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Neoproterozoic Tectonics and Magmatism in the central Eastern Desert of Egypt:Age dating and AMS constrains.

Ahmed Saleh

National Research institute for Astronomy and Geophysics, Helwan, Egypt ((ahmed.saleh@daad-alumni.de / Fax: +2 02-27543615)

The crystalline bedrock geology of Egypt is exposed over more than ten-percent of the surface of the country, and it is rich in a variety of rocks, that were formed in different geologic environments. It includes Precambrian-age basement rocks, which host Egypt's extensive gold deposits, as well as the world's first emerald mines and younger post-Precambrian volcanic rocks. Although the geology of the Egyptian crystalline bedrock is generally well described, the geologic and tectonic evolution of rocks is still debated. However, to understand how and when these processes affected the Egyptian basement rocks, the timing and style of the geologic events must be known. Geochronological investigations and an analysis of the magnetic anisotropy, which can be used to determine the directions of strain and foliation, provide insight into this matter. Unfortunately, few modern geochronologic and AMS (Anisotropy of the Magnetic Susceptibility) data exist for the Egyptian rocks and the data, which exists, is inconsistent. Therefore, a perlimenary survey was conducted in the central Eastern Desert of Egypt, through which predominantly gneiss, granite, amphibolite, serpentinite, gabbro and basic dykes were sampled. U-Pb detrital zircon and 40Ar/ 39Ar ages determination on the studied rocks will be presented in this study. The main magnetic carriers of these rocks are magnetite. Large seconday components are present in most granite and gneiss rocks. Anisotropy of magnetic susceptibility (AMS) was studied in Hafafit Metamorphic Complex. Five types of fabrics were identified from 236 samples collected in 42 sites. NNW-SSE trends are predominant, minor N-S and NE-SW trends are present.The strong correlation between the structural featurs and the AMS orientation suggests a tectonic origin for most magnetic lineations. The tectonic studies reveal a major ENE-WSW compression, which provide orientations of compressive tectonic regimes consistent for resulting the magnetic lineations.