Geophysical Research Abstracts
Vol. 16, EGU2014-10261, 2014
EGU General Assembly 2014

Assessing ocean wave energy potential and microseisms

Paul Christodoulides (1), Lauranne Pellet (2), Frédéric Dias (3,4)

(1) Faculty of Engineering and Technology, Cyprus University of Technology, Limassol, Cyprus (paul.christodoulides@cut.ac.cy), (2) Ecole Centrale Marseille, 38 Rue Frédéric Joliot Curie, 13013 Marseille, France(lauranne.pellet@centrale-marseille.fr), (3) School of Mathematical Sciences, University College Dublin, Belfield Dublin 4, Ireland (frederic.dias@ucd.ie), (4) Centre de Mathematiques et de Leurs Applications (CMLA), Ecole Normale Superieure de Cachan, 94235 Cachan, France

Ocean gravity waves driven by wind and atmospheric pressure generate pressure variations on the sea floor, which are at the origin of microseism. These microseisms can be recorded as a “noise” in seismic recordings by coastal seismic stations. Two types of microseism can be recorded: primary and secondary. We are interested in the secondary microseisms, which have a frequency twice that of the causative wave and amplitude independent of the depth. From the records of coastal seismic stations, we are able to determine wave characteristics (period, height). So we need to know the sea states that allow pressure variations large enough to generate microseisms. We also need to understand how pressure variations vary in space and time and how they are linked to the sea floor. We will present the results obtained for the oceanic pressure in different cases. We will also show the conditions on different parameters to obtain pressure variation able to generate microseisms. Finally, we will study the pressure with respect to different parameters in order to illustrate our theoretical results.