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# Article Extreme Sea Surges, Tsunamis and Pluvial Flooding Events during the Last ~1000 Years in the Semi-Arid Wetland, Coquimbo Chile.

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## Résumé

The coast of Chile has been exposed to marine submersion events from storm surges, tsunamis and flooding due to heavy rains. We present evidence of these events using sedimentary records that cover the last 1000 years in the Pachingo wetland. Two sediment cores were analyzed for granulometry, XRF, pollen, diatoms and TOC. Three extreme events produced by marine submersion and three by pluvial flooding during El Niño episodes were identified. Geochronology was determined using a conventional dating method using <sup>14</sup>C, <sup>210</sup>Pb and <sup>137</sup>Cs. The older marine event (E1) was heavier, identified by a coarser grain size, high content of seashells, greater amount of gravel and the presence of two rip-up clasts, which seems to fit with the tsunami of 1420 Cal AD. The other two events (E3 and E5) may correspond to the 1922 (E3) tsunami and the 1984 (E5) storm waves, corroborated with a nearshore wave simulation model for this period (SWAM). On the other hand, the three flood events (E2, E4, E6) all occurred during episodes of El Niño in 1997 (E6), 1957 (E4) and 1600 (E6), represented by layers of fine-grain sands and wood charcoal remains. Acknowledgments: The CLAP program (Concurso de Fortalecimiento al Desarrollo Científico de Centros Regionales 2020-R20F0008-CEAZA); Millennium Nucleus UPWELL (ANID NCN19\_153)

**Mots-Clés:** extreme events, tsunami deposit, flood events, storm deposits, wetland areas, Coquimbo, Chile

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