



Evaporite dissolution rate through an on-site experiment into piezometric tubes applied to the real case-study of Quinis (NE Italy)

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The present research deals with geochemical data on groundwater samples collected during different surveys at Quinis, a hamlet of the Enemonzo municipality in NE Italy, where the formation of sinkholes occurred in the past and it is still going on causing severe damages to the existing infrastructures. The area is characterized by a Carnian evaporitic bedrock constituted by gypsum and anhydrite mantled by alluvial and colluvial deposits. In order to evaluate the loss of weight and volume of the subcropping evaporites as responsible for sinkholes, a field-experiment was realized. Inside seven piezometers, at different depths, evaporitic rock-samples were exposed to the naturally occurring variation of relative humidity, air flow and hydrodynamics. Rock-samples were placed respectively in the aeration, in the fluctuation and in the phreatic section of the piezometric tube. Data related to water level fluctuations were collected by using data-logger devices. After 13 months of recording, rock-samples were removed weighted and the volume loss evaluated. The obtained results indicate that rock sample reduction is mainly dependent to the water table fluctuations and not to the number of days during which the samples were in contact with water. This approach represents a novel contribution to the overall knowledge on karst and iper-karst processes where not only chemical dissolution occurs, but also the erosion processes can cause a loss of important volumes with noticeable impact on human-built construction.