



## **The Impact of DEM and Mesh Resolution in a 3D Simulation of Seismic Response**

Saad Khan (1,2), Mark van der Meijde (1), and Harald van der Werff (1)

(1) Faculty of Geo-Information and Earth Observation (ITC), University of Twente, Netherlands (s.khan@utwente.nl), (2) Department of Geology, Bacha Khan University Charsadda (BKUC), Pakistan

This study assesses the impact of using different Digital Elevation Model (DEM) resolutions and mesh resolutions in 3D simulations of seismic response. Topography causes variations in seismic response at the surface of the earth. Scattering of waves as a result of topographic heterogeneity causes amplification and de-amplification of seismic amplitudes. Topographic information of the earth surface is available from DEMs, which come at a certain spatial resolution. The resolution influences the recorded heterogeneity of topography and hence affects calculations and results in seismic simulation studies. Apart from the spatial resolution of a DEM, the mesh resolution, adopted in creation of 3 dimensional finite element meshing, could also change the detailedness of the surface topography and thus affect simulation results. In this study, we show modeled seismic response obtained with several different DEM and mesh resolutions, showing considerable variation in model output.