

The eastern extension of the Avalonian terranes, the Prototethys and Paleotethys oceans

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Avalonia was an archipelago of microcontinents divided into West and East Avalonia. West Avalonia included south-eastern parts of Nova Scotia, eastern Newfoundland, New Brunswick, Florida(?), and New England, while East Avalonia included southern Ireland, southern Scotland, England, northern France, the Brabant Massif, Lusatia, northern Germany, and north-western Poland. Several crustal fragments such as the Bruno–Silesia terrane, Moesian terranes, Istanbul/Zonguldak terrane constituted an extension of East Avalonia (Golonka *et al.*, 2023). These microcontinents detached from Gondwana during the Early Paleozoic times. Golonka *et al.* (2023) also portrayed a chain of microcontinents moving away from Gondwana across the Palaeoasian (Prototethys) Ocean. These chain included Scythian, Turan, South Kazakhstan, Junggar, Tarim and Indochina. The Rheic–Palaeotethys Ocean opened behind these microcontinents. Collision occurred between Avalonia, Laurentia and Baltica during Caledonian Orogeny. This collision also

included Bruno–Silesia, Moesia terranes, Istanbul/Zonguldak, Scythian and Turan terranes (Golonka & Gawęda, 2012). The events involving Junggar, South Kazakhstan and Tarim are more speculative.

Indochina collided with South China along Song Ma–Truong Song–Ailaoshan suture during latest Silurian–earliest Devonian times. In northwestern Vietnam, the Late Silurian Song Chay complex granitoid is connected to this event. Moreover, the deep-water deposits such as Pa Ham formation were later replaced by shallow-water sedimentary formations, including the continental Lower Devonian red beds and Lower Devonian Nam Pia Formation composed mainly of terrigenous sediments and marl, medium-bedded to massive fine-grained limestone, representing shallow water sediments. The Lower Paleozoic greenschists of deep-sea origin were unconformably covered in many localities by Devonian redbeds (Son *et al.*, 1978; Hung, 2010; Hung *et al.*, 2023).

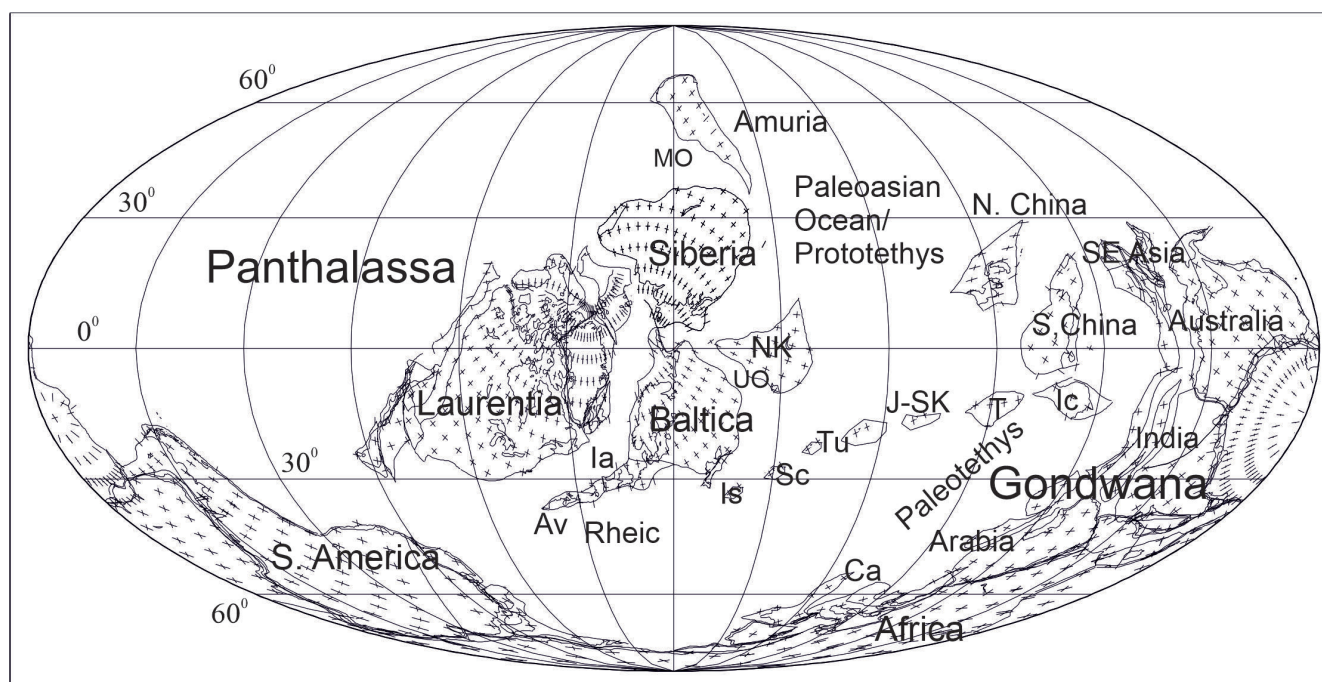


Fig. 1. Early Silurian palaeogeography. Abbreviations: Av – Avalonia, Ca – Cadomia, Ia – Iapetus Ocean, Ic – Indochina, Is – Istanbul, J–SK – Junggar–South Kazakhstan, MO – Mongol–Okhotsk Ocean, NK – North Kazakhstan, Sc – Scythian terranes, SK – South Kazakhstan, T – Tarim plate, Tu – Turan terranes, UO – Ural Ocean

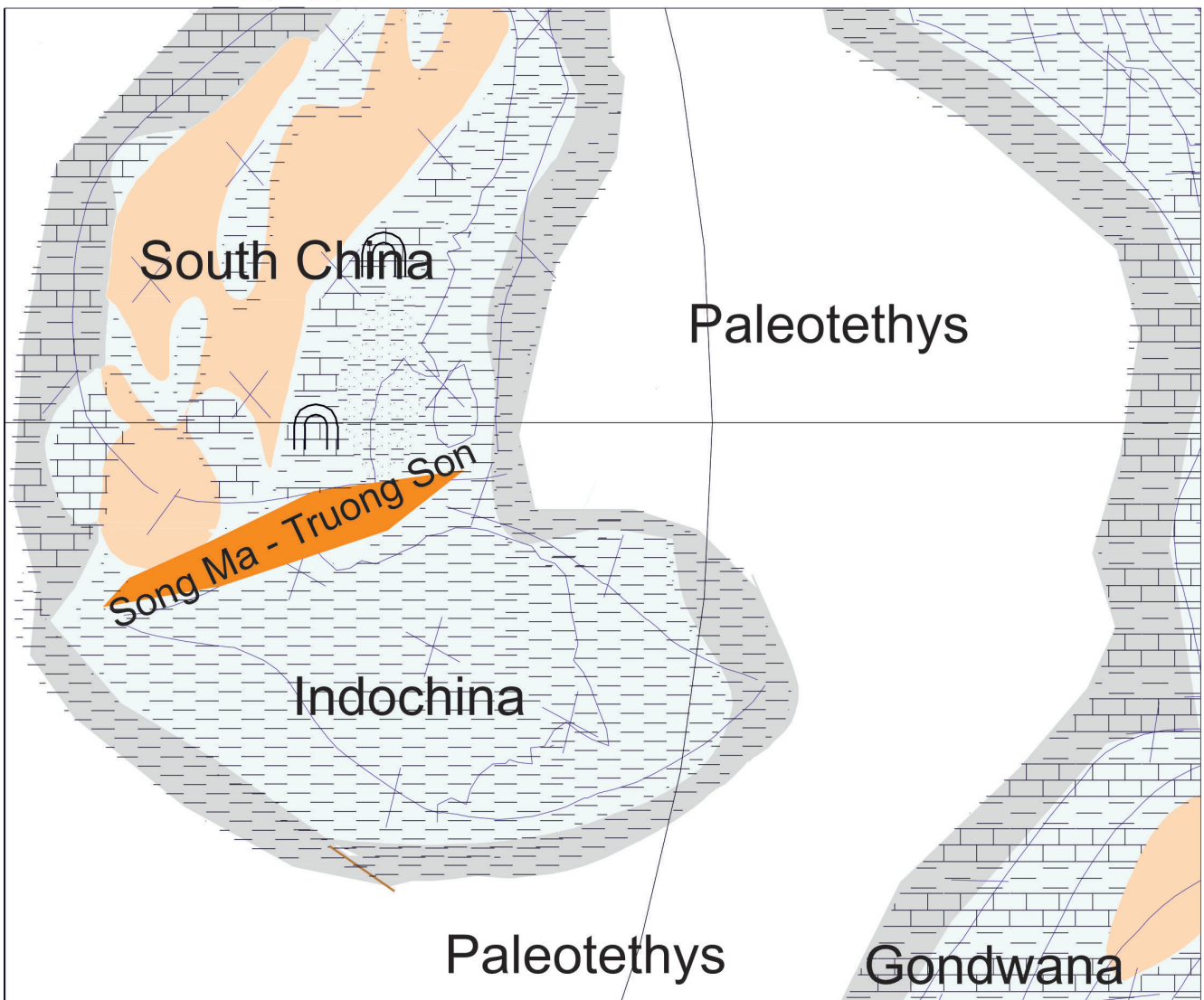


Fig. 2. Palaeogeography of Indochina and South China during latest Silurian–earliest Devonian

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