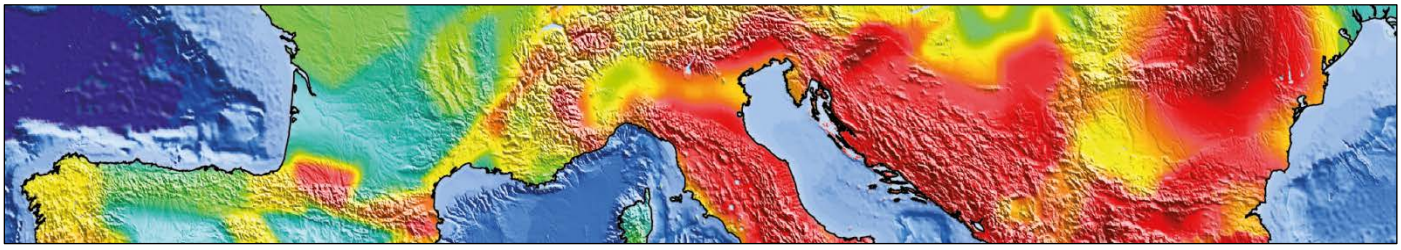

Job Announcements by Fabrice Cotton and Oliver Heidbach, Section 2.6 *Seismic Hazard and Stress Field*, GFZ Potsdam

The Helmholtz Centre Potsdam – GFZ German Research Centre for Geosciences is the national research centre for Earth sciences in Germany. With approx. 1280 employees, the GFZ is conducting interdisciplinary research on the "*System Earth*" and the influence of humans on the planet. As a member of the Helmholtz Association, it is part of Germany's largest science organization. Section 2.6 *Seismic Hazard and Stress Field* invites applications for the following positions.

Research Scientist Position on *Physics-based ground-motion modelling and seismic hazard evaluation*

The assessment of seismic hazard for major cities is a key challenge and requires detailed investigation of the potential site-specific amplifications and near-field ground-shaking. The development of broadband waveform simulation methods and the exponential increase of ground-motion data provide new research opportunities to develop such site and fault-specific ground-motion models. We are looking for an enthusiastic research scientist interested by the development of innovative physics-based ground-motion modelling and the scientific issues that need to be solved in order to integrate both physic-based simulations and empirical ground-motions models into site-specific seismic hazard studies (e.g. near-source effects, ground-motion variability, directivity effects, site effects, epistemic uncertainties). The successful candidate will be part of a team dedicated to engineering seismology with a solid experience in ground-motion modelling and probabilistic seismic hazard assessment. Our key team project "*Urban Fault Observatory*" is the development of urban, fault and site-specific, probabilistic hazard assessment methods. Further information and application details are given at: www.gfz-potsdam.de/en/career/job-offers.

PhD Position on *Stress and strain accumulation in stable part of Western Europe: Implications for probabilistic seismic hazard assessment*

The classical probabilistic seismic hazard assessment (PSHA) is based on seismic event catalogues and does not yet consider physical processes of stress and strain accumulation during the seismic cycle. In particular for low strain intraplate regions this approach is under controversial debate in past few years (e.g. Calais et al., 2016, http://dx.doi.org/10.1002/2016GL070815). Thus, the overall goal is to model the large scale thermo-mechanical processes that control the contemporary deformation and stress pattern in central Western Europe on scales between 1000 and 100 km and to link the result into a workflow of physics-based probabilistic seismic hazard assessment for low strain areas. The model will integrate a wide range of data such as gravity, seismological catalogues, tectonic stress, temperature and GPS observations. Furthermore, the model results should be linked to a complementary PhD position at the GFZ Potsdam (section 6.1 *Basin Modelling*) that is modelling thermo-hydro-mechanical (THM) processes at reservoir scale. The envisioned link is that the large scale model should deliver initial and boundary conditions for the THM simulations. Both models are expected to establish jointly a workflow in order to quantify the key uncertainties of the model (e.g. Ziegler et al., http://dx.doi.org/10.5194/se-7-1365-2016). Further information and application details are given at: www.gfz-potsdam.de/en/career/job-offers.

PhD Position on *Marmara Sea Earthquake Simulation Model - MEMO*

Recent dramatic events such as the Tohoku earthquake in 2011 have demonstrated that we are only at the beginning in understanding how faults behave. In the next decade, we will need to merge geological, geodetic and seismological information to better constrain future earthquake scenarios which will be shaking mega-cities located to major active faults. That requires more detailed investigation of near-field and directivity effects as well as the assessment of individual earthquake scenarios taking into account fault segmentation and rupture propagation. The overall goal of the PhD is to address such scientific question for the Main Marmara fault located close to the megacity of Istanbul. Based on the 3D stress evolution model of Hergert and Heidbach (2011, http://dx.doi.org/10.1111/j.1365-246X.2011.04992.x) earthquake scenarios should be simulated and associated ground-shaking in a second step. With this model key questions about the nature of the earthquake process in the Marmara Sea should be investigated in order to address question like: Is there a creeping segment in the seismic gap south of Istanbul? Can the hypocenter location be determined in a probabilistic way using the modelled stress field? Further information and application details are given at: www.gfz-potsdam.de/en/career/job-offers.

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