



Petrology and geochemistry of doleritic dykes in Burkina Faso

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Three different generations of doleritic dykes crosscutting Paleoproterozoic basement were distinguished using interpretation of regional magnetic airborne data of Burkina Faso. Some of the dykes reach up to 300km in length and the bulk orientations of the dyke families are as follows: N45, N100, and N130. Some sills also occur in the sediments of the Neoproterozoic Taoudeni basin. The dyke generations are most probably of different ages; however, radiometric ages are very scarce for this type of rocks. All datings were obtained using K/Ar method and they yield 1814 ± 26 Ma in central Burkina Faso (Castaing et al.), 896 ± 24.5 Ma in Niger (Ama Salah, 1991) and 250 ± 13 Ma in Western Burkina Faso (Marcelin et Serre, 1971).

From petrographic point of view, they correspond to tholeiitic basalts and are typically composed of plagioclase + clinopyroxene (augite) \pm orthopyroxene (enstatite) \pm olivine displaying doleritic texture and variable grain size.

With the exception from one sample, the dykes display clear fractionated, moderately enriched, trace element patterns. They are all (but one) characterized by a clear negative Nb anomaly, indicating a plausible subduction fingerprint. The similarities of all their trace element patterns play in favor of a single geodynamic environment for all samples, except for one which is clear depleted, MORB-like. This geodynamic setting should have been active for a long period of time, according to the large range of available ages.