



Tectonic setting of south Sinai metamorphic belts

Y. Sultan (1), T. Abu-Alam (2,3), and K. Stüwe (2)

(1) Geology Department, faculty of Science, Port-Said University, Egypt, (2) Institut für Erdwissenschaften, Universität Graz, Universitätsplatz 2, A-8010 GRAZ, Austria (tamer.abu-alam@uni-graz.at), (3) Geology Department, Faculty of Science, Tanta University, Tanta, Egypt

The northernmost part of the Neoproterozoic Arabian-Nubian Shield (Sinai) comprises volcano-sedimentary metamorphic complexes evolved during the Pan-African Orogeny. Distinction among Sinai metamorphic complexes is largely based on the fact that they are located in different area (some tens of kilometers apart) and are separated by extensive regions of post-tectonic granitoids. Here we propose that their relationship may be understood within the same framework of Pan-African tectonics as known for the eastern Desert of Egypt. Comparing the structural elements and the metamorphic grade of these metamorphic complexes reveals that the south Sinai metamorphic complexes were subjected to four deformational events, the earliest tectonic event (D_1) is differing in the high-grade rocks of Feiran-Solaf metamorphic complex from the low-grade rocks of Sa'al –Zaghra and Kid complexes, in which Feiran-Solaf complex is expressed by extensional tectonic regime and compressional regime for Sa'al –Zaghra and Kid complexes. The second deformational event (D_2) related to a contractional regime of thrust related shear zones and its associated thrust faults. This deformation is related to the major collision and accretion between East and west Gondwana. The third tectonic event (D_3) represents oblique sinistral NW-SE transpressional regime. This event is known to have formed the Najd Fault System equivalent to the same deformation in the Eastern Desert. The last tectonic event (D_4) during the Pan-African Orogeny reveals change in the stress regime from shortening NE-SW to shortening NW-SE and WNW-ESE revealing open concentric folds trending NE-SE to NNE-SSW followed by extension NW-SE associated with intrusion of NE-SW alkaline suite bodies. Dextral NW-SE shear zones system was recorded in the field and probably represents reactivation of the Najd Fault System during the Oligo-Miocene.