

## Using active and passive acoustics to assess O<sub>2</sub> production of a *Posidonia oceanica* meadow

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This work discusses the data acquired during two experiments conducted in October 2011 and May 2013 in the Bay of la Revellata, Calvi, Corsica for the purpose of developing an acoustic system for monitoring the oxygen production of a seagrass meadow. During two periods of one week, acoustic signals transmitted from a sound source (active acoustics) and environmental acoustic noise (passive acoustics) were recorded at various locations over *Posidonia oceanica*. The changes of both the acoustic power of the transmitted signal and of the acoustic noise at the various locations were highly correlated with dissolved oxygen measurements by optodes conducted in the same area, i.e. with the diel cycle of photosynthesis. The changes of the acoustic signal are ascribed to the formation of O<sub>2</sub> bubbles both in the water column and within plant aerenchymas. Since the amount of O<sub>2</sub> bubbles are not assessed by conventional chemical methods, combining the acoustic method with those methods will allow to obtain more robust, and accurate in situ estimates of the productivity of seagrass meadows. This work is a contribution for the development of a low cost, non-intrusive system to continuously monitor coastal ecosystems dominated by macrophytes at high spatial scales.