

Reassessment of the stress history in the eastern Boso Peninsula, central Japan

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There are numerous mesoscale faults in the Neogene to Quaternary Awa and Kazusa Groups in the eastern Boso Peninsula (Kinugasa et al., 1969). The counterclockwise change of the Philippine Sea plate motion was argued on the basis of the stress history reconstructed by fault striation analyses in the peninsula (Angelier and Huchon, 1987; Yamaji, 2000). However, there has been no consensus on the timing of N-S or NE-SW compression. The timing was said to be about the late Pliocene by Kinugasa (1969), before 3-2 Ma by Angelier and Huchon (1987) and before 1.2 Ma by Yamaji (2000). In this research, we reinvestigated the stress history by using a recent technique of paleostress analysis (the Hough-transform-based inversion method: Yamaji et al., 2006; Sato, 2006).

We investigated mesoscale faults cropping out along the east coast of the Boso Peninsula and collected about 1,400 fault-slip data in the Awa and Kazusa Groups. The result of the fault striation analysis is as follows; a vertical axial compression, N-S extension and NW-SE extension were detected from the upper Katsuura Formation to the Umegase Formation. In addition to the above-mentioned three stresses, we detected NE-SW compression from the Amatsu Formation to the Kurotaki unconformity and an early stage extension from the Amatsu and Kiyosumi Formations. The clarified stress history is summarized as follows; the early stage extension before ~3 Ma, the NE-SW compression at 3-2 Ma, the NW-SE extension at 2-0.8 Ma, the N-S extension after 0.8 Ma and the vertical axial compression at the present.

The most important discovery of this study is that the compression was episodic from 3 to ~2 Ma. In this presentation, we discuss the relationship between the paleostress and the past position of the TTT junction.

Reference:

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