

Weathering of a Calcarenite Stone in the Archaeological Site of Volubilis - Morocco

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Abstract : Volubilis is the most important archaeological site in Morocco. It was founded in the 3rd century B.C about thirty kilometres north of Meknes and has been registered on the UNESCO World Heritage list since 1997. The site is located in a region where reigns the semi-arid continental climate, characterized by strong thermal amplitudes. A beige-yellowish calcarenite limestone is the most largely used on Volubilis site, representing about 60% of the total volume of building stones. This limestone is mainly affected by scaling and sanding according to field observations. In order to preserve monuments of this site, characterization of calcarenite weathering is essential. This work aims at investigating the nature of the dominant weathering. For this goal, mineralogical compositions of deteriorated and fresh samples are compared. Besides, the risk of damage by thermal stresses is estimated. The results of this study show that there is no major difference observed between the mineralogy of the fresh and weathered calcarenite samples. Otherwise, thermal stresses may have an important role in the weathering of calcarenite limestone by fatigue.

Keywords : characterisation, stone, thermal stresses, Volubilis, weathering

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