



Effect of the North Anatolian fault on the evolution of Lake Iznik, Turkey

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Following the bifurcation caused by the Almacik block in the west, the southern branch of the North Anatolian fault (NAF), which follows the Mudurnu valley to the west of Bolu, bifurcates again at the western side of the village Pamukova. One of the fault segments extends westward into Lake Iznik, while the other one extends from Mekece to the northern scarps of Uludag Mountain along the Yenisehir plain. On the basis of this definition Lake Iznik is placed on the fault segments defined as the middle branch of the NAF, which is located between Pamukova and Gemlik Bay and along the southern coast of Lake Iznik. Then the lake itself and almost all of its coastal plains were located on the northern block of the middle branch. Contrary to this, the coastal plain along the southern coast is very narrow except the deltas cut by the Soloz fault. This is a normal fault 24 km long and represented by many short segments forming the southern high altitude coast as an open arch northward. The deepest part of the lake, about 75 m, is located in front of the Soloz fault. This is WE elongated ellipse-shaped trough which terminates at the eastern part of the Soloz delta. Then WE elongated normal fault changes its direction towards WSW at the southwest margin of the Soloz delta. The length of the fault segment which changed its direction is about 10 km. Then, at the boundary of the Soloz delta against the basement rocks in the south, this fault changes its direction westward as before. Even this fault along the southern coast of Lake Iznik has a small right-lateral strike-slip component as evidenced on the valleys and deltas perpendicular to the lake; in fact it is a normal fault dipping northward into the lake. The distance of the WE elongated trough to the Soloz fault is about 2 km.

These findings show that the normal fault segments along the southern coast of Lake Iznik are only the releasing bend boundary faults, while the right-lateral strike-slip faults observed apparently in the Gemlik town to the west and in the Mekece valley to the east were connected to each other by a strike-slip fault below the deep trough in the lake. At the beginning the normal Soloz fault was responsible for the evolution of Lake Iznik under the right lateral tectonic movements and then it has changed its character to a normal fault running parallel to the middle branch of the NAF which is on the main axis of the realizing bend. At the final step the middle branch followed the main axis of the deep trough in the lake. At present the southern coast of Lake Iznik is formed as a secondary fault parallel to the middle branch of the NAF. These two faults lying almost parallel to each other with different characters, namely the middle branch of NAF and the Soloz fault, are the most effective tectonic elements comparing to those reactive faults observed on the northern margin of Lake Iznik.