The paper by Grelle et al. propose a computer code for the simulation of both topographic and stratigraphic amplification effects on seismic waves. The core of the model is a spatially-extended 1-d computational code, complemented with a simulation model and a topographic effect estimator, taking advantage of GIS techniques for data handling (input and output).
The paper may be suitable for publication, provided that some corrections are implemented as suggested in the following comments.

GCM for Vs-h trainer models

The sentence "*it shows relatively high values of the shear wave velocity in the Vs-z dispersion curve*" may be misleading. The term dispersion curve is usually referred to the variation with depth of the phase velocity of seismic waves. Here is probably used instead of "depth-varying uncertainty".

Stratigraphic seismic response

The authors mention that "*A horizontal polarized propagation of the shear waves through a site with infinite horizontal layers is assumed*". In their GIS Cubic model, strata are not horizontally unbounded, and lateral variation of velocity may occur. The authors should justify while this is not taken into account.

"Emul-spectra": adaptive simulation model

It should be mentioned that the simplified spectral shape provided by this model are valid only under several assumptions: 1) the site response is 1-d only, without influence of 2-d effects like closed valleys, sharp variation of the buried morphology 2) independence of site response to azimuth and incidence angle 3) absence of velocity inversions.

Topographic amplification mapping

The sentence "*aims at predicting the spatial amplification effect on the seismic response of reliefs considering them to be constituted by homogeneous material*" is not clear. Does it means that on part of the model the variation of Vs with depth modelled by GCM is not accounted for? This is also important, because the numerical model quoted in this section provide the maximum value of amplification when the wave is vertically incident on the slope. The verticalisation of seismic ray path occurs thanks to the lower velocity encountered in the surficial strata. This is why the assumption of vertical incidence for stratigraphic model is almost always satisfied. This is not true for a slope of uniform rock. A vertical incidence can be obtained at the epicentre only, and any other angle of incidence will be preserved in an uniform velocity model, giving substantial overestimation of the topographic effect (as observed in real earthquakes, as shown in some of the paper cited, e.g. Gallipoli *et al.*).

Appendix
In the description of formula 2A substitute "dumping" with "damping"