Estimation of seismic network detection thresholds for Austria

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Seismic networks are expanding and changing continuously: station instrumentation breaks and improves, new stations are set up permanently and temporarily for projects, or get available online from seismological services. For routine processing, it is important to know if and where adding an existing station to processing or building or improving a station will add the most value to the detection an location capabilities.

Therefore, in this study we calculate seismic network detection thresholds for Austria using data available to us from different sources: From the Seismic Network of Austria (OE), which consists of unevenly distributed high quality low noise broadband and strong-motion stations, with station spacing up to 100 km. Cross-border from neighboring countries, where each of them operates at least one seismic network with very different station quality and coverage. As well as from temporary regional scientific projects (i.a. AlpArray (Z3), the SWATH (ZS)) and local infrastructure monitoring (GeoTief EXPLORE 3D).

Additionally to comparing different methods (SN-CAST by Möllhoff et al. 2019, Net-Sim by Niko Horn, GT5-criterium) with each other, we also analyze how strong-motion stations, recently added due to the interregio project ARMONIA, improve the detection capabilities.

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