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Comment

## ***Interactive comment on “New particle formation infrequently observed in Himalayan foothills – why?” by K. Neitola et al.***

**K. Neitola et al.**

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Response to referee #1 comments.

Thank you for your comments. Here are answers for your comments and suggestions.

Comment one, Page 13195, line 20:

This is true that there are several results on the fraction of total particle number formed via secondary route, for example Spracklen et al., (2006) gives mean result of 77.5% formed via secondary route for the 22-day period they analyzed. Also Yu and Luo, (2009) has results for South and East Asia 50-80% in the boundary layer and 90% above BL.

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Comment two, Page 13201, line 13:

This was the best parameterization what we could find for our case. It is true that this parameterization is created to be used in boreal forest. The use of this method can be partly justified by that the landscape around the station does not have huge forests that would produce completely different chemical composition of the particles. Of course the composition is not the same here as in the boreal forest, but for example Wake et al., (1994) report chemical analysis results that the particles are composed mainly of ammonia, sulphates, nitric oxides and minerals, so that the main difference is the lack of organics. The study by Wake et al. is done at elevation of more than 5000m (a.s.l.) so that there will be no organics. The amount of organics will of course influence the hygroscopicity and growth of the particles but we consider the difference here to be relatively small.

Comments 3, 5 and 7:

Spelling errors will be corrected.

Comment four, Page 13208, line 9:

According to Bonasoni et al., (2010) during monsoon season, 80% of the afternoon hours were covered with thick clouds and about 10% were cloud-free sky. The NPF events occurring at the station are most likely to happen at free tropospheric conditions, which mean that the clouds have not reached the station. If there are clouds and rain, the NPF event is unlikely to happen, due to wet/cloud scavenging of the precursor gases.

Comment six, Page 13209, line 22:

There are no days during spring season that BL height would exceed height of the station (2180m) and there would be an NPF event.

Comment, figure 6:

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It will be added.

references:

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Yu F. and G. Luo: Simulation of particle size distribution with a global aerosol model: contribution of nucleation to aerosol and CCN number concentrations, *Atmos. Chem. Phys. Discuss.*, 9, 10597–10645, 2009.

Wake, C. P., J. E. Dibb, P. A. Mayewski, L. Zhongqin and X. Zichu: The chemical composition of aerosols over the Eastern Himalayas and Tibetan plateau during low dust periods, *Atmos. Env.*, 28, 4, 695-704, 1994.

Bonasoni, P., P. Laj, A. Marinoni, M. Sprenger, F. Angelini, J. Arduini, U. Bonafe, F. Calzolari, T. Colombo, S. Decesari, C. Di Biagio, A. G. di Sarra, F. Evangelisti, R. Duchi, MC. Facchini, S. Fuzzi, G. P. Gobbi, M. Maione, A. Panday, F. Roccatò, K. Sellegri, H. Venzac, GP. Verza, P. Villani, E. Vuillermoz and P. Cristofanelli: Atmospheric Brown Clouds in the Himalayas: ĩĽArst two years of continuous observations at the Nepal Climate Observatory-Pyramid (5079 m), *Atmos. Chem. Phys.*, 10, 7515–7531, 2010.

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Interactive comment on *Atmos. Chem. Phys. Discuss.*, 11, 13193, 2011.

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