

Development process of branching Out-of-sequence thrust

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Out-of-sequence thrust (OST) develops from subduction plate boundary to sea floor and plays a great role in thickening of an accretionary prism, formation of a forearc basin and tsunami generation attended by trench type earthquake like 1944 Tonankai earthquake (e.g., Park et al., 2002). The OST branches more some OSTs at the shallow portion and extend to the sea floor (e.g., Park et al., 2002). Tsunami occurs because of the fluctuation of the sea floor attended by these faults activity. Thus, to clarify about development process of branching OST is important to estimate the source of the tsunami generation. The objective of this study is to clarify about development process of branching OSTs from map scale geologic structural analysis and pressure temperature condition based on the fluid inclusion measurement.

The ancient branching OSTs are exhumed from 3-5km in depth in the late Cretaceous Shimanto accretionary complex at the coastal area of southwest Shikoku. The angles of these OSTs change from seaward (20-40 northward dipping) to landward (70 northward-80 southward dipping). This structure is agreeable with present days OSTs. Pilot result of fluid inclusion measurement indicates that the P-T condition of landwards OST is higher (190C, 135MPa) than the seawards OST (150C, 80MPa).

Decrease of the P-T condition from landward to seaward may indicate that the branching OSTs were not formed at the same time but landwards OST was formed earlier at the deep portion (5-6 km) and most seawards OST was formed latest at the shallow portion (3-4 km). It is suggested that the most seawards OSTs will slips next time.