

Review of the revised manuscript “The importance of vertical resolution in the free troposphere for modelling intercontinental plumes” by Zhuang et al.

The authors satisfactorily addressed most of my comments.

I am still not fully convinced that the numerical plume simulations in section 4 actually prove and confirm the theoretical analysis of section 2. The authors also claim that the consistency between Fig. 1 and Fig 7. would confirm the theoretical analysis by the numerical simulations. However, all lines shown in Fig 7. are based on the scaling arguments from section 2. No actual run time (computer resource) information is included. From the information given in the manuscript it seems that since the time step is adjusted according to the horizontal resolution a scaling following the red lines in Fig. 7 should be expected. This should be made more explicit and a short paragraph about the actual scaling of computing time should be added. Additional factors/penalties not considered here (for example computational overhead due to parallelisation) might lead to deviation from the expected scaling.

Minor correction:

Page 16, line 21 should read lower L/H and smaller (not larger) dx/dz ratios.