Geophysical Research Abstracts
Vol. 19, EGU2017-2619, 2017
EGU General Assembly 2017

Structural evolution of Halaban Area, Eastern Arabian Shield, Saudi Arabia

Yousef Al-Amri and Osama M. K. Kassem1
Saudi Arabia-King Saud University- (amri133@hotmail.com)

Abstract: Neoproterozoic basement complex comprises a metamorphic/igneous suite (Abt schist and sheared granitoids) with syn-accretionary transpressive structures, unconformably overlain by a post-amalgamation volcanosedimentary sequence. This study aims to attempt to exposed post-accretionary thrusting and thrust-related structures at Halaban area, Eastern Arabian Shield. The Rf/φ and Fry methods are utilized on quartz and feldspar porphyroclasts, as well as on mafic crystals, such as hornblende and biotite, in eighteen samples. The X/Z axial ratios range from 1.12 to 4.99 for Rf/φ method and from 1.65 to 4.00 for Fry method. The direction of finite strain for the long axes displays clustering along the WNW trend (occasionally N) with slight plunging. Finite strain accumulated without any significant volume change contemporaneously with syn-accretionary transpressive structures. It indicates that the contacts between various lithological units in the Halaban area were formed under brittle to semi-ductile deformation conditions. The penetrative subhorizontal foliation was concurrent with thrusting and shows nearly the same attitudes of tectonic contacts with the overlying nappes.

Keywords: Finite strain analysis, volcanosedimentary sequence, Halaban area, Eastern Arabian Shield, Saudi Arabia.