

Reconstruction of stratigraphy and tectonic setting in El Dabbah, Eastern Egypt: Neoproterozoic banded iron formations

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In the Eastern Desert of Egypt, Neoproterozoic Banded Iron Formations (BIFs) are reported within Nubia greenstone belt whose geological structure and stratigraphy are not well understood. In this study, the geological structure was established to reconstruct the stratigraphy including Iron formations (IFs) in El Dabbah in the middle of the Eastern Desert.

Greenstone sequence in El Dabbah area, strike-slip basin on Nubia shield during pan African orogeny, is covered by Hammamat Group. The greenstone sequence preserved the thick volcano-sedimentary rocks with gabbro, coarse-grained volcanoclastics rocks, pillow lavas, black shales, and BIFs. Reconstruction of stratigraphy in this greenstone sequence, which is 4000m in total thickness, composes Basal, Lower, Middle, and Upper members. There are 13 iron sections within this greenstone sequence.

Especially, BIFs sequence preserved within Lower and Upper members. BIFs sequences are well preserved within massive - pillow lavas sections and it contain laminated greenish - black shales. BIFs are composed of magnetite and/or hematite. Magnetite are oxidized from rims and become hematite.

We have determined major and trace element compositions of whole rock of volcanics and BIFs by using XRF and ICP-MS analysis. Trace elements compositions indicate that the volcanics are arc origin in term of a Nb-Zr-Y discrimination diagram and a MORB normalized spider diagram. Major elements in BIFs in this area are characterized by their higher content of Al_2O_3 than the other Archean BIFs. In addition, REE in BIFs show pattern of light REE enrichment and negative Eu anomalies.

This Volcanoclastic sedimentary sequence would be related at island arc sedimentary sequence with volcanic activity.

Keywords: banded iron formation, Neoproterozoic