Progradational structures of the late Jurassic-Valanginian carbonate platform margin in the eastern Caucasus

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Two areas of different sedimentation existed in the basin of Great Caucasus during late Jurassic. The northern part of the basin was the area of neritic (shallow) carbonate sedimentation including formation of red and, locally, evaporitic sediments while the southern part was covered by deeper sediments including flysch. Transitional zone between these two areas represents a system of barrier reefs preserved in the northwestern and southeastern Caucasus only (Lagonaki and Shakhdag zones, respectively).

Our study in the southern Dagestan, SE Caucasus was focused on the structure of this transitional zone. Late Jurassic through Valanginian carbonate platform was formed northward of barrier reef zone on the thick (up to 8-9 km) lower-middle Jurassic siliciclastic complex. The sediments of carbonate platform are mainly shallow (detrital, oolithic, etc) limestones and dolomites. The unilateral cross-bedding structures appear at individual levels representing more than 5 m thick horizons.

Southern platform margin with wide progradational structures is of top interest. These clinoforms are inclined in a SWS direction toward the deepest part of the Great Caucasus basin in the territory of Azerbaijan. The carbonate platform margin is perfectly exhibited in the structure of Shakhdag carbonate massif, Usukhchay R., right tributary stream of Samur R. One of the perfectly preserved large structurally complex reef system of this area is the carbonate massif of Shalbuzdag Mt. Deepening of the basin southward of barrier reef is detected by increased thickness of clinoform sequences reaching 1000 m. Formation of progradational structures is caused by a series of Tithonian episodes of sealevel fall. Intensive supply of sedimentary material southward from the carbonate platform to the slope and intensive lateral aggradation of the platform occur at this time. Formation of the structures of lateral aggradation terminated with the sea-level rise. Relatively smaller clinoforms formed the last in the shelf edge. Later, the fineclayey material becomes supplied over the shelf edge that forms remnant outcrops on the surface of southernmost large clinoform. Large clinoform structures in the Cretaceous deposits of Shakhdag Mt. are not found. While lateral aggradation occurred in the carbonate platform margin in Tithonian as a result of sea-level fall, small semi-isolated basins (lagoons) formed in the platform inner part where gypsum- and salt-bearing sediments accumulated under conditions of arid climate.

Acknowledgements: RFBR Project no. 09-05-00872.