Calcareous nannoplankton as a useful tool on coastal dynamics and (paleo)environment

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The sedimentological record of the calcareous nannoplankton is mainly studied on the oceanic domain where it occurs with maxima abundance and diversity. However, for some time now we have been using its record also as a tracer of marine influence inside coastal systems such as rias, estuaries, and coastal lagoons. Examples range from storm or tsunamigenic deposits to sea-level induced paleoenvironmental changes.

Here we present preliminary results from a new protocol for sampling sandy shores and quantify their calcareous nannoplankton and other coastal groups such as ascidians (aragonite spicule taxa) and calcareous macroalgi (micron size cell-wall fragments named tubiliths) taphocoenoses. Still in a validation stage this protocol uses a design of three replicates: I) three beaches to characterize each coastal sector; ii) three samples to characterize each beach; iii) three scans to characterize each smear-slide.

Repeated three times throughout 2021 to 2022 this spatial high-resolution study covered three sectors: the open sea Western Iberia Portuguese Atlantic coast (Santa Cruz, Rodízio and Guincho beaches), the outer Tagus estuary (Cascais, Carcavelos and Algés beaches) and the inner Tagus estuary (Alcochete, Montijo and Alfeite beaches). Results corroborate the usefulness of calcareous nannoplankton to characterize between these distinct coastal domains.

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