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Assessment of the Chile 2010 and Japan 2011 Tsunami Events in the Galapagos Islands

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The object of this study is to present an analysis of measurements and observations from the Chile 2010 and Japan 2011 tsunamis, in order to understand the particular response of the Galápagos Islands to the occurrence of these extreme events. There was very limited data measured in the Galápagos during the tsunami events, other than a high-frequency and continuous record of each event logged at the two tidal gauge stations. With this data, a wavelet analysis is performed with the aim of discriminating different patterns in wave periods along the record of observation and to recognize the frequency response of the islands to an incoming tsunami. During both events, a clear and persistent signal is found in the period range of ten to twelve minutes for Baltra tide gauge, and in the range of seventeen to twenty minutes for Santa Cruz tide gauge. Both of these persistent signals are speculated to be a shelf resonant mode particular to the Galápagos Islands and the Galápagos Platform.