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# Nonlinear dynamics of the coastal zone with applications to marine hazards

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The nonlinear dynamics of the coastal zone is studied theoretically and experimentally and applied to different types of marine hazards, such as tsunami, rogue waves, ship-induced waves and storm surges. Theoretically, the coast is represented by gentle beach or by a sea wall, and the process of runup of different wave types (characteristic single waves, random wave field, wave trains) is studied for these two cases. The data of field and laboratory experiments are used to validate the results.