Zircon Hf- and O-isotope constraints on the evolution of the Paleoproterozoic Baoulé-Mossi domain of the West African Craton

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New zircon Hf-isotope data obtained from across the Baoulé-Mossi domain of the West African Craton show that the region can be divided into two sub-provinces. The Hf-isotope data indicate that both sub-provinces are of mostly juvenile origin and that they are separated by a less radiogenic Hf-isotope region across the Banfora Belt in southern Burkina Faso. This more evolved Banfora Belt region might represent a sliver of older crust. Although both sub-provinces present relatively juvenile Hf-isotope signature, the westernmost portion is slightly less radiogenic than the easternmost portion.

The more isotopically evolved signature of the westernmost portion indicates a potentially greater interaction between the Paleoproterozoic Baoulé-Mossi and Archean Kenema-Man domains. Hf-isotope evidence opens a possibility for magma mixing, where felsic intrusions could have incorporated a crustal component as old as 2800 Ma.

Complementary O-isotope data ($\delta^{18}O$ between 6 and 11 ‰) obtained from across southern Mali also suggest that the magmas that originated the studied felsic intrusions interacted with supracrustal materials. Because of the limited amount of inherited zircons identified in the region it is possible that the supracrustal materials are the result of altered mafic volcanics. These mafic volcanics could be incorporated into the magma source during docking of the Archean Kenema-Man and Baoulé-Mossi domains at ca. 2100 Ma.

The combination of the Hf- and O-isotope information indicates that the magmas that originated the felsic intrusions interacted with supracrustal material. These data strengthen the case for recycling and crustal contamination at a greater scale than previously recognized for this region.