A Hafnium isotopic perspective on the provenance and tectonic setting of allochthonous Neoproterozoic sedimentary sequences in the North Atlantic region

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Alternative reconstructions of the Rodinia Supercontinent have given rise to diverse views on the tectonic setting of various Neoproterozoic sedimentary sequences in the North Atlantic region. These include the late Neoproterozoic Sørøy Succession of Arctic Norway and the Moine Supergroup of Scotland. Reconstructions that place Baltica adjacent to Greenland in the late Neoproterozoic imply an intracratonic setting for these basins (e.g. [1]) and appeal to the far field effects of accretion on the Rodinia margin to explain tectonic events such as the c. 850-820 Ma Porsanger and Knoydartian orogenies. An alternative reconstruction locates the Moine and Sørøy basins on the active periphery of Rodinia facing the Panthallassan Ocean [2]. This continental margin setting permits a more conventional setting for the Porsanger and Knoydartian orogenies. Hf isotopic analysis of dated detrital zircons provides a potential discriminant on the basis that a contribution from juvenile sources is more likely on an active continental margin as opposed to an intracratonic milieu.

[1] Cawood, P.A., Nemchin, A.A., Strachan, R., Prave, T. and Krabbendam, M. (2007) *Journal of the Geological Society, London* **164,** 257-275. [2] Kirkland, C.L., Daly, J.S. and Whitehouse, M.J. (2008) Precambrian Research **160,** 245-276.

Fluorine and Barium remobilization in 2.4 Ga low grade metamorphic carbonate rocks associated with dolomitic banded iron formations in Quadrilátero Ferrífero, Brazil

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The Paleoproterozoic Itabira Group (2,419+/- 19 Ga; Pb-Pb isochron data) is one of the few known sequences in the world hosting dolomitic banded iron formations, in the Quadrilátero Ferrífero mining district. It is located in the south of the São Francisco Craton, a geotectonic unit of Brasiliano age (0.8 – 0.6 Ga). At the base, the BIFs grade vertically and horizontally into platform carbonates. They have preserved primary structures comprising stylolitic Fe-oxides rich micrometric laminae, and millimetric iron oxides concretions. These laminae host also dolomite, Mg-silicates, quartz, minor barite, apatite and fluorite. These minerals also occur as inclusions in the concretions. Dolomite inclusions have rombohedral shapes, different from those in the laminae that show irregular grains with lobate boundaries, due to corrosion by calcite. Similarly, the irregular shapes of Mg-silicates also indicate reactions processes. The Fe-oxide bearing laminae alternate with centimetric bands composed of low-Mg calcite, with traces of Fe, Mn, Ba (<3,500 ppm) and F (<1,000 ppm). They are finely intergrown with Mg-Al-phyllosilicates and quartz. Oblique veins of carbonates and/or fluorite represent probably diagenetically remobilized material. The overall mineralogical assemblage indicates low grade metamorphism in a carbonaceous-siliceous rock transforming a dolostone into a quasi-limestone leading to *in situ* remobilisation/ resequestration of F and Ba.