



Hydrometeorological Monitoring of the Dead Sea

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The natural fresh water budget of the Dead Sea has changed mainly due to the intensive use of the fresh waters from its water shed for the needs of the neighboring population, thus resulting in a drastic reduction of runoff into the sea. From a level of -397 m in 1960, the surface of the Dead Sea has dropped almost continuously. During the last 10 years the rate of the level decrease is about 1 m/year and at present (November 2005) the Dead Sea level is -418. As a result of the runoff reduction the hydrological regime of the Dead Sea is dramatically unstable. Two layers thermohaline structure of the Dead Sea with relative light upper layer remained unpenetratable by the winter mixing for the hundreds of years. As the upper layer salinity of the Dead Sea has increased, the gravitational stability of the water body was diminished. Eventually, during the winter of 1978-1979, the lake waters overturned bringing to an end the long-term stable hydrological regime. The lake entered a new phase in which its hydrological regime is unstable during winter periods and stabilizes for 4-5 years following extremely rainy winters (twice after 1979). Because the thermohaline structure changes are rapid continues monitoring of hydrometeorological parameters was established (<http://isramar.ocean.org.il/DeadSea>). Vertical distributions of temperature and density measurements are carried out four times per year at the deepest point of the Dead Sea. In addition, standard set of meteorological parameters (wind speed and direction, relative humidity, air temperature, insolation and air pressure), as well as water temperature on 12 levels at upper 40 meters, are measured continuously every 20 minutes on stationary open sea platform, located 2.5 miles from shore. Another set of meteorological parameters is measured in parallel on meteorological station located at the shore.