Karlsruhe Institute of Technology

Mountain Building Processes in 4D

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The nature of the Albstadt Shear Zone, Germany

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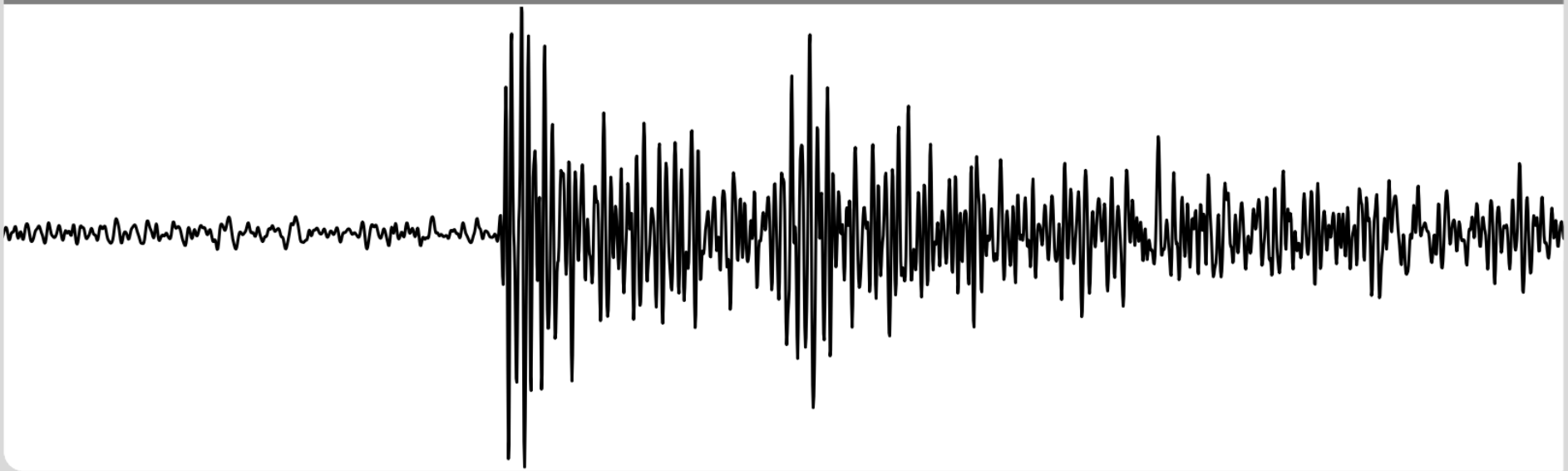
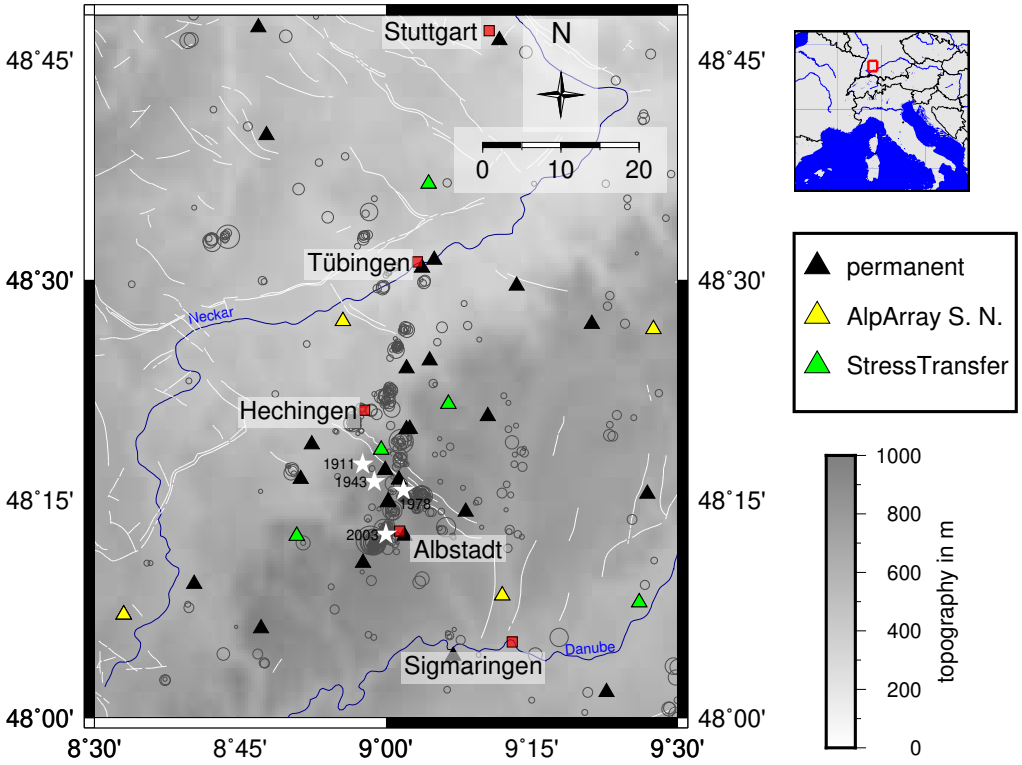
Geophysical Institute

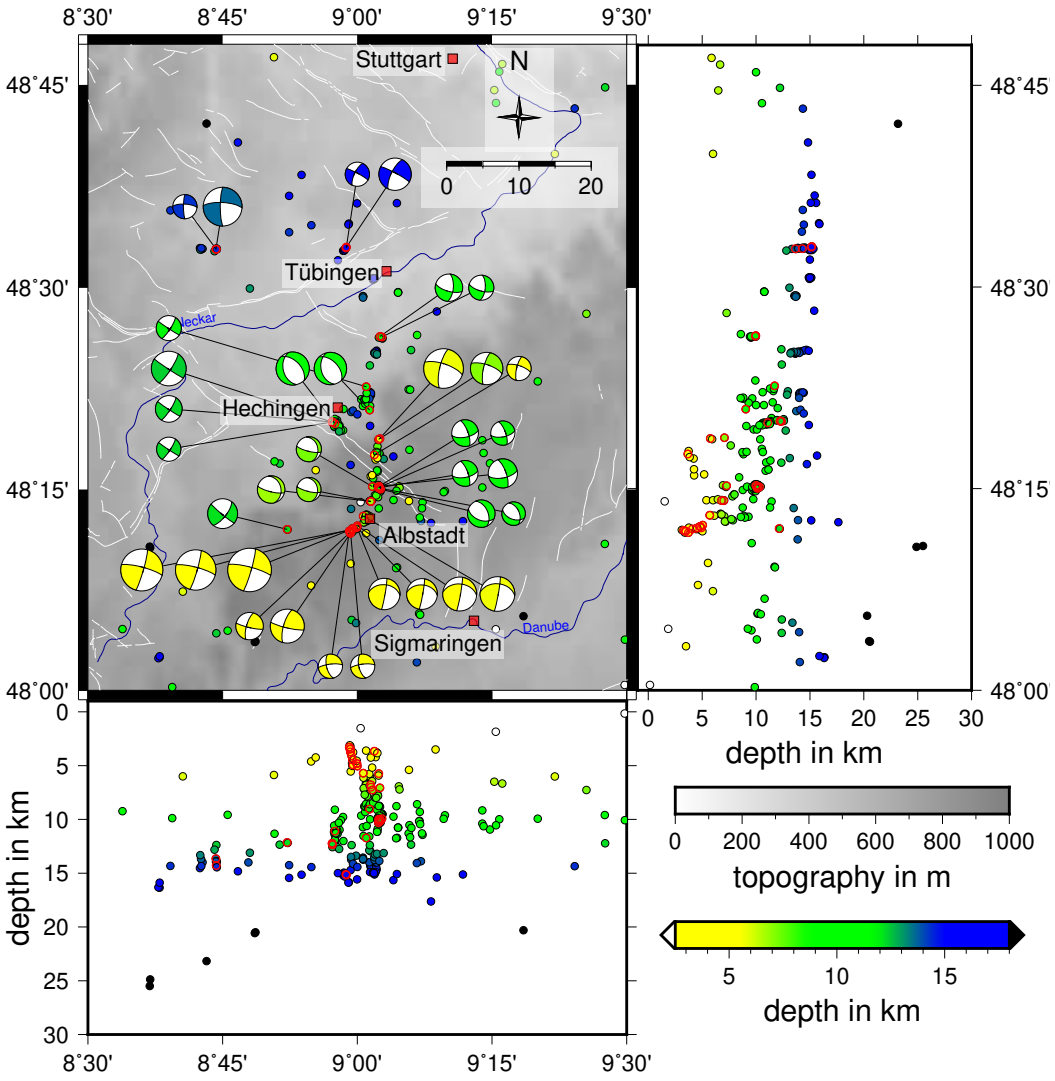


Overview of our research area around the Albstadt Shear Zone



- Stars show the locations of the biggest events with *Mw* > 5 in 1911, 1943 and 1978[1] and the event on 22 March 2003 with a *Mw* of 4, which was so far the best observed event of the Albstadt Shear Zone[2]
- Gray circles show the earthquake catalog of the State Earthquake Service of Baden-Württemberg between 2011 to 2018[3]
- We complemented this catalog with P- and S-phase picks at the AlpArray Seismic Network stations[4] and our own StressTransfer seismic stations
- White lines show known and assumed faults in our research area[5]
- Topography is based on the ETOPO1 Global Relief Model[6]

Results



- Best relocated events of the complemented catalog from 2011 to 2018
- Fault plane solutions of 36 events with local magnitude ML between 0.9 to 3.4
- Seismicity aligns north-south
- The minimum depth increases from 3 km to 5-14 km towards north
- The dominating focal mechanism is strike-slip, but we also observe minor components of normal faulting

References

[1] Leydecker, G. (2011). Erdbebenkatalog für Deutschland mit Randgebieten für die Jahre 800 bis 2008.

[2] Stange, S. and Brüstle, W. (2005). The Albstadt/Swabian Jura seismic source zone reviewed through the study of the earthquake of March 22, 2003. Jahresberichte und Mitteilungen des Oberrheinischen Geologischen Vereins, 391-414.

[3] Bulletin-Files des Landeserdbebendienstes B-W, Ref. 98 im Landesamt für Geologie, Rohstoffe und Bergbau im Regierungspräsidium Freiburg (http://www.lgrb-bw.de); Az. 4784//18_3303

[4] Hetényi, G. Molinari, I. Clintopn, J. Bokelmann, G., Bondár, I. Crawford, W. C., … and the AlpArray Working Group (2018). Teh AlpArray seismic network: a large-scale European experiment to image the Alpine Orogen. Surveys in geophysics, 39(5), 1009-1033.

[5] GÜK300:Tektonik, http://maps.lgrb-bw.de/

[6] Amante, C. and B.W. Eakins (2009). ETOPO1 1 Arc-Minute Global Relief Model: Procedures, Data Sources and Analysis. NOAA Technical Memorandum NESDIS NGDC-24. National Geophysical Data Center, NOAA.

Acknowledgement

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