

SHRIMP U-Pb Geochronological, Petrological, and Geochemical Constraints on the Early Ediacaran Dokhan-type Volcanics in Jebel Urf Area, North Eastern Desert, Egypt

Eliwa, Hassan¹ Breitkreuz, Christoph³ Khalaf, Ibrahim¹ D. Renno, Axel² El Gameel, Khaled¹

¹Minufiya University, Geology, Faculty of Science, Shebin El-Kom, Egypt ²TU Bergakademie Freiberg, Mineralogy, Freiberg, Germany ³TU Bergakademie Freiberg, Geology, Freiberg, Germany

The Dokhan-type volcanics in Jebel Urf area are composed of rhyodacitic to rhyolitic pyroclastic flow deposits including ignimbrite and fine ash flow tuff, as well as coherent lavas. The Dokhan-type volcanic suite is intercalated with Hammamat-type sediments constituting a volcanosedimentary succession of *ca.* 2000 m thickness (Eliwa *et al.* 2008). SHRIMP U-Pb zircon ages of two ignimbrite samples gave 615 and 616 Ma, which assign the volcanosedimentary succession of Jebel Urf as an Early Ediacaran (Breitkreuz *et al.* 2008). The volcanic textures such as spherulites, lithophysae and/or the presence of fiamme enabled to distinguish two types of ignimbrites; welded and non-welded varieties. Furthermore few varieties are non-welded but underwent diagenetic compaction.

Geochemical data indicate that Dokhan-type volcanics in Jebel Urf area range in composition from basalt to rhyolite and belong to high-K-calc alkaline series. Normalized trace elements patterns show enrichment in LIL elements such as Cs, Rb, Ba, K and few HFS elements such as U, Th, Pb. These patterns also show strong negative Ti, P and Nb anomalies. The total content of LREE is higher than that of the HREE for the whole rock volcanic suite. The samples display negative Eu anomalies which becomes strong in the more acidic rocks. Discrimination diagrams suggest that the investigated Dokhan-type volcanics have geochemical signatures which is transitional subduction related and within plate tectonic settings. However, our studies support the previous studies that the Dokhan-type volcanics are not products of the main subduction event of the Arabian-Nubian Shield, although they still keep their inherited subduction signatures. Therefore, we suggest that the Dokhan-type volcanics were emplaced during time span from compressional tectonics to post orogenic setting, which characterized the evolution of the final stage of Pan-African orogeny.

References

Breitkreuz C; Eliwa H; Khalaf, I; El Gameel K; Sergeev S; Larionov A; Hoffmann U (2008) Neoproterozoic SHRIMP U-Pb zircon ages of Dokhan Volcanics in the northern part of the Eastern Desert, Egypt. Abstract, 33rd International geological congress, Oslo, Norway.

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