



The evolution of hydrological and water quality conditions on Techirghiol Lake

Carmen Maftai, Constantin Buta, and Lucica Tofan
Ovidius University of Constanta, Civil Engineering, Romania

Changes in climate and environment conditions alter the hydraulic and chemical properties of lakes.

With a surface from 1300ha, the Techirghiol Lake, situated on the littoral of the Black Sea at 15km from Constanta town, is considered the greatest hypersaline lake of Romania very well known (from 1891) especially for the curative qualities of its water and mud.

Physical and geographical conditions associated with an arid climate regime - where the annual precipitation is less than 400mm and the average temperatures exceed (lead evaporative potential to 700-1000mm), cause a strong concentration of mineral salts that give the lake an excessive salinity. In conditions of excessive salinity forms a therapeutic mud as a result of bacterial decomposition of aquatic organisms that have done there, especially crustaceans *Artemia* and algae that live in water. This mud, highly hydrated, rich in minerals, has therapeutic properties, for this reason in Techirghiol has developed a strong health resort.

Fresh water is a threat to the therapeutic lake properties. In hydrological year 1961-1962, the overland flow value to the lake was approximately 0.4 million m³, and from 1972-1973 the value reached 6 million cubic meters per year a great contribution was from the irrigation water. One of the consequences is the increasing of the lake level and the second is the decreasing of salinity. For this reason a hydraulic work system has been built to separate the saline water of the lake and the freshwater.

The aim of this paper is to investigate the hydrologic and chemical responses of the Techirghiol Lake to the changes in climate and environment conditions.