Review of the revised paper "A macroscale mixture theory analysis of deposition and sublimation rates during heat and mass transfer in dry snow" by A. C. Hansen and W. E. Foslien.

We would like to acknowledge the authors for their answers to the first review and for their efforts to improve the quality of the manuscript. Nevertheless modifications are still required to help the reader and to avoid any misunderstandings.

1/ In order to help the reader, it could be interesting to add a nomenclature defining all the variables (Table).

2/ In the continuity, the appellation of the variables needs to be homogenized throughout the text to help the reader to follow the development and improve the clarity of the paper. For example, all the effective properties (macroscopic properties of the snow) should be named with a variable using "^{eff}". You should make sure that the terms "effective" is systematically used for effective properties (example page 22 line 11 k_s is named "thermal conductivity for snow" only), same for the apparent properties. Another example of non-homogenous appellation: page 31, line 11, k_s is called "thermal conductivity" while D_s is called "effective diffusion coefficient".

3/ According to Eq (62), k_s depends on k_i^{eff}, k_{ha}^{eff}, ice volume fraction and air volume fraction. It is mentioned that k_i^{eff} depends on k_i and the microstructure only (see page 17 line 22), and that k_{ha}^{eff} depends on k_{ha} and the snow microstructure only (page 19 line 16 for the air phase). So according to the equation (62), the effective thermal conductivity of the snow k_s is a function of k_i, k_{ha}, volume fraction of each phase, and microstructure (tortuosity of each phase). k_s does not depend on the phase change. This definition is consistent with the result of Calonne et al 2014.
In section 4, the result given by Eq (87) is in contradiction with the above results, since a term that reflects the phase change appears in the definition of k_s. Thus, the results from the microstructure models in section 4 contradict the theory developed in section 3. This point, which is an important result of the paper, must be clarified.
The same remark holds for the effective diffusion coefficient D_s.

Other minor comments:
Page 11, line 11: "Albert and McGilvary (1992) incorporated the effects of mass diffusion in a heat and mass transfer analysis of snow centered on natural convection and the phenomenon known as wind pumping."
Albert and McGilvary (1992) investigated the air advection (forced convection), which refers to the air flow through the pore spaces of snow caused by windy conditions close to the snow surface, and which is often called the "wind-pumping effect". They do not study the natural convection, which refers to the convection due to air density gradients.
Please modify the above sentence accordingly.

Page 11, line 13: "The equations developed involve a velocity of the humid air and conditions where the vapor density is not saturated." This sentence is rather vague.
In the work of Albert and McGilvary (1992), the vapor density at a given location may change in time due to advection of vapor by the air flow, diffusion of vapor by vapor-density gradients and generation or dissipation of vapor by the source term.

Depending on these processes, the air in the snow can be locally supersaturated, saturated or unsaturated with vapor.
You should be more precise about the vapor conditions used by Albert and McGilvary (1992).

Page 11, line 16: As you explained that you neglect the natural convection, you could write that the forced convection is also not studied in your paper.

Page 37, line 11: a space is missing before "Pinzer".

Page 45, line 7: in the citation of Löwe et al 2013: "Richei" → "Riche".