



Salt weathering in Egyptian limestone after laboratory simulations with continuous flow of salt solutions at different temperatures

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Limestone is one of the most frequent building stones in Egypt and is used since the time of ancient Egyptians and salt weathering is one of the main threats to its conservation. Most of the limestone used in historical monuments in Cairo is a biomicrite extracted from the Mid-Eocene Mokattam Group. During this work, cylindrical samples (2.4 cm diameter and approx. 4.8 cm length) were subjected, in a purpose-made simulation chamber, to simulated laboratory weathering tests with fixed salt concentration (10% weight NaCl solution), at different temperatures, which were kept constant throughout each test (10, 20, 30, 40 oC). During each test, salt solutions flowed continuously imbibing samples by capillarity. Humidity within the simulation chamber was reduced using silica gel to keep it low and constant to increase evaporation rate. Temperature, humidity inside the simulation chamber and samples weight were digitally monitored during each test. Results show the advantages of the proposed experimental methodology using a continuous flow of salt solutions and shed light on the effect of temperature on the dynamics of salt crystallization on and within samples.

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