

Invited personnel : Richard Hugh Sibson (Otago University)

Person in charge (Contact person) : Yoshihisa IIO (Disaster Prevention Research Institute, Kyoto University)

Period of stay in Japan : 15-29 July 2016

Purpose : To attend the "International Symposium on Crustal Dynamics" and a research meeting held at Tohoku university.

In the symposium, Prof. Sibson gave us the primary lecture as follows:

He discussed about the tensile overpressure compartments on low-angle thrust faults, and emphasized the following points. Thrust faults serve as discharge conduits in areas of crustal shortening and thickening especially where finite shortening at depth is accompanied by formation of subvertical cleavage, associated pressure solution and fluid loss. In a compressional regime a tensile overpressure compartment may extend some depth below an impermeable seal of tensile strength, while the overpressure immediately below such a seal is supralithostatic, the hydraulic gradient in the fault core stays hydrostatic provided hydraulic communication is maintained. Structural and geophysical evidence supports the existence of tensile overpressure compartments in exhumed and active areas of continental collision and subduction. Systems. Overpressured fault-fracture shear meshes are possible sources for episodic (Non-Volcanic) tremor, LFEs, etc. Dilatant, fluid-saturated fault-fracture meshes of this kind are likely to be highly unstable with mesh activity migrating as overpressured fluids are redistributed, both along-strike and up-dip.

He gave us many comments during the symposium and the DFDP workshop.

After the symposium, he stayed at Tohoku University in Sendai. We discussed the three dimensional seismic velocity structure in the northern part of the South Island, New Zealand. We have compared V_p , V_s and V_p/V_s distribution with the previous studies and discuss the similarities and differences between them. In particular, we agree that the interpretation of V_p/V_s is not simple because V_p/V_s could be controlled by many factors (e.g. lithology, existence of fluid) and we will continuously discuss in future.