

Conversely, the basement inliers exposed in Wales and the English Midlands, previously assigned to the Cymru, Wrekin and Charnwood terranes, preserve a spread of ages between about 710 Ma to 566 Ma with an apparent hiatus between 675 Ma and 643 Ma, and conspicuous absence of rocks with ca. 615 Ma ages.  $\epsilon\text{Nd}$  between -2.0 and +3.5 and TDM between 1507 Ma and 994 Ma overlap with the other grouping but tend toward younger and less dominant crustal source components. The  $\delta^{18}\text{O}$  values of +7.7 to +10.1 ‰ are within the range of calc-alkaline rocks, with little contribution from sedimentary sources.

Previous interpretations have considered the southern Britain basement equivalent to West Avalonia of the northern Appalachians orogen. However, comparison with isotopic signatures of basement rocks in the northern Appalachians shows that the British basement has more in common with ensialic Ganderia than with the oceanic-arc successions that are inferred to underlie West Avalonia. **(SY1, Wed. 10:20)**

### **Magmatism and extension in the outer trench slope and near-trench region of collisional/convergent systems**

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The outer slope region of active plate convergent and continental collisional zones may develop extensional fault systems during approach to the trench or foreland basin axis, and during underthrusting beneath the overriding accretionary wedge. The more common development is of an asymmetrically-dipping system of normal faults approximately parallel to the trench or foreland basin axis. Less common is the occurrence of localized rifts at a high angle to the foreland basin axis. Alkali basalt magmatism in modest volumes in association with this extension is well known for recent examples of high-angle rifts, for instance the Rhine Graben. The trench-parallel systems have only one possible young (and very localized) example of associated magmatism identified in the present oceans, the “petitspot” volcanoes off northern Japan, although it may be argued that this is instead an example of a high-angle rift, as the faults on which the volcanics occur are significantly oblique to the nearby trench and to most of the regional outer slope fault array. In contrast, in old orogens several examples of foreland basin-parallel outer slope magmatism can be identified, the Acadian of Maine and adjacent Canada being one where large volume magmatism occurred. Others of smaller volume are the Jonestown and Starks Knob occurrences in the Laurentian Taconic foreland, and a mid-Proterozoic example, the Flaherty Formation of the Belcher Islands in the foreland basin outer slope of the northern Superior margin. The basalts of these sequences are mostly of enriched MORB parentage, but range locally from MORB to alkali basalt, and show variable evidence of continental crustal contamination. In these old examples, limited preservation and later deformation may prevent identification of which kind of extension was associated with the magmatism but, in the case of the Maine Acadian, it is clear that there were trench-parallel faults and large dikes. Such magmatism is significant in that it shows whole-lithosphere extension of the down-going plate in response to slab-pull forces, not just minor flexural extension of its upper part. The large variation in scale of magmatism between our identified examples may have resulted from differences in the rate of plate convergence and/or include mechanical differences in lithospheric strength, in Maine perhaps related to effects of Ordovician accretionary tectonics. **(SY3, Fri. 8:00)**