

Table SI-1

Range of average wind speed, k_{Hg} , saturation ratio and gaseous Hg water-atmosphere fluxes obtained for the three different stations and seasons

		Wind speed ^a (m s ⁻¹)	k_{Hg} ^b (cm h ⁻¹)	Saturation ratio	Gaseous Hg flux (ng m ⁻² h ⁻¹)
March 2005					
Muddy sediments	S2	3.8	7.7	5 - 5	4.3 - 5.3
Muddy with macrophytes	S3	3.2 - 5.7	6.4 - 12.6	3 - 13	4.2 - 11.6
May 2006					
Muddy sediments	S2	3.7	10.5	6 - 12	1.5 - 3.2
Muddy with macrophytes	S3	6.0 - 7.3	17.2 - 19.7	2 - 26	0.4 - 14.5
Subtidal station	S4	3.5 - 3.8	10.3 - 11.0	4 - 17	0.9 - 4.4
October 2007					
Muddy sediments	S2	2.3 - 2.5	7.0 - 7.4	5 - 7	1.4 - 2.5
Muddy with macrophytes	S3	3.0 - 4.4	8.6 - 11.7	4 - 20	1.5 - 13.5
Subtidal station	S4	2.9 - 3.3	8.5 - 10.1	5 - 9	1.7 - 4.7

a. Range of wind speed at 10 m (1-hour averaged) over the benthic chambers incubation periods

b. k_{Hg} calculated with the model of Borges et al., (2004) as a function of wind speed

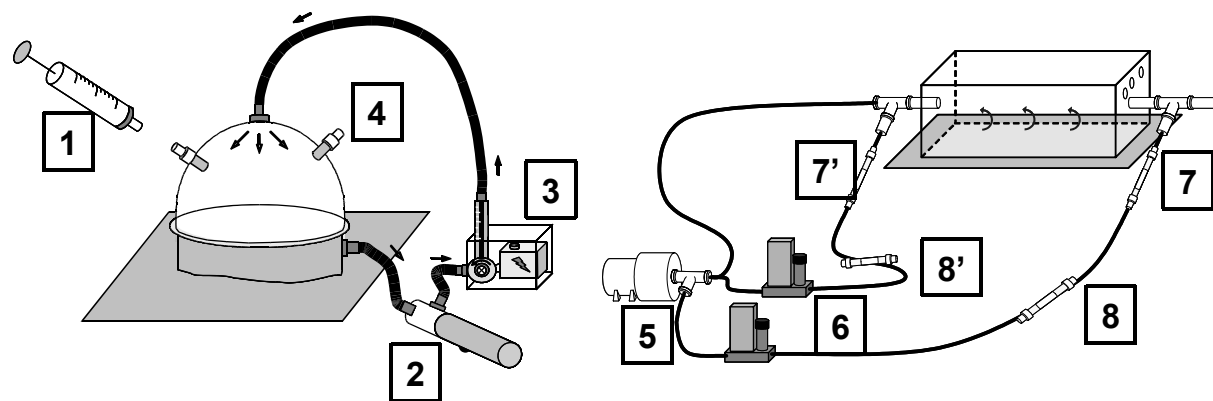


Figure SI-1. Schematic representation of benthic chamber (left) and dynamic flux chamber (right). 1. 450 mL PP syringe; 2. pH, O₂ and T probe; 3. battery and flowmeter; 4. tap; 5. vacuum pump; 6. mass flow controllers; 7 and 7': analytical inlet and outlet gold traps; 8 and 8': preventive gold traps

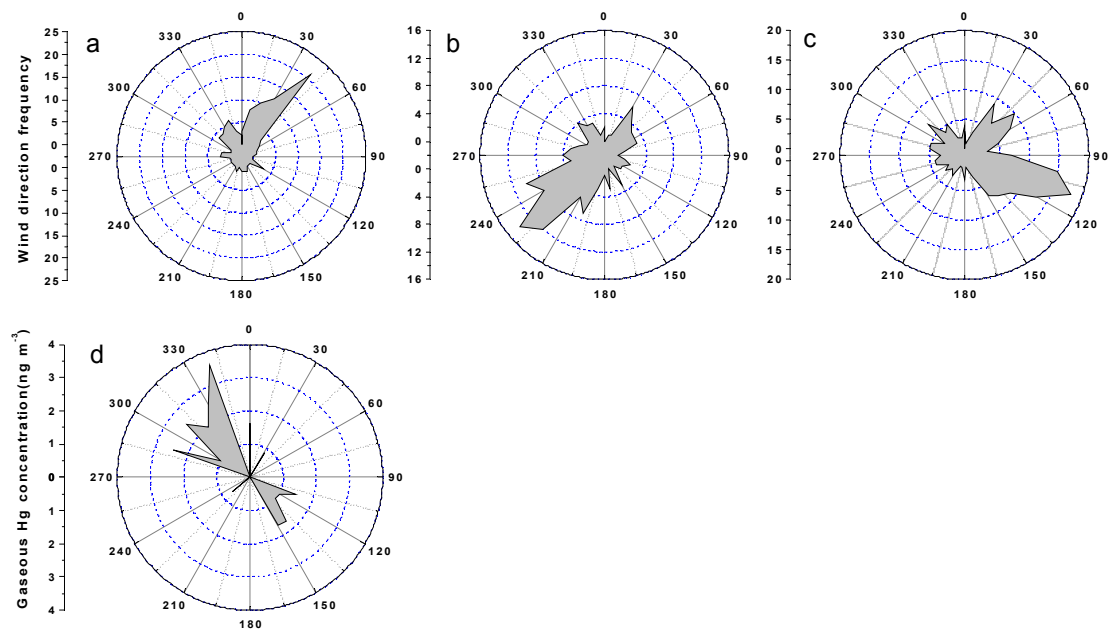


Figure SI-2. Compass roses for the three field campaigns a. March 2005; b. May 2006, c. October 2007 and d. mean gaseous Hg concentrations according to the wind directions averaged over the three campaigns

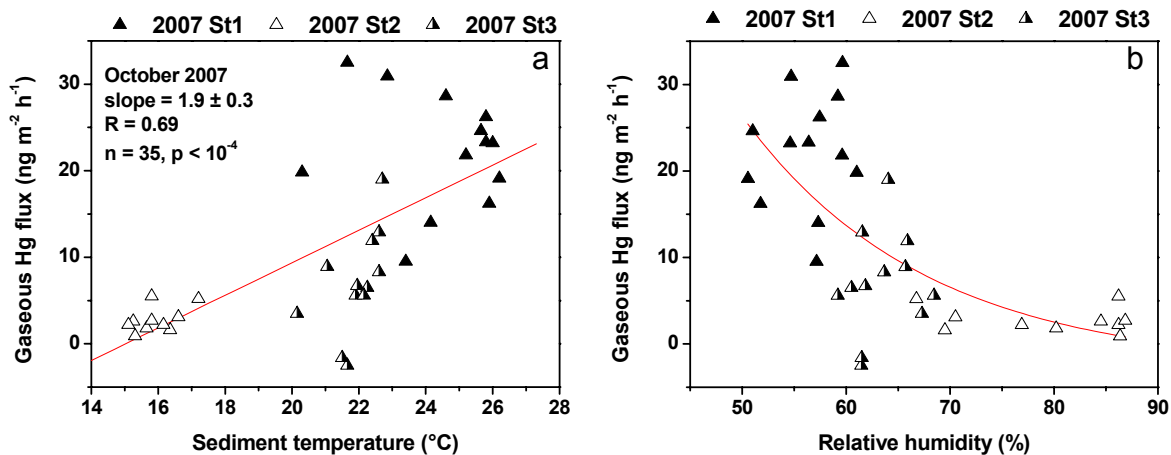


Figure SI-3. Specific relationships observed in October 2007 between sediment - atmosphere gaseous Hg fluxes and sediment temperature (a) and relative humidity (b)

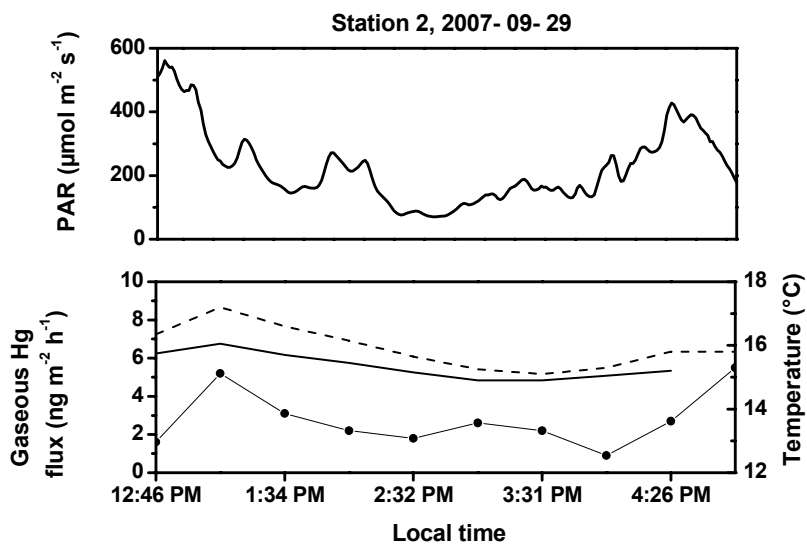


Figure SI-4. Example of time course evolution of gaseous Hg fluxes (circles), sediment (dashed line) and air (solid line) temperatures and PAR intensity on station 2 (intertidal mudflat without *Zostera noltii*) during the 2007 field campaign.