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# Utilization of an echosounder in observing and quantifying GHG ebullition in reservoirs

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Gas ebullition of inland water reservoirs plays an increasingly significant role, particularly in transporting methane CH4 from their sediments to the atmosphere. Therefore, ebullition has captured international concern regarding its contribution to the global carbon budget. Nevertheless, Stochastic and episodic nature of gas ebullition, however, complicates quantification of ebullitive fluxes so a choice of an adequate monitoring technique is essential. Among the recently emerging methods aimed on solving this problem, the most promising and approved technique seems to be hydroacoustic techniques, which are at the same time able to sample large areas, efficiently capture the spatiotemporal scale of gas ebullition and, in addition, to size individual bubble targets.
In our presentation, illustrated is the quantification of gas ebullition from hydroacoustic records. The first step consists in distinquishing bubbles from acoustically similar objects. Consequently, acoustic sizes of bubbles targets are converted to adequate gas volume using regression models based on the functional response between acoustic and real size of bubbles. Finally, acoustic ebullitive flux is determined as a product of the volumetric bubble density and a mean rise velocity of bubbles.
Although hydroacoustic results can provide good evidence of spatial variability, the question remains how frequently they should be carried out on the temporal scale in order to bring a realistic picture of ebullitive fluxes around the whole year.