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Abstract

Construction of offshore wind farms with high-power turbines affect on marine ecosystems in shallow waters. Cetaceans, especially coastal dolphins and porpoises, are the key species in its ecosystem and need to be assessed properly. In these couple of decades, passive acoustic monitoring (PAM) is getting popular for cetacean census. They produce distinctive and species/family specific sounds, which can be used to monitor presence of animals. Here, we introduce the PAM survey for coastal dolphins and porpoises using stereo event recording system (A-tag, MMT INC., Saitama, Japan). The stereo hydrophones are most sensitive at 70 and 130–140 kHz, respectively. This leads us to discriminate dolphins (Delphinidae) or porpoises (Phocoenidae) because porpoises produce narrower band higher frequency sound than dolphins. Independent sound source in bearing angles, which is calculated from time-of-arrival difference of same signal recorded in two hydrophones of the A-tag, is used as the proxy of number of existing animals. Fixed or stationed A-tag records local movements of phonating dolphins or porpoises, which was related with the tidal current and time of a day or a year in most cases. Towed A-tag from a moving platform such as ship reveals highly concentrated area of dolphins or porpoises and seasonal change of distributions on transect lines of thousands kilometers. For setting A-tag and downloading the data, Logger Tools system (MMT INC., Saitama, Japan) is used on PC. And Igor Pro softwere (WaveMetrics, Inc., Oregon, USA) is used for data analysis to exclude false positives that were generated by background noise such as eco-sounder of ship and snapping shrimp sound.