



A model for beachrock formation and evolution at high-latitudes. The case study of 41°N Corrubedo Complex (Ría de Arousa, Galicia, NW Spain)

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The exceptionally high wave-energy conditions affecting the majority of beach systems on the northwest coast of the Iberian Peninsula during winter 2001, intensified the erosion processes of beach profiles. As a consequence of this, a present-day beachrock unit was fully exhumed in the intertidal zone of the high-energy beach of Corrubedo in NW Spain at 41°N. In contrast with tropical beachrocks, the cementing material comprised epitaxial low-Mg calcite occurring as acicular and bladed coatings, pore linings, pore fillings of sparitic calcite, and meniscus-style cements. Composition of the beach sands consists of medium-to-coarse mixed siliciclastic-carbonate sands. Seawater, dominantly wave action, plus marine and meteoric mixed waters are invoked as the main generative fluids. The proposed model approaches beachrock formation and evolution from a morphodynamic viewpoint, considering four progressive stages: 1. initial cementation in the intertidal zone; 2. exposure and modelling by wave action; 3. colonization and hardening; and 4. disintegration/preservation and burial.

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