[EJ] Evening Poster | S (Solid Earth Sciences) | S-CG Complex & General

[S-CG57]Dynamics in mobile belts

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The dynamic behaviours of mobile belts are expressed across a wide range of time scales, from the seismic and volcanic events that impact society during our lifetimes, to orogeny and the formation of large-scale fault systems which can take place over millions of years. Deformation occurs on length scales from microscopic fracture and flow to macroscopic deformation to plate-scale tectonics. To gain a physical understanding of the dynamics of mobile belts, we must determine the relationships between deformation and the driving stresses due to plate motion and other causes, which are connected through the rheological properties of the materials. To understand the full physical system, an integration of geophysics, geomorphology, and geology is necessary, as is the integration of observational, theoretical and experimental approaches. In addition, because rheological properties are greatly affected by fluids in the crust and fluid chemical reactions, petrological and geochemical approaches are also important. After the 2011 great Tohoku-oki earthquake, large-scale changes in seismic activity and regional scale crustal deformation were observed, making present-day Japan a unique natural laboratory for the study of the dynamics of mobile belts. This session welcomes presentations from different disciplines, such as seismology, geodesy, tectonic geomorphology, structural geology, petrology, and geofluids, as well as interdisciplinary studies, that relate to the dynamic behaviour of mobile belts.

[SCG57-P20]Characteristics of focal mechanism solution of the earthquakes in the source region of the 2000 Western Tottori Earthquake based on "0.1 Manten" hyper dense seismic observation

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In order to understand earthquake generation process, stress field around an earthquake fault is important because it is affected co-seismic fault behavior. Precise Determination of focal mechanisms of earthquakes is required to estimate stress field in a target region. Here, we investigate characteristics of stress field in the source region of the 2000 Western Tottori Earthquake by hyper dense seismic network. The network is composed by about 1000 seismic stations in the region. Using high density polarity of first P wave onset data on a focal sphere from the network, we accurately determined a focal mechanism solution of small earthquake. We found some cases in which the polarity distributions of the events cannot be explained by well-known double couple earthquake source model. The misfit of the data from the expected polarity distribution provides important suggestions for understanding relation between earthquake generation and regional property of the crust. In order to identify the cause of the misfit, we considered three factors producing it: velocity structure model, far-field approximation in radiation pattern of earthquake source

model, and simultaneous occurrence of events with different source mechanisms. In order to confirm a most dominant factor among them, we verify misfit for various model considering the three factors. We conclude no effect on the misfit distribution from the factors of the velocity model and the far-field approximation. On other hand, the misfit of about 25% decreased due to multiple event model. This suggests complex stress field in the region.