Hiltunen, V., Pohja, T., Launiainen, S., Hari, P., Mannila, H., and Kulmala, M.: A look at aerosol formation using data mining techniques, *Atmos. Chem. Phys.*, 5, 3345–3356, 2005.

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