

Abstract

The thesis deals with moisture transport in porous medium of quartz sandstone. Capillary water and its movement is crucial for processes such as salt and frost weathering, growth of organisms and development of honeycombs and tafone. However, moisture transport is still not well described. I focused particularly on two new methods applied to sandstone investigation. In the laboratory I studied moisture transport in sandstone samples by means of repeated injection of uranine solution. I observed the evolution of evaporation front based on the changes in solution concentration indicated by difference in color of uranine solution. Additionally I investigated moisture content in the shallow subsurface of sandstone outcrops in the field using suction pressure and moisture content measurements by microtensiometers and TDR in three locations in the Bohemian Cretaceous Basin. Uranine proved to be an excellent tracer for visualization of the evaporation front geometry and its evolution in time. The results suggest that moisture transport is considerably affected by the presence of biofilms which are hydrophobic and retain moisture transport to surface. In addition, the values of suction pressure measured in honeycombs and a tafone are in agreement with the salt weathering model proposed by Huinink et al. (2004).