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The Goren Greenstone Belt (GGB) is a Palaeoproterozoic volcano-sedimentary belt situated in the north-east of Burkina Faso in the West African craton (WAC).

Basalt is the main volcanic constituent of the GGB, specifically mid-ocean ridge basalts (MORBS), which have undergone pervasive greenschist facies metamorphism during at least 2 deformation including the Tangaean Event (2170-2130 Ma) and Eburnean Orogeny (2130-1980 Ma). Remarkably, many of the primary textures and minerals remain intact in less deformed regions of the GBB. Textural characteristics and petrographic analyses include aphyric and aphanitic textures, amygdales, hyaloclastic brecciation, pillow structures and preserved (chloritised) volcanic glass. Despite the ubiquitous presence of chlorite and epidote, plagioclase and clinopyroxene microlites are fairly common albeit altered. Phenocrysts (< 1 mm) of plagioclase and CPX are present in some samples but aphyric texture is dominant. These textures indicate that the basalts represent coherent units of sub-aqueous extrusion from a proximal volcanic facies setting relative to the original magma conduit.
A repetitious succession of Fe-rich meta-siltstones, fine-grained, carbonaceous, Fe-rich exhalatives and volcaniclastic units is intercalated with the basalts. The volcaniclastic units contrast with the MORBs, which raises questions about the source region of the volcaniclastics. In hand sample, the volcaniclastic rocks show an array of various sized fragments, compared to the fine-grained nature of the MORBs. They are dominated by euhedral, zoned, brown volcanic hornblende, large (2.5-5 mm) euhedral plagioclase crystals, and sub-angular to rounded quartz grains in a poorly sorted volcanogenic sedimentary sequence.
Due to the alteration of the original mineralogy, whole rock geochemical analyses of the MORBs were approached with caution, focusing on immobile and trace elements. The REE chemistry displayed a flat trend with an average value of 10x chondrite. The sample suite shows both slight enrichments and depletions of light-REE relative to heavy-REE. This is typical of N-type MORBS. A multi-element diagram illustrates a distinct, negative phosphorus anomaly, which is consistent with previous studies throughout the WAC. However, the volcaniclastic unit has larger phosphorus and significantly lower Ti (ppm) values in comparison to the MORBs. The Mg # of the basalts range from 42-57 suggesting fractionation of the melt had already begun by the time eruption took place. We interpret the volcaniclastic units as an erosional product of a pre-existing volcanic arc, deposited in a back-arc basin which has undergone extension.