

## ***Interactive comment on “Aerosol mass and black carbon concentrations, two year-round observations at NCO-P (5079 m, Southern Himalayas)” by A. Marinoni et al.***

**Anonymous Referee #2**

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### 1. General comments:

The paper attempts to address diurnal and seasonal variation of aerosol and black carbon concentration in the Nepalese Himalayas. After two years of observation (March 2006 – February 2008) at Nepal climate observatory (NCO-P, 5079msl) authors conclude that aerosol mass and black carbon concentration follow well defined seasonal and diurnal variation. The paper reveals that quantity of pollutants is highest during pre-monsoon season and it drops to its minimum level during monsoon season. Thermal wind system plays a vital role in diurnal variation of pollutants over the Himalayas.

Although the authors compare the results across different location of the world, some

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previous research are missing which were carried out in the same area (e.g. shrestha et al 2000).

As the measurement site is characterized by a rugged topography, one of the major uncertainties in the climate science, which significantly affects the measurements of the parameter. The paper does not include general description of the site and its geography (e.g. surrounding environment, nearest settlement, land use patterns etc. . .). Bonasoni et al (2008) also does not explain the geography of the site.

The term “brown cloud” is not defined. “Asian Brown cloud” is old-fashioned and it is replaced by “Atmospheric Brown Cloud”.

### 2. Specific comments:

Objectives of the research are not clearly described. Everything is mixed up together. In section 3.1.1 the authors reveal the results that 60% increase in rainfall during 2006 pre-monsoon season over the same period of 2007. I don't see strong relation with the research title and sub-title. The results do not accompanied with citation and/or data analysis as well. Although the paper confirms the ‘Tropospheric Biennial Oscillation’ hypothesis, activation of CCN and IN could have affected increase in rainfall as the authors mention that 2006 is more polluted than 2007.

Methodology is adopted from the paper which is currently under review process. In the section 3.3 ‘air-mass cluster classification’ is originally formed by Bonasoni et al (2010) which is not published to date however, the same classification is used in this article. Many papers cited in this article is not published yet (e.g. Bonasoni et al (2010); Duch et al (2010); Sellegri et al (2010); Maroq et al (2010)).

### 3. Technical corrections:

Some citation is missing in the reference list e.g. Bonasoni et al (2008).

Some typos:

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Page 8384 line 23 'ad'

Page 8392 line 20 'average' is double

Use same value of Black Carbon concentration (either '160' or '160.5') and standard deviation (either '296' or '296.1') in abstract and conclusion

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Interactive comment on Atmos. Chem. Phys. Discuss., 10, 8379, 2010.