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Corrigendum: A new methodology for quantifying bubble flow rates in deep water using splitbeam echosounders: Examples from the Arctic offshore NW-Svalbard

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In our original paper, M. Veloso, J. Greinert, J. Mienert, M. De Batist, 2015, *A new methodology for quantifying bubble flow rates in deep water using splitbeam echosounders: Examples from the Arctic offshore NW-Svalbard*, Limnol. Oceanogr.: Methods 13, 2015, 267–287, doi: 10.1002/lom3.10024; we would like to correct the variable of time used in the inverse method for the flow rate calculation. The correct time variable that should be used in Eq. 15 (letter τ) is the time of the pulse length of the transmitted signal and not the sample interval as defined in the original paper. Thus, the description of the variable τ of Eq. 15 in page 278 should be replaced by:

τ: pulse length of transmitted signal [sec].

As consequence of this, paragraphs on pages 275 and 278 need to be adjusted and miscalculated values in Tables 2 and 3 must be corrected as indicated below.

Correction of paragraph at page 275.

TS is calculated for each sample of each ping (e.g., Fig. 4) and therefore each TS value represents the backscattering produced by the targets located at the approximated truncated conical volume with a depth determined by the pulse length of the transmitted signal and the sound propagation speed in the water (sample volume V; Fig. 8).

Correction of paragraph at page 278.

As we further know that D represents the depth of the volume sample which can also be expressed as a function of the pulse length τ and the sound propagation speed c_w in the water., Eq. 13 can be rewritten as:

Correction of values Table 2.

Table 2. CH_4 flow rates and fluxes with respect to different BRS models (Mendelson 1967; Woolf and Thorpe 1991; Woolf 1993; Leifer et al. 2000; Leifer and Patro 2002). The table also includes the mean, standard deviation, relative standard deviation using the different BRS models, and the relative propagation error produced by ±1 dB of variation in the TS value of the source of the acoustic flare.

Data period	2009		2012		2 yr merged	
			Total covered area (m^2)			
	101,285.61		158,632.36		231,930.41	
BRS model						
Clean bubbles	$Ø_V^T$ (L/min)	$Ø_M^T$ (T/yr)	$Ø_V^T$ (L/min)	$Ø_M^T$ (T/yr)	$Ø_V^T$ (L/min)	$Ø_M^T$ (T/yr)
Leifer "clean bubble" (mean =0.231 m/s)	9.15	75.12	10.71	88.60	16.19	133.63
Mendelson "clean bubble" (mean = 0.249 m/s)	11.55	94.82	13.52	111.82	20.44	168.66
Leifer& Patro "clean bubble" (mean = 0.249 m/s)	11.40	93.66	13.35	110.47	20.19	166.61
Mean	10.70	87.87	12.52	103.63	18.94	156.30
Standard deviation	1.35	11.05	1.58	13.04	2.38	19.66
Relative standard deviation, BRS models (%)			± 12.60			
Relative propagation error, ± 1 dB TS value (%)			± 23.03			
			Mean Flux (1000 ×$Ø_{M,V}^T$/ m^2)			
	0.11	0.87	0.08	0.65	0.08	0.67
Dirty bubbles	$Ø_V^T$ (L/min)	$Ø_M^T$ (T/yr)	$Ø_V^T$ (L/min)	$Ø_M^T$ (T/yr)	$Ø_V^T$ (L/min)	$Ø_M^T$ (T/yr)
Leifer & Patro "dirty bubble" (mean = 0.190 m/s)	9.27	76.05	10.84	89.69	16.39	135.28
Woolf & Thorpe "dirty bubble" (mean = 0.191 m/s)	9.95	81.70	11.65	96.35	17.61	145.32
Woolf 93"dirty bubble" (mean = 0.249 m/s)	11.56	94.92	13.53	111.95	20.46	168.84
Leifer "dirty bubble" (mean = 0.178 m/s)	7.54	61.90	8.82	73.01	13.34	110.11
Mean	9.58	78.64	11.21	92.75	16.95	139.89
Standard deviation	1.67	13.68	1.95	16.13	2.95	24.33
Relative standard deviation, BRS models (%)			± 17.40			
Relative propagation error, ± 1 dB TS value (%)			± 23.03			
			Mean Flux (1000 × $Ø_{M,V}^T$/ m^2)			
	0.09	0.78	0.07	0.58	0.07	0.60

Correction of values Table 3.

Table 3. Estimation of flow rates using different BSD.

BSD	Flow rate (mL/s)
BSD from our visual observations (McGovern 2012)	45.26
All bubbles same size (diameter:6 mm, most frequent value of our BSD)	27.60
BSD from Ostrovsky et al. (2008)	27.11
BSD from Sahling et al. (2009)	103.15
BSD from Römer et al. (2011)	34.13
Mean	47.45
Standard deviation	31.99
Relative standard deviation (%)	±67.42

The authors regret the errors and apologize for any inconvenience this may have caused.