

# Observed versus simulated mountain waves over Scandinavia - improvement by enhanced model resolution?

Reply to interactive comments (acp-2016-765-SC1) of  
manuscript acp-2016-765

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## 1 Introduction

We thank Peter Alexander for the interactive comment and acknowledge his effort to improve our manuscript.

In the following, interactive comments are marked with numbers and corresponding replies of the authors are written in bold and labelled with “ $\Rightarrow$ ”.

1. This manuscript is very interesting and thorough. However, I think that one important issue is missing: you should specify what  $dt$  you used to correctly handle GWs and avoid possible numerical instabilities, particularly if GWs produce large vertical velocities.  
 $\Rightarrow$  **We agree that information about the used time step is missing in the manuscript and added the following sentence in section 3.1 (P7, L149): To avoid numerical instabilities adaptive time stepping was used with a maximum time step of 15 s and a maximum Courant number of 1.2.**
2. Whatever  $dt$  values you used, sensitivity tests should be performed to test the robustness of your results and verify if some  $dt$  intervals lead to better agreement with observations.  
 $\Rightarrow$  **We think that testing the impact of different time steps on model results would be quite interesting. As this study focuses, however, on different spatial resolutions of the model grid, additional simulations with varying time steps would go beyond the scope of this study.**