ID: Type: **Poster**

T1.5-P02. A Cluster of Deep Crustal Seismicity in the Northern Alpine Foreland of Austria

During 2008 a cluster of nine earthquakes was detected in the northwestern region of Austria, which until then was unremarkable in terms of naturally occurring seismicity. The events (estimated magnitudes 2.0-3.8) were located at depths of about 10-20km in the general vicinity of Braunau (13.5°E) between the Bohemian Massif and the Eastern Alps, in an area of elevated geothermal heatflow (80-90mW/m2) with active geothermal energy production. A relocation of these events (NonLinLoc & HypoDD) using a 3D-velocity model revealed a very dense clustering, and resulted in anomalously deep foci within 10 km of the Moho. Coherent focal mechanisms with T-axes striking NE-SW were determined for the strongest of the events through both, waveform-inversion (gCAP) and P-wave onset polarities (HASH). The waveforms of all events exhibit high similarity, as is typically observed in densely clustered seismicity. Using a crosscorrelation technique we found previously undetected, weaker events during that timespan associated with the same cluster. Similarly deep, lower crustal seismicity in the northern Alpine foreland has previously been observed and investigated in the Swiss part of the Central Alps west of 10°E, where the deepest events have been found to closely follow the Moho of the subducting European lithosphere.

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Track Classification: 1. The Earth as a complex system