



Toward a New Vision of Lithostratigraphic Classification Scheme of the Arabian Shield

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The Arabian Shield is a part of Arabian-Nubian Shield, which constitutes the northern segment of the East African Orogen. It dominates by rejuvenated Neoproterozoic crustal rocks formed during the Pan-African Orogeny as a result of East and West Gondwana collision, except for some remnant exposures extending back to Paleoproterozoic age, possibly representing fragments of Rodinia paleocontinent. The Arabian Shield composes of amalgamated tectonostratigraphic arc terranes, in which their crustal rocks evolution follows the Wilson Cycle and the plate tectonics. Previous lithostratigraphic scheme and geological mapping of the Arabian Shield was based on a simple tectonic model of craton development and terrane amalgamation concept.

The new vision of the lithostratigraphic scheme of the Arabian Shield is based on the Plate-tectonics, where its crustal evolution involves the Rodinia break-up and Gondwana assembly. The oldest rock units, constituting the Khida terrane, represent the Pre-pan-African remnant of Rodinia supercontinent. The Pan African crustal rocks start with ophiolites, which occur as disrupted linear fragments along the sutures between the amalgamated terranes, which represent the Rodinia rifting, divergent, and oceanic basins development stage. Subsequent Arc-related magmatic rocks of either batholithic plutonic and/or volcanic rocks, commonly of intermediate composition, developed as a result of subduction regime. Arc-related basins of commonly back- and fore-arc basins, in addition to the marginal basins were developed and filled by thick sedimentary sequences. Along the transpressional N-trending dextral Nabitah and NW-trending sinistral Najd fault systems, L- to MP-HT gneiss domes of igneous and sedimentary parentages have been exhumated from mid- to lower-crustal level. The final Pan-African crustal rocks of the Arabian Shield are represented by commonly circular to oval shaped plutons of post-tectonic intrusives, which are widespread all over the shield and commonly represented by granitoid rocks, intruding all the previous rocks.