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ethology and physics for an interdisciplinary approach to underwater  
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## First results on underwater acoustic background in SMO –NEMO Phase II

In recent years the Italian legislation is conforming itself to protect marine ecosystems which requires the study and the subsequent monitoring of the physical and chemical characteristics of the underwater environment that is affected and changed by the increasing human activities. The Submarine Multidisciplinary Observatory (SMO) is an underwater acoustic antenna installed onboard the NEMO-KM3NeT tower at 3500 m water depth and 100 km offshore Capo Passero (Sicily) and founded by Italian Ministry of Research, University and Education. It consists of 12 high sensitivity and broadband (sensitivity:  $-172 \pm 3$  dB re  $1V/\mu Pa$ , bandwidth:  $10\text{Hz} \div 70\text{kHz}$ ) acoustic sensors (hydrophones) and environmental probes (two Conductivity-Temperature-Depth probes to measure sound velocity at the site). The SMO antenna performs real-time monitoring of acoustic signals in deep-sea and, in particular, bio-acoustic sounds (marine mammals). Hydrophone signals are sampled at 192 kHz/24 bit and analyzed in real-time on shore. In this contribution we present the first results of the analysis of underwater acoustic background measured by the SMO antenna, operating since end of March 2013. Ambient sound in the whole bandwidth, and in particular impulsive sounds measured over the frequency band 10 Hz to 10 kHz and continuous low frequency sounds will be presented.

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