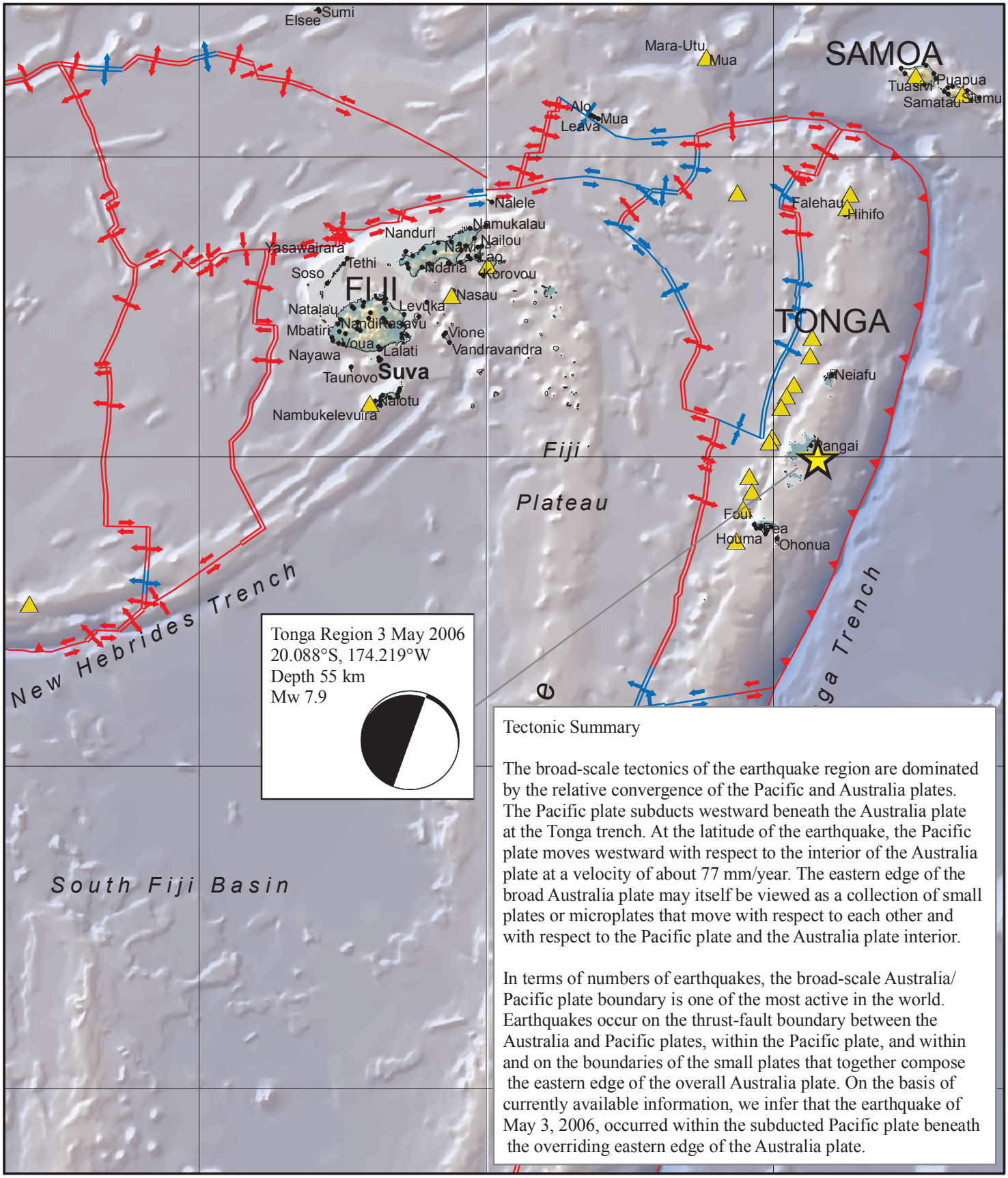
M7.9 Tonga Region Earthquake of 3 May 2006



Tectonic Summary

The broad-scale tectonics of the earthquake region are dominated by the relative convergence of the Pacific and Australia plates. The Pacific plate subducts westward beneath the Australia plate at the Tonga trench. At the latitude of the earthquake, the Pacific plate moves westward with respect to the interior of the Australia plate at a velocity of about 77 mm/year. The eastern edge of the broad Australia plate may itself be viewed as a collection of small plates or microplates that move with respect to each other and with respect to the Pacific plate and the Australia plate interior.

In terms of numbers of earthquakes, the broad-scale Australia/Pacific plate boundary is one of the most active in the world. Earthquakes occur on the thrust-fault boundary between the Australia and Pacific plates, within the Pacific plate, and within and on the boundaries of the small plates that together compose the eastern edge of the overall Australia plate. On the basis of currently available information, we infer that the earthquake of May 3, 2006, occurred within the subducted Pacific plate beneath the overriding eastern edge of the Australia plate.