



Moisture impact on building rocks - the laboratory and in situ investigations

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Rocks are influenced by moisture that in combination with temperature, hydrological conditions, climatic conditions, etc. leads to changes of physical and chemical properties. These changes can be observed in the laboratory, where different conditions can be simulated in which the rocks can be found. This work is focused on water transport and moisture determination in various sandstones observed in laboratory conditions and also directly in environment. Porosity affects transport properties of rocks. Experiments are focused on the mechanism distributing the water in sandstones with different porosities. Measurements were carried out by thermal conductivity sensors (Hot-ball sensor) which measure local temperature and local thermal conductivity. The sensor in connection with the RTM device is used for monitoring of the moisture in various sandstones with different porosity. For in situ measurements a moisture sensor is constructed. The sensor is made of the original stone in a form of the cylinder (diameter and length around 20 mm) in which thermal conductivity sensor is placed. The moisture sensor must be calibrated for dry and water saturated state, and then it is inserted into the original site to start monitoring of the impact of surrounding weather conditions on the rock. Meteorological data are correlated to the measured data. Results from water transport and change of moisture in sandstones at various monitoring conditions are presented.