

River capture and sediment redistribution in northern Tunisia: The doom of Utica

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Utica was a flourishing port city in northern Tunisia since the Phoenician times, 12-9th century B.C., until the 4th century A.D.. However, at present it is located 10 km from the coastline after very fast late Holocene progradation of the Mejerda River delta into the bay of Utica. This fast delta progradation occurred after Mejerda River captured Tine River increasing 140 % the river catchment area. Charcoal fragments present in the youngest Tine river terrace at the wind gap give a conventional radiocarbon age of 3240 +/- 30yr BP, indicating that the capture occurred after this date. Quaternary fluvial terraces located in the Tine River paleovalley have been folded and uplifted above a fold related to the active El Alia Tebousouk reverse fault (ETF). Continued uplift of the Tine River valley above the ETF favoured headward erosion of the Medjerda river tributaries creating a transverse drainage that captured Tine River. This capture produced an important change in sediment discharge along the northern Tunisia coast driving sediments to the Gulf of Tunis instead of feeding the Tyrrhenian Sea through the Ichkeul and Bizerte lakes. Although anthropogenic derived degradation of northern Tunisia land for agricultural purposes probably influenced the increase in sediment into the Utica bay, the main cause of rapid progradation of the Medjerda River delta during the late Holocene is related to its increase in drainage area after capturing the Tine River. This process was mostly driven by local contractive tectonics linked to the seismogenic Alia Tebousouk reverse fault.