



## **Sedimentological and geochemical features of anthropogenic travertine: the model of the Roman hot spring of Jebel Oust, Tunisia.**

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Located about 30 km south of the ancient Carthage (present Tunis, Tunisia), the hot spring of Jebel Oust is a great model of the interactions between travertine – i.e., hydrothermal waters deposits - and human activities. The exploitation of this hot spring since Roman times has led to the transition from a natural gentle slope deposit model to one with anthropogenic controls on carbonate deposit. This results in a larger diversity of morphologies and facies of the travertine. The ancient sanctuary built just above the vent of the hot spring is dominated by iron-rich hydrothermal deposits. A deep underground aqueduct, providing hot waters from the spring to well-preserved Roman baths located downstream, is mostly filled with puff-pastry travertine and some terrigenous sediments. Finally, the travertine preserved in the baths complex show several morphologies and facies due to the diversity of human structures. Hot pools are filled with alternate dark/bright laminated travertine, whereas the tepid ones are characterized by alternate dense/porous laminate deposits - marked by a biological influence - and pools used as tanks (colder waters) are filled with spongy fabric travertine showing higher isotopic values of  $\delta^{13}\text{C}$  and  $\delta^{18}\text{O}$ . Facies of water canalizations and pipes, with a well-known particular morphology, and some crystalline crusts travertine forming small cascades, which are correlated to the decay of the site during Late Antiquity, complete the whole deposits panel. These anthropogenic travertines truly reflect strong human forcing on the environment and the palaeohydrological dynamics of the hot spring. Moreover, their sedimentological and geochemical features are great sedimentary records of past human engineering and management of waters.