Assessing ocean wave energy potential and microseisms

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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 sec-
ondary 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.