

## Structure of the Kumano splay fault system from 3D seismic reflection and IODP drilling

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A key target of investigation for NanTroSEIZE is the mega-splay fault that cuts up from the plate boundary megathrust through the older accretionary prism to the seafloor. Using a combination of 3D seismic reflection data and results from IODP drilling, we are able to investigate the deformation history of the splay fault, the hanging wall and footwall blocks and sedimentation associated with slip along the mega-splay.

The hanging wall is composed of a few hundred meters of Recent to upper Pliocene hemipelagic slope sediments overlying strongly deformed lower Pliocene strata that are believed to have been accreted at the toe of the accretionary prism. The prism strata are characterized by very low seismic reflection amplitudes and few internally coherent reflections. At least three prominent landward-dipping discontinuities, believed to be thrust faults, cut the hanging wall block. The landward portion of the hanging wall consists of a tract of coherent strata, approximately 900 m thick, 1000-1250 m wide that extends laterally for at least 10km. The block is truncated at its seaward edge, presumably by a steeply-dipping back thrust. Minimum slip of the hanging wall along the splay fault is 2.25 km (2 km horizontal and 0.9 km vertical slip).

As the hanging wall advances, it is blanketed by hemipelagic slope sediments that slump off steep slopes and into the adjacent trench slope basin. The more consolidated (and thus stronger) hanging wall block then overrides these redeposited slope sediments. The slope sediments in the footwall are 100-400m thick and are faulted and folded as they are overridden.