[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-P28]A new apparatus for measuring elastic wave velocity, electrical conductivity and permeability of fluid-saturated rocks at various confining and pore-fluid pressures

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Both conductivity and permeability of fluid-saturated rocks are sensitive to the structure of pores. Conductivity and permeability depend differently on the aperture of pores. Simultaneous measurements of conductivity and permeability thus impose strong constraints on inferring the structure of pores. A new apparatus has been made for measuring elastic wave velocity, electrical conductivity and permeability of fluid-saturated rocks at various confining and pore-fluid pressures. The apparatus is composed of a pressure vessel and a pore-fluid control system. The pressure vessel has 16 electrical feedthroughs for velocity and conductivity measurements. The pressure medium is silicone oil and the maximum pressure is 200 MPa. A piston-cylinder system (Watanabe and Higuchi, 2014; 2015) is used for the electrical insulation and pore-fluid pressure transmission. The pore-fluid is electrically isolated from the metal work to enable us to measured conductivity of a rock sample. The transient pulse method (e.g., Brace et al., 1968) is employed for permeability measurement. Pore-fluid pressure is uniformly set to be a prescribed value prior to a measurement. At the beginning of a measurement, a small pressure pulse is introduced in the upstream. The pressure in the upstream decays as the fluid flows through the sample. Permeability is determined from the pressure evolution in the upstream. Preliminary results will be presented in our poster.