

## ***Interactive comment on “Simulations and parameterisation of shallow volcanic plumes of Piton de la Fournaise, La Réunion Island using Méso-NH version 4-9-3” by S. G. Sivia et al.***

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The manuscript describes modelling efforts of a volcanic gas plume at Piton de la Fournaise using LES type simulations and quasi 1D simulations with a plume model. The article is reasonable, useful and generally well written. I only ask for a few minor but mandatory corrections and clarifications:

-page 8364, lines 14-15: saying '1 dimensional (single column) model with 1 km resolution' is odd. Clarify, you might use something like 'quasi-1D model using 3x3 columns'  
...

-clarify in text why you decided to entrain all at the first model level at 40 m and if you  
C2596

formulation is vertical resolution dependent, also if your mass you wish to entrain can be larger than  $\Delta p$  of first model level

-page 8364: change title '2 Materials' to something more sensible

-page 8369: change notation for  $r_{mix}$  for the gas constant as one can easily think this is a mixing ratio

-page 8373 and 8374: The definition of the fluxes in (10) and (11) is incorrect. It should write  $(q_u - q)$  and  $(T_u - T)$  as there isn't any flux if there is no difference in scalar value

Typos:

-page 8362 line 25, add 'comma' after 'convection'

-page 8373, line 13; 'atleast'

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