

Supplements

Table S1. Population density and abundance of the living and dead dominant species: *A. aomoriensis*, *E. incertum* and *A. cassis* at station FF1, FF4 and FF5.

Living							
Station	Species (ind. 10 cm ⁻³)	June 02.06.2009	August 18.08.2009	October 20.10.2009	December 07.12.2009	February 15.02.2010	April 19.04.2010
FF1	<i>Ammonia aomoriensis</i>	10.1	10.6	49.1	8.0		14.1
	<i>Elphidium incertum</i>	20.7	30.1	4.5	2.8		3.3
	<i>Ammotium cassis</i>	0.0	0.0	0.0	0.0		0.2
FF4	<i>Ammonia aomoriensis</i>	7.7	4.0	0.4	0.9	0.6	
	<i>Elphidium incertum</i>	71.5	22.8	11.2	11.7	44.6	209.4
	<i>Ammotium cassis</i>	5.1	0.4	3.0	7.2	3.3	13.6
FF5	<i>Ammonia aomoriensis</i>	22.3	3.4	93.3	19.7	1.4	3.5
	<i>Elphidium incertum</i>	30.9	12.3	5.9	15.4	11.3	48.0
	<i>Ammotium cassis</i>	1.7	30.2	0.0	0.3	8.2	7.6
Dead							
Station	Species (tests 10 cm ⁻³)	June 02.06.2009	August 18.08.2009	October 20.10.2009	December 07.12.2009	February 15.02.2010	April 19.04.2010
FF1	<i>Ammonia aomoriensis</i>	138.9	270.1	79.2	131.2		75.4
	<i>Elphidium incertum</i>	35.2	85.0	14.1	21.9		13.1
	<i>Ammotium cassis</i>	1.6	2.9	0.0	1.0		0.2
FF4	<i>Ammonia aomoriensis</i>	2.6	8.5	28.0	79.6	10.6	19.0
	<i>Elphidium incertum</i>	2.6	0.4	10.8	5.9	10.6	21.8
	<i>Ammotium cassis</i>	15.3	2.7	12.4	2.5	2.5	5.4
FF5	<i>Ammonia aomoriensis</i>	5.1	78.0	34.1	29.0	54.3	64.7
	<i>Elphidium incertum</i>	12.0	38.3	4.4	10.2	39.8	36.9
	<i>Ammotium cassis</i>	1.7	1.7	0.0	0.6	5.3	2.1

Table S2. Mean test diameter of living and dead *A. aomoriensis* from June 2009 to April 2010.

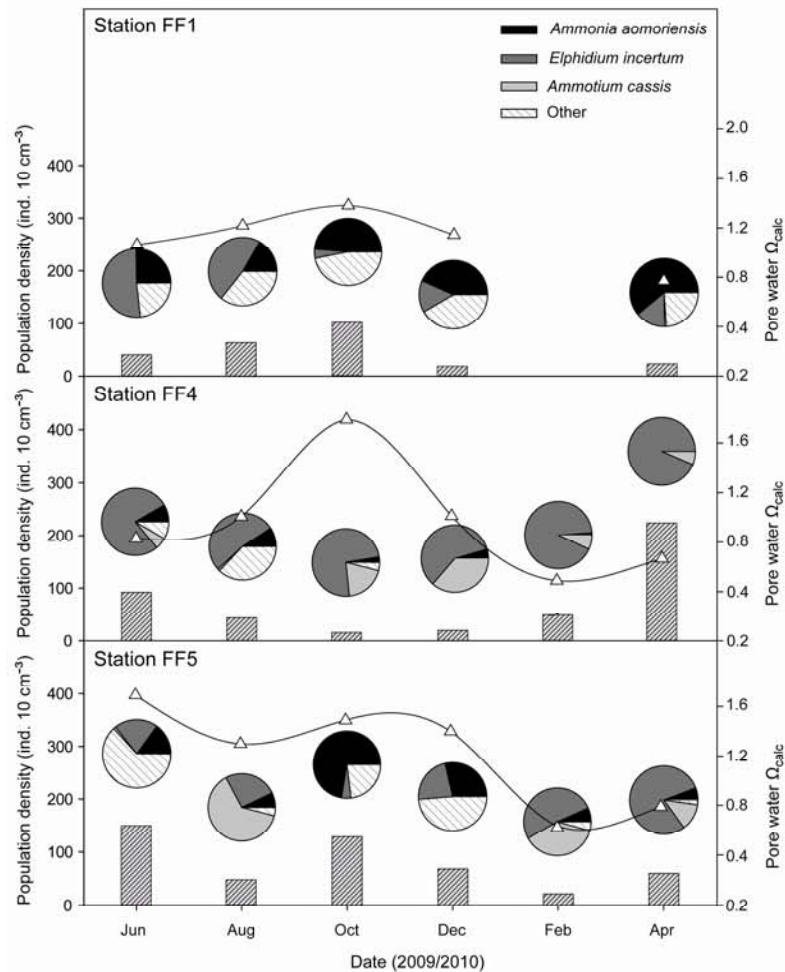
<i>A. aomoriensis</i>	Station	June [μm]	August [μm]	October [μm]	December [μm]	February [μm]	April [μm]
Living	FF1	415	393	385	378		392
	FF4	308	328	388	306	325	
	FF5	372	385	461	419	404	363
Dead	FF1	430	373	376	419		392
	FF4	400	269	375	308	369	357
	FF5	433	412	420	396	426	384

Table S3. Foraminiferal and total carbonate production, loss and accumulation on a global scale. Data sources are given in brackets.

	Planktonic foraminifera	Benthic foraminifera	Total Carbonate
Production	1.3 – 3.2, on average 2.9 Gt yr ⁻¹ (1) 1.2 Gt yr ⁻¹ (2, 3)	Coral reef environments: 0.04 Gt yr ⁻¹ (4) Non-carbonate shelves: 0.03 Gt yr ⁻¹ (5) Other shelf environments: 0.03 Gt yr ⁻¹ (6) Total neritic: 0.1 Gt yr ⁻¹ (13) Slopes and deep sea: 0.33 Gt yr ⁻¹ (7)	5.8 Gt yr ⁻¹ (8) 5.7 Gt yr ⁻¹ (9)
Loss	75 % (1)	Reef environments: 13 % (4) Neritic: >95 % (10)	Neritic: 75 % (11) Slopes: 40 % (11) Deep Sea: 55 % (11) Total: 40 % (11)
Accumulation	0.4 – 0.9 Gt yr ⁻¹ (1) 0.83 Gt yr ⁻¹ (12)	Coral reef environments: 0.035 Gt yr ⁻¹ (4) Non-carbonate shelves: 0.002 Gt yr ⁻¹ (13) Other shelf environments: 0.0075 Gt yr ⁻¹ (13) Total neritic: 0.045 Gt yr ⁻¹ (13) Slopes and deep sea: 0.15 Gt yr ⁻¹ (13) Total benthic foraminifera: 0.2 Gt yr ⁻¹ (2)	3.2 Gt yr ⁻¹ (11)

Sources: **(1)** Schiebel (2002), **(2)** Langer (2008), **(3)** probably export from the near surface ocean, **(4)** Langer et al. (1997), **(5)** 0.1 – 3, for deeper parts on average 2 g CaCO₃ m⁻² yr⁻¹ Wefer and Lutze (1978) at 15.3 x 10⁶ km² Milliman (1993, his Table 1), **(6)** assigned to “Banks/Bays” by Milliman (1993) with the same carbonate production as non-carbonate shelves, **(7)** total accumulation of 0.2 Gt yr⁻¹ minus **(2)** neritic accumulation plus loss due to pelagic export or dissolution, **(8)** Milliman et al. (1999), **(9)** Milliman and Droxler (1996), **(10)** Wefer and Lutze (1978), **(11)** Milliman (1993), **(12)** Catubig et al. (1998), **(13)** own calculations from the above figures.

Living fauna



Dead fauna

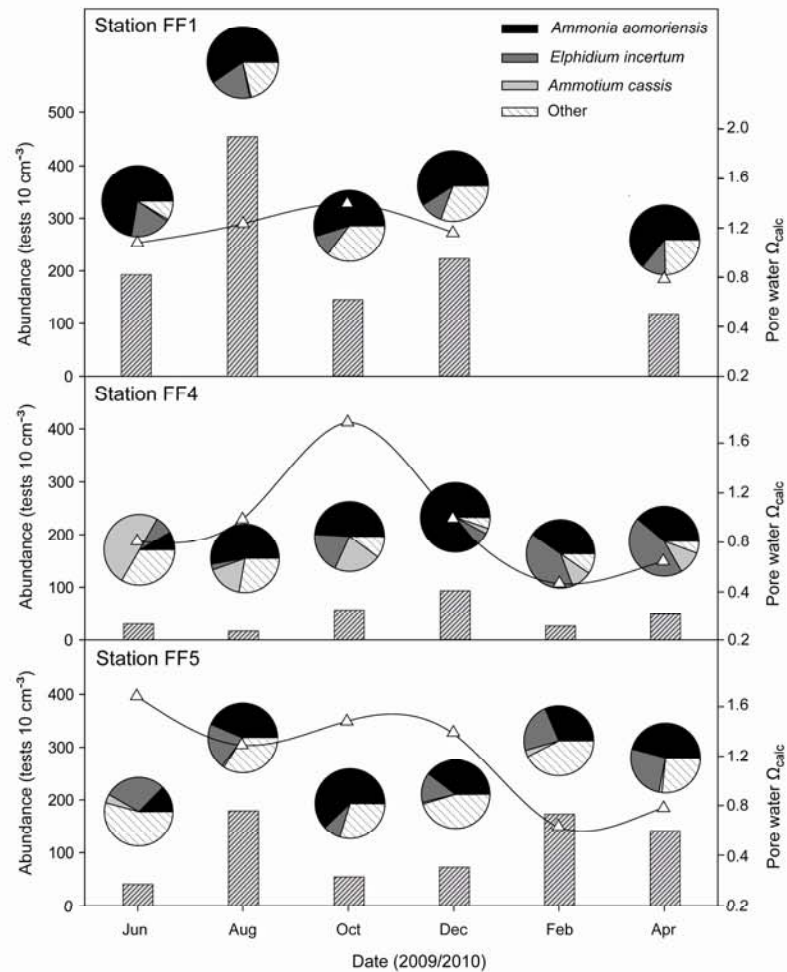


Fig. S1. Proportions and abundance of living and dead benthic foraminiferal species at stations FF1, FF4 and FF5 from June 2009 to April 2010. The bars present the population density and abundance of the living and dead fauna. Pie charts indicate the percentages of dominant species (Table 5 and 6). Pore water Ω_{calc} in Flensburg Fjord is displayed by white triangles.

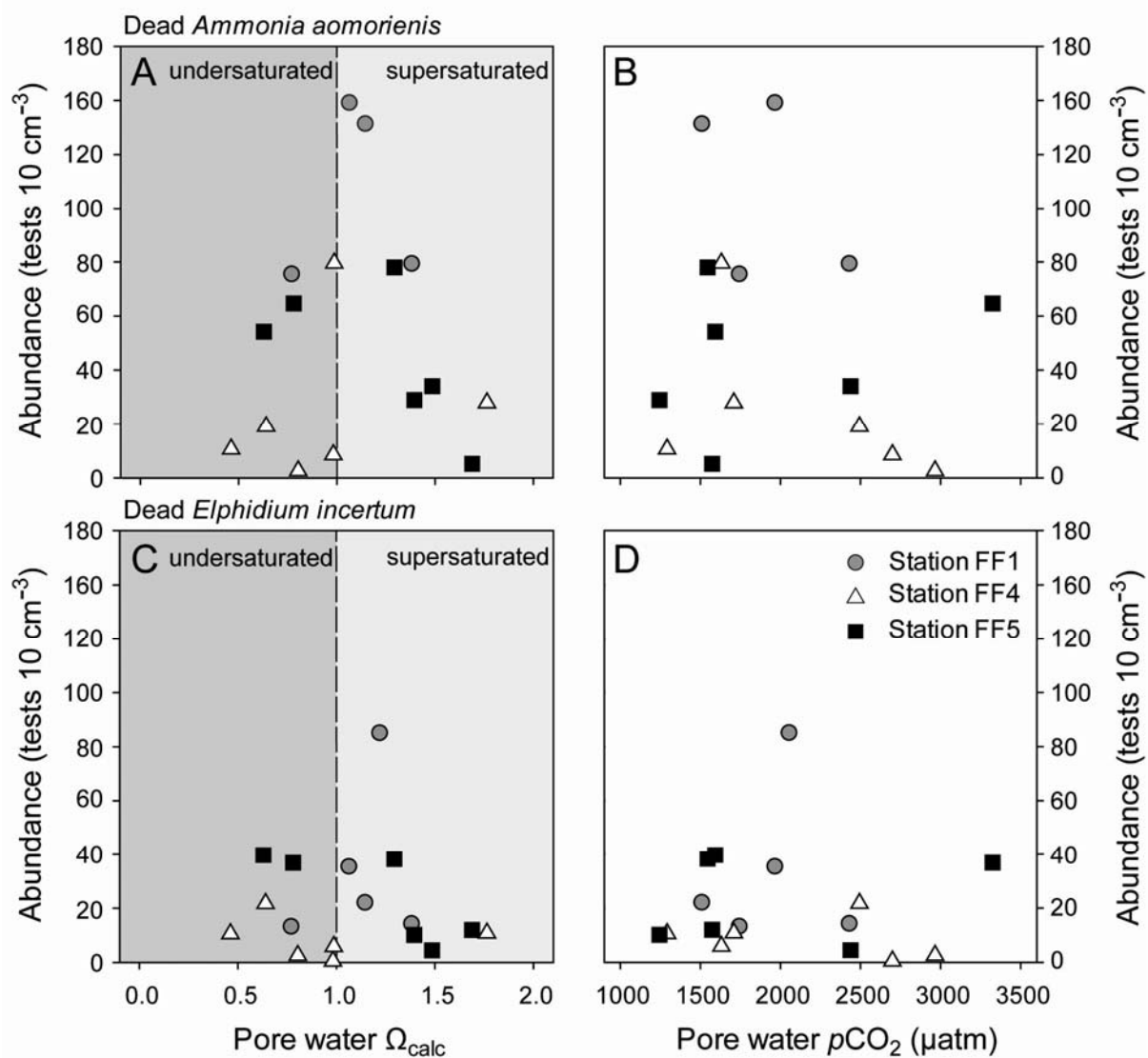


Fig. S2. Abundance of dead *A. aomoriensis* (A and B) and *E. incertum* (C and D) vs. sediment pore water Ω_{calc} (A and C) and $p\text{CO}_2$ (B and D). The different symbols present stations FF1, FF4, and FF5 during the one year cycle.

References

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