

## ***Interactive comment on “Microstructure-based modeling of snow mechanics: a discrete element approach” by P. Hagenmuller et al.***

### **Anonymous Referee #1**

Received and published: 27 April 2015

The authors addressing certainly a very important issue in snow modelling, name the influence of micro-structure on snow mechanics. They approach the structure with the Discrete Element Method (DEM). However, following points should be addressed in the article: 1. There is no reference as to which temperature the mechanical behaviour is connected to or how the temperature dependence is taken into account. 2. The DEM model taking into account the interaction between snow grains is not presented in a clear way: The cohesion model needs a better explanation and presentation in formulas for the reader to understand e.g. what is  $\tan(\phi)$  referring to? 3. Is bonding or re-bonding taken into account? 4. No validation e.g. comparison with experiments has been presented for the DEM model developed. Therefore, are the material properties chosen meaningful?

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