

# Spatial change of extension direction detected by paleostress analysis in the Miocene Tanabe Group, Southwest Japan

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Stress state in forearc basin is considered to reflect deformations along the underlying plate boundary fault and of basement such as accretionary prism. Lin et al. (2010) reported spatial difference of stress in the Kumano Basin, present-day forearc basin offshore the Kii Peninsula (Lin et al., 2010). Extension direction is perpendicular to trench near outer-arc high, whereas it becomes perpendicular to subduction direction as distance from outer-arc high increases. The spatial resolution, however, is not enough to reveal whether the difference reflects local deformations or regional stress change related to plate subduction or deformation of basement. Onland paleoforearc basin sediments, as an analog to present basin, are suitable for bring out spatial variety of stress. This study performed a series of paleostress analyses by using outcrop-scale structures in the Miocene Tanabe Group, paleoforearc basin sediments. The study area extends roughly 10 km along the coastal area of the Shirahama Formation, the upper part of the Tanabe Group, the Kii Peninsula, southwest Japan. The measured structures consist of outcrop-scale faults and mineral veins. Fault displacements range from about several mm to 1 m. The thicknesses of veins are about several mm. In total, 159 faults and 245 veins have been observed. They have been analyzed by the stress inversion methods (Sato, 2006; Yamaji and Sato, 2011), which can detect multiple stress conditions from a dataset.

As the result, normal and strike-slip faulting stress regimes were detected. The horizontal extension direction was spatially variable. It trends roughly N-S in southern area, rotates clockwise and trends E-W in northern area. The change of extension direction is not consistent with the frequency of map-scale faults. Extension normal to the outer-arc high at the southern end of the Kumano Basin can be considered to reflect rising of outer-arc high. The change of extension direction in the Tanabe Group may be reflect the same tectonics at the period.

## References

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