Anomalous pollen evidence at the mouth of Ría de Vigo reveals new details about the Holocene marine transgression in NW Iberia

PRESENTED BY

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ABSTRACT

A high-resolution pollen record from the upper 155 cm of the MVR-3 vibracore (recovered at 30 m bsl in the outer sector of Ría de Vigo, NW Iberia) reveals noticeable sedimentation changes during the last 12,000 cal yr BP. A reliable age model was built using part of the 14 AMS radiocarbon dates available, namely 3 marine shells and 11 pollen residue samples extracted from muddy sediment. Deciduous Quercus pollen expanded during c. 9700-8500 cal yr BP at the beginning of the RSL rise. Subsequently, two Pinus pollen peaks (40-60%) are recorded between 138-115 and 98-73 cm depth separated by a Quercus maximum dated between 7800-6000 cal yr BP. The total accumulation rates of palynomorphs decline during both Pinus peaks, while Lingulodinium machaerophorum (characteristic of well-stratified estuarine waters) notably decays and other dinoflagellates (Bitectatodinium tepikiense and Spiniferites spp.) increase revealing enhanced mixing of coastal waters. Moreover, in spite of the suitable radiocarbon ages obtained from pollen extracts at the stage dominated by Quercus and also after the beginning of the regional deforestation, the ages obtained from the anomalous Pinus peaks seem inverted and notably aged. These apparently jumbled data may be a coherent high-resolution record describing the main sedimentary processes that occurred during the marine transgression, and it allows to improve the interpretation of the seismic evidence (units, unconformities) previously described. In Ría de Vigo, the transgressive system tract (TST) includes deposits accumulated from the onset of coastal transgression (<12 kyr BP) until the time of maximum transgression (i.e. the Quercus maximum dated between 7.8-6.0 kyr BP, which corresponds to the Holocene Climatic Optimum). The basal boundary of the Holocene sequence corresponding to the first Pinus peak is an erosional surface associated with marine transgression, i.e. a ravinement surface, with coarse sand or bioclastic gravel facies typical of high-energy environments. The Holocene unit below it is therefore interpreted as the first transgressive system tract (TST1) during the pulse of relative sea-level rise after the YD. The second Holocene unit, also with an erosional basal surface, i.e. the second Pinus peak, would correspond to a second phase of RSL rise (TST2).

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