boulders up to 35 m^3 and 4) the scarcity of tsunami events affecting the coasts of the ABC Islands compared to frequent impacts of tropical storms and hurricanes.

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Sedimentological aspects of recent and historical tsunami events along the coast of Peru

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The coast of Peru is greatly endangered by tsunami events. The subduction of the Nasca Plate below the South American Plate triggers strong submarine earthquakes that are capable of causing tsunami.

High-energy wave events are major coast shaping processes. In some regions, e.g. the Caribbean, a distinction between storm/hurricane and tsunami deposits is difficult. Therefore, the absence of heavy storms makes the Peruvian coast a good target for tsunami research. Other meteorological phenomena, like El Niño events that occur in Peru are not associated with strong storms or surges. Deposits of El

Niño-caused flooding can easily be distinguished from tsunami events, since their sedimentary structures imply transport from the land to the sea, the deposited material derives from the mountain ranges and no indicators (e.g., foraminifera, shells) of marine inundations are present.

In our study we re-surveyed locations of the three most recent regional tsunami events in order to learn about the sedimentary structures and their preservation potential. We visited the areas affected by the Chimbote-Tsunami of 21st February 1996 (5 m run up; Bourgeois et al., 1999; Kulikov et al., 2005), by the Camana-Tsunami of the 23rd June 2001 (9 m run up; Jaffe et al., 2003) and by the Pisco-Paracas-Tsunami of 15th August 2007 (10 m run up; Fritz et al., 2007). Secondly, we surveyed the coast of Peru in order to find traces of historical or paleotsunami events. All sediments were sampled for grain size analysis, foraminifera determination and optically stimulated luminescence dating. For historical events, the inverse tsunami model of Jaffe & Gelfenbaum (2007) was applied to calculate onshore tsunami flow depths.

Both recent and historical tsunami deposits are present as (1) (graded) layers of coarse sand, some including shell fragments or pieces of rock, (2) (imbricated) shell layers, (3) heavy mineral accumulations and (4) mud caps or mud balls. Imbricated shells can give information on flow directions and hence can help to distinguish between run up and backwash sediments.

Unfortunately, the preservation potential of onshore tsunami deposits is very low. Erosion by wind, rivers or heavy rain falls (e.g., during El Niño events) and bioturbation (e.g., by crabs) can modify or destroy the sediments. For recent events, human activity (e.g., the use of beach / tsunami sand for rebuilding) is a limiting preservation factor. This study shows that muddy tsunami sediments and backwash sediments have the highest preservation potential. This is due to the cohesion of mud that makes the deposits less sensitive for erosion during backwash and due to fast hardening of mud layers in the dry Peruvian climate.

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A new fossil *lagerstätte* for ichthyosaurs of early Cretaceous age in the Torres del Paine National Park, Southernmost Chile

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Platypterygian ichthyosaurs recently discovered in the Torres del Paine National Park of Chile represent the southernmost and stratigraphically youngest and most complete specimens of this group worldwide. Within only one week of fieldwork in February 2007, we located 15 articulated and subcomplete skeletons, both adults and juveniles, associated with ammonites, belemnites, inoceramid bivalves and teleostid fishes. The assemblage was deposited in monotonous siliciclastic flysch lithologies of the now closed Rocas Verdes back-arc basin. This enormous concentration of marine Mesozoic reptiles to present knowledge appears to be unique for Chile and South America and will certainly place the locality among the prime fossil *lagerstätten* for Jurassic-Cretaceous marine reptiles in the world. We have begun to investigate taxonomy, biostratigraphy and palaeobiogeography of the Torres del Paine ichthyosaurs and associated fossil assemblage. Our research further aims to evaluate the conditions, which led to the excellent preservation and concentration of marine vertebrates in this enigmatic fossil deposit.

Massive use of GIS for Natural Hazard Assessment on 90 low-cost house building projects in Nicaragua

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