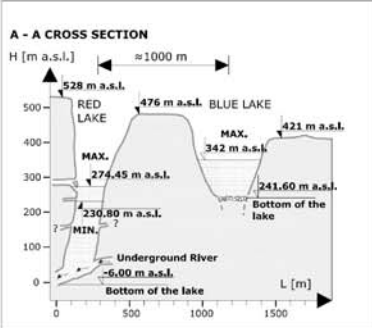
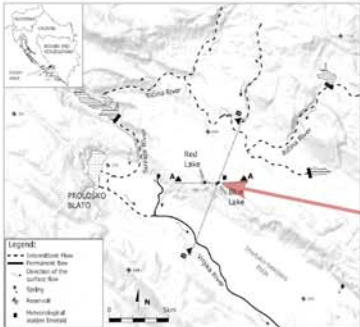


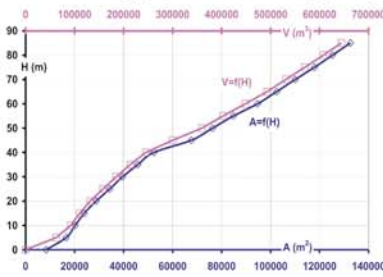
# Interpretation of the first hydrological measurement at the Blue Lake (Dinaric karst of Croatia)

6 November 2009 at 10:26 h - 4 September 2010 at 03:26 h (7230 h or 302 days)

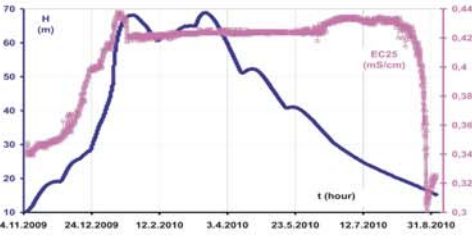
Blue Lake (local name "Modro jezero") near the town of Imotski (Croatia), presents one of the most fascinating and very rare karst phenomena on Earth and is located in the central part of the bare Dinaric karst region. Located in its immediate vicinity, only about 500 m westbound, is Red Lake (local name "Crveno jezero"). Red Lake is permanently filled with water whereas Blue Lake dries up occasionally.



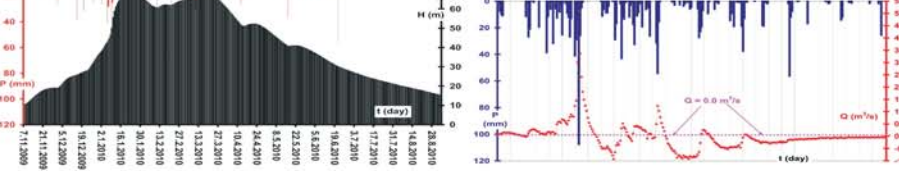
Relationships between depth,  $H$ , and volume of water,  $V$ , (blue) and between depth,  $H$ , and water surface area,  $A$ , (violet)



Time series of the average hourly water depth,  $H$ , and the electrical conductivity of the water,  $EC_{25}$

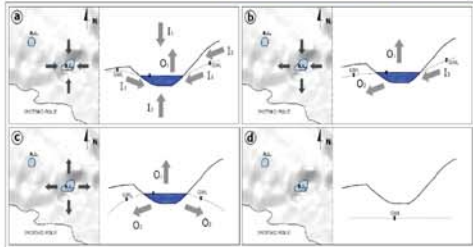


Time series of the average daily discharge,  $\pm Q$ , and the precipitation,  $P$



**HYDROLOGICAL BUDGET OF BLUE LAKE**

- $O_1$  - evaporation from the water surface of the Blue Lake
- $O_2$  - water outflow through the lake bottom and sides
- $I_1$  - precipitation which has fallen on the lake water surface
- $I_2$  - water inflow through the vadose zone
- $I_3$  - water inflow recharged by groundwater from a karst aquifer



Characteristic (minimum, average and maximum) hourly and daily values of the five analyzed hydrological and climatological parameters recorded in Blue Lake and at the Imotski meteorological station

	H (cm)	EC25 (mS/cm)	T <sub>water</sub> (°C)	T <sub>air</sub> (°C)	P (mm)
MINIMUM	1032	0.301	8.95	-5.30	0
AVERAGE	4027	0.411	10.99	13.52	9.84
MAXIMUM	6896	0.438	23.27	30.20	107.8

RANGE  
 $\Delta H = 58.64$  m  
 $\Delta EC_{25} = 0.137$  mS/cm  
 $\Delta T_{water} = 14.32$  °C  
 $\Delta T_{air} = 35.50$  °C

*Italic blue are daily values*

**ACKNOWLEDGMENTS**  
 This work represents part of the Croatian - Japanese research project "Risk identification and land -use planning for the disaster mitigation of landslides and floods in Croatia" funded by the Japan International Cooperation Agency (JICA). The authors are grateful for the scientific equipment donated by JICA. Special thanks to Prof. Yosuke Yamashiki from the Disaster Prevention Research Institute at the Kyoto University for his helpful advice during our work.