

## Post-rift, Middle Miocene stress regime of the NE Japan arc inferred from dikes and mesoscale faults in the Kakunodate area

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Intra-arc rifting in the NE Japan arc terminated around 14–15 Ma, but the Middle Miocene, post-rift stress regime is not well understood. Researchers in the 1980s and early 90s could not determine either the maximum or intermediate stress axis from dike orientations or could not deal with non-Andersonian faults for their paleostress analysis. The methodological development in the last quarter century has enabled us to determine not only all the principal axes but also stress ratio (e.g., Bear et al., 1994), and to separate stresses from heterogeneous data from dikes and faults (Yamaji, 2000; Yamaji et al., 2006; Sato, 2006; Yamaji, et al. 2006; Yamaji and Sato, 2011).

We collected orientation data from 28 doleritic dikes, 10 dacitic dikes and 59 mesoscale faults in the Kakunodate area, NE Japan to apply the latest methods to determine the post-rift stress regime of the NE Japan arc. The stratigraphic constraints and the U-Pb age of a dacitic dike indicate that the doleritic and dacitic ones were formed in ~17.5–13.5 Ma and ~14–12 Ma, respectively.

As a result, the doleritic and dacitic dikes yielded the normal faulting regime of stress with NW-SE extension. Stress ratio decreased during the transition from doleritic to dacitic magmatism, suggesting the approach of the minimum principal stress to the intermediate one to reduce differential stress when the intra-arc was abandoned. It is unclear when the mesoscale faults were formed, but the similarity of the normal faulting stress regime obtained from the fault-slip data suggest their activity in the early Middle Miocene. However, the stress does not explain a quarter of the data from the faults with the reverse sense of stratigraphic separations. Those are probably younger faults.

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