

Formation mechanisms of intraformational conglomerate: Case study in Triassic and Jurassic of the Zanjan area

A. Zohdi^{1*} and J. Rabbani²

1, 2- Assist. Prof., Dept., of Geology, Faculty of Sciences, University of Zanjan, Zanjan

* afshin.zohdi@znu.ac.ir

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Abstract

In this research, conglomerate layers of the Triassic (Elika Formation) and Jurassic (Dalichai Formation) successions regarding to sedimentary environment and origin in Zanjan area has been studied for the first time. The Triassic conglomerates are composed of intraclast with floatstone-rudstone texture. The erosional surface and normal grading of these intraformational conglomerates indicate a high-energy condition and effect of storm process in a shallow marine environment. While in the Middle Jurassic strata, the presence of thin shell bivalves, radiolarian, ammonite, belemnite, planktonic foraminifera and microbialites show relatively deeper marine environments. The thick-bedded conglomerates along with these fossil contents are oligomictic, which contains microbialites, bryozoans, ammonite and belemnite. These layers are poorly sorted (grain size: 3 to 30 cm) and clearly show a high-energy condition during deposition (possibly related to falling stage of sea level across middle-upper Jurassic?). Angular to rounded grains, irregular fabric, the absence of sedimentary structures such as the bouma sequence show sedimentation with gravity flows (i.e. debris flow). Finally, the results show that the Zanjan area as a small part of northern Tethys realm, has been changed from near-shore marine environment to relatively off-shore area as a result of eustatic sea level rise during Triassic-middle Jurassic and then followed by a sea level fall at the middle/upper Jurassic boundary?. In this large-scale sedimentary package, the Triassic carbonate conglomerate has been considered as tempestite facies in a shallow marine environment. Whereas conglomerate sequences in upper part of Dalichai Formation shows effect of ocean currents on microbialites in relatively deeper marine environments.

Keywords: *Intraformational conglomerates, Triassic-Jurassic, Elika and Dalichai formations, Zanjan*