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Interactive comment on “Elemental carbon in snow at Changbai Mountain, Northeastern China: concentrations, scavenging ratios and dry deposition velocities” by Z. W. Wang et al.

Anonymous Referee #2

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The manuscript entitled ‘Elemental carbon in snow at Changbai Mountain, Northeastern China: concentrations, scavenging ratios and dry deposition velocities’ by Wang et al presents the concurrent measurements of EC in air and snow, carried out during the period from 2009 to 2012, over Changbai Mountain located in the north eastern part of China. They further reported the scavenging ratios as well as wet and dry deposition fluxes during the snow season over the study region. The database used in the study is adequate and the scientific and technical effort devoted to the study is significant. However, the main drawbacks of the paper are the lack of estimation on possible implication to regional climate, very poor writing style and organisation. The manuscript

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needs to be thoroughly revised with additional details to meet the ACP standard.

Specific comments

1. The quality of English used in the manuscript is very low. 2. Recently, several studies are available in literature on atmospheric values of EC/BC as well as EC/BC in snow over Himalayan regions (even a special issue in ACP ON Himalayan aerosols). Surprisingly, despite being a study from high altitude location, the authors made very limited comparison of the observations in the present study with the reported values from Himalayas. 3. Details of the uncertainties in Particle Soot Absorption Photometer measurements and Thermal/Optical Carbon analyser needs to be provided. 4. Details on the estimation of dry deposition flux should be provided. 5. Authors are requested to add a section on the possible climate implication on scavenging of EC/BC by snow over Changbai Mountain. (eg. Flanner et al., 2007; Yasunari et al., 2012,... etc) 6. Add estimates of the snow albedo changes due to the observed EC/BC in snow over Changbai Mountain. How far the radiative forcing due to the snow albedo changes compares with the direct radiative forcing of aerosols over the same region.

Interactive comment on Atmos. Chem. Phys. Discuss., 13, 14221, 2013.

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