

# Origin of the Hida belt: The exotic block in the Phanerozoic crust of Japan

\*Yukio Isozaki<sup>1</sup>

1. Department of Earth Science and Astronomy, Multi-disciplinary Sciences - General Systems Studies, Graduate School of Arts and Sciences, The University of Tokyo

After the Miocene opening of the Japan Sea, the connection between the Japanese Islands and mainland East Asia became obscure. The Hida belt in central Japan occupies a unique position with respect not only to the rest of Japan but also to the Japan Sea margin of the conterminous East Asia. Within the Phanerozoic orogenic edifice of Japan with oceanward younging polarity, the Hida belt has long been regarded as the core of the entire orogen with the oldest age. Nonetheless, the dominant granitoids and metamorphic rocks of the belt yielded merely much younger ages (Permo-Triassic and Jurassic) than previously imagined. The Hida belt is too unique in various aspects to be claimed as the orogenic core of Phanerozoic Japan; instead, it forms an independent unit totally exotic to the Phanerozoic subduction-related units in SW-NE Japan. The latest comparative study on the geologic units between Japan and southern Primorye (Far East Russia) revealed that the Hida belt is geotectonically correlated with the southern extension of the Laelin-Grodekov (L-G) belt along the Primorye/China/North Korea border, via the Yamato Ridge in the middle of the Japan Sea. The L-G belt occurs between the North China block on the west and the Khanka/Jiamusi/Bureya block on the east; the latter represents the northern extremity of Greater South China (GSC) that continued all the way from South China (Yangtze + Cathaysia) via East China Sea, SW-NE Japan, to Primorye. The key criterion for this correlation is the eastern limit of the co-occurrence of Permo-Triassic and Jurassic granitoids in Far East Asia (Isozaki et al., 2021; Bull. Nat. Mus. Nat. Sci.). In contrast to the L-G belt, Yamato Ridge, and Hida belt, Jurassic granitoids are totally absent on the Pacific-side of GSC. In these three belts, no signature of continental collision (e.g. ultrahigh-pressure rocks of the Dabie-Sulu belt in China) was detected, except the medium-pressure metamorphics in the Hida belt. These belts likely represent a non-collisional remnant of a pre-existing ocean between North China and GSC. In short, the Hida belt was secondarily incorporated into Cenozoic Japan by the crustal re-organization through the back-arc opening tectonics.

Keywords: Hida belt, Greater South China, North China block, Laelin-Grodekov belt, granitoids, U-Pb age