

Comparative study of the Nankai and Shimanto accretionary prisms and the drilling of the seismogenic zone

Gaku Kimura[1]

[1] Department of Earth and Planetary Science of the Graduate School of Science, University of Tokyo/JAMSTEC IFREE

Shallow part of the seismogenic zone of the Nankai subduction zone is proposed to be a target of the early stage of IODP. The target is the best place to decipher the several hypotheses and questions about the seismogenic zone in the following; 1: systematic, progressive material and state changes control the onset of seismogenic behavior and locking of subduction thrusts. 2: subduction zone megathrusts are weak faults; i.e., they slip under conditions of low resolved shear stress. 3: within the seismogenic zone, relative plate motion is primarily accommodated by coseismic, frictional slip. 4: Physical properties, chemistry, and state of the fault zone change with time throughout the earthquake cycle. We have on-land analog of the fossil seismogenic zone in the Shimanto Belt, especially the latest Cretaceous part. Burial depth and thermal condition of the on-land melange was very similar to the expected drilling site of present Nankai seismogenic zone. All the processes from subduction to underplating throughout the seismogenic zone are recorded in this melange. Therefore, detailed observation and determination of the physico-chemical condition related to the seismicity from the melange is one of the keys to make a success of the coming seismogenic zone drilling.