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Syn- and Post-Accretionary Structures in the Neoproterozoic Central Allaqi-Heiani Suture Zone, Southeastern Egypt

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The Allaqi-Heiani suture (AHS) is the western part of the main Allaqi-Heiani-Gerf-Onib-Sol Hamed-Yanbu suture and represents one of the Neoproterozoic, arc-arc sutures in the Arabian-Nubian Shield (ANS). It separates the ca. 750 Ma South Eastern Desert terrane in the north from the ca. 830-720 Ma Gabgaba terrane in the south. The AHS is a deformed belt of ophiolitic rocks, syn-tectonic granitoids and metasediments. The central AHS zone is divided into three structural domains. The western domain () is characterized by NNE low thrusts and SSW-vergent folds. The central domain () includes upright tight to isoclinal NNW-SSE oriented folds and transpressional faults. The eastern domain () shows NNW-SSE oriented open folds. Structural analysis indicates that the area has a polyphase deformation history involving at least two events. Event D1 was an N-S to NNE-SSW regional shortening generating the SSW-verging folds and the NNE dipping thrusts. Event D2 was an ENE-WSW shortening producing NNW-SSE oriented folds in the central and eastern parts of the study area and reactivating older thrusts with oblique-slip reverse fault movement. The tectonic evolution of the area involves two episodes of collision: an early collision between the South Eastern Desert terrane and the Gabgaba terrane along the AHS after the consumption of a basin floored by oceanic crust above a north-dipping subduction zone; and a later collision between East- and West-Gondwanas at ca. 750-650 Ma, leading to the closure of the Mozambique Ocean. This collision deformed the AHS along N-S trending shortening zones and produced NW-SE and NE-SW oriented sinistral and dextral transpressional faults, respectively. The early collision episode is related to the terrane accretion during the early Pan-African orogen, while the later phase is related to a late Pan-African or Najd orogen.