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Water losses from the resrvoir built in karst: example of the Boljuncica reservoir (Istria, Croatia)

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The paper presents a case of the Boljuncica reservoir which was built in 1970 in the Istria peninsula (Croatia). This is typical multipurpose reservoir, which was built in order to protect downstream area from flood, to storage water for irrigation, to control sediment transport, and to provide possibilities for recreation and fish cultivation. The reservoir is built on the contact between water impermeable Eocene flysch layer, deep Eocene and Cretaceous limestone. Bottom of reservoir is covered by Quaternary deposits. Water losses from the reservoir bottom are so high that all intended functions of reservoir, except flood protection, are completely impossible. After every intensive precipitation the reservoir is filled very fast, but significant water storage in it is very short, about fey days. The reservoir is dry during three to six month in the hot part of the year. At the bottom of the reservoir many new swallow-holes opened in sediment cover after each its filling. Interdisciplinary analyses and investigations of hydrological and hydrogeological factors which cause formation of swallow-holes and water losses from the Boljuncica reservoir have been discussed. Special attention is devoted to analyses of interaction between surface water and groundwater.