



Atypical coastal environmental change during Copper Age – Bronze Age transition (Rio de Moinhos, NW Portugal) – preliminary results

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The research is part of an ongoing project of geo-archaeology from Rio de Moinhos beach (Esposende, NW Portugal), where an extensive area of dark sedimentary outcrops and a large amount of ceramic remains from a Roman shipwreck are present.

The dark sedimentary deposit, presenting tree stumps and roots in life position, partially covers a rocky platform that extends seawards. Over the platform, that presents many pits of sea urchins (infralittoral environment) as well as salt pans (supratidal environment), a marine rusty conglomerate is present in some places.

Several hand gauge cores were extracted in the sedimentary deposit whose maximum depth do not exceed 50cm. Samples from cores and outcrops were analysed for grain size, mineralogical composition, pollen and diatom content and radiocarbon dated. This work concerns sediment size analysis, dating and pollen.

Tree stumps and roots of *Alnus glutinosa* dated 6310-6220 cal BP are in the base of the sedimentary sequence that presents a gradual passage from very fine sands to clayey silts, all of them organic and very poorly sorted.

Pollen analysis revealed an initial wetland habitat containing *Alnus*, inundated ca 5645-5585 cal BP due to rising sea level at the time. A brackish lagoon formed at the site presumably protected by a clastic barrier seaward. Similar formations of lagoons are detected all along the Portuguese coast, typically disappearing with time due to sand infilling. In this case, however, the brackish lagoon turned into a fresh water lake ca 4485-4440 cal BP. This may have been a natural development caused by permanent closing of the clastic barrier but human interference cannot be excluded as anthropic activity was detected since formation of the lagoon. The lake seems to have filled in with sand at some point in time subsequent to ca 3750-3725 cal BP, the date of the top lake sediment. However, shipwreck vestiges from the Roman Period presently dispersed over the lake sediment, suggests a later date for its infilling. Furthermore dating of wooden remains of what was interpreted as a fish trap, found on the sediment surface gave the age 2055-1770 cal BP (Roman Period). The old age of the top level may hence be the result of truncation of the sediment sequence at least in parts of the platform. Landwards, the Roman period is represented by fine and dark sediments similar to those of Rio de Moinhos beach, found in deeper cores.

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