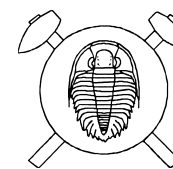


## Fragmentation of microcontinents accreting to Baltica: Did it happen and are the detached terranes traceable?

(1 fig.)

J. A. WINCHESTER

Keele University; j.a.winchester@esci.keele.ac.uk



The disposition of the principal crustal blocks abutting the East European Craton (EEC) along the Trans-European Suture Zone (TESZ) needs to be reassessed. Recent work by members of the EU-funded PACE Network, combined with emerging information about basement massifs in NW Turkey and Romania, reveals some unexpected relationships.

With the end-Cambrian establishment of the Bruno-Silesian, Łysogory and Małopolska terranes in approximately their present location on the SW margin of the EEC, a major promontory on this margin of the continent was created: the Bruno-Silesian Promontory (BSP). This palaeogeographic feature exerted a controlling influence on the geometry of terrane accretion to the EEC.

Both the late Ordovician accretion of Avalonia, and the early Carboniferous accretion of the main components of the Armorican Terrane Assemblage (ATA), involved emplacement of new continental material around the BSP. All the blocks accreted to Baltica in the Palaeozoic contain similar Neoproterozoic basement, indicating a peri-Gondwanan origin: it is therefore inappropriate to apply the term peri-Gondwanan solely to the components of the ATA.

Inherited ages from Avalonia contain a 1.45 Ga “Rondonian” component arguing for proximity to the Amazonian craton at the end of the Neoproterozoic (Tucker –

Pharaoh 1991; Nance – Murphy 1994): such a component is absent from ATA terranes, which suggests that they have closer affinities with the West African craton. Clear information about the inherited ages characteristic of granitoids occurring within the core of the Bruno-Silesian block is also urgently required.

In NW Turkey, indications of an Avalonian faunal affinity (Dean *et al.* 2000), combined with inherited Rondonian ages (Chen *et al.* 2002) in the Istanbul block both suggest it once formed part of Avalonia. If so, its present geographic location indicates that the easternmost part of Avalonia became detached on collision with the BSP and migrated east. The southerly displacement of the Istanbul block with the mid-Cretaceous opening of the western Black Sea basin detached it from its westerly continuation: the amount of displacement suggests that this extension was part of the Moesian platform of Romania, which may therefore also contain Avalonian crust.

The Balkan, Sakarya and eastern Pontides blocks, with similar Palaeozoic histories to the ATA, appear to have rifted from Gondwana, possibly as discrete blocks, forming the eastern extremity of the ATA. On collision with the BSP they too were displaced eastwards and accreted to the south of the EEC and its already-attached Avalonian terranes.

Models showing the former locations of these terranes and the larger continents from which they rifted, or to which they became attached, must conform to the above constraints, as well as those provided by palaeomagnetic data. Hence, in the late Neoproterozoic and Early Palaeozoic, these smaller terranes, some of which contain Neoproterozoic ophiolitic marginal basin and magmatic arc remnants, probably fringed the end-Proterozoic supercontinent as part of a “Pacific-type” margin. Palaeozoic plume-influenced metabasite geochemistry in the Bohemian Massif (Floyd *et al.* 2000) may also explain the repeated rifting of the supercontinent margin, with many of the resulting fragments moulded onto the SW and southern margin of the EEC.

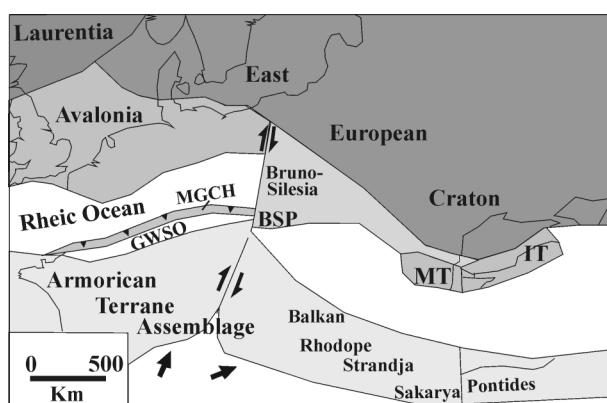


Fig. 1 Likely configuration of the Early Carboniferous disposition of the newly-amalgamated Armorican Terrane Assemblage, on initial impact with the Bruno-Silesian Promontory.

Abbreviations: GWSO, Giessen-Werra-Südharz Ocean; IT, Istanbul Terrane; MGCH, Mid-German Crystalline High; MT, Moesian Terrane.

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