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Salt Weathering on Buildings and Stone Sculptures

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Salt weathering in the Al-Namrud Monuments in Iraq: characterization of historical stone and fresh stone treated with accelerated decay tests.

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ABSTRACT

This study concerns the decay of a historical site Al-Namrud in the north of Iraq developed in the second millennium B.C. by the Assyrian Empire. The building stones show sever signs of damage. In order to analyse the weathering effects and the decay agents, a number of complementary multi-scale characterization methods were carried out on the tested limestone. Results shows great changes in the historical stone compared with the fresh one: higher porosity and different pore size distribution, water transfer parameters (capillarity and water uptake) increases, bulk and skeletal density decreases. Preliminary data confirm that applied accelerated decay tests induce changes similar in the fresh to those observed in the historical stones. The salt weathering seems to be the main factor of the physico-chemical reactions (dissolution, crystallization), structural, textural changes and deterioration in the Al-Namrud monuments.