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Technical note: Assessing gas equilibration systems for continuous pCO_2 measurements in inland waters

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Table S1. List of components of the tested equilibration systems.

	Spray-type equilibrator	Marble-type equilibrator	Membrane-enclosed sensor
Medium of equilibration	Spray nozzle (GG 3/8 - SS 15, Spraying System Co., USA)	Marble (Ø 10 mm)	PTFE membrane (200-07, International Polymer Engineering, USA) Rubberizing compound; Plasti Dip (Plasti Dip International, USA)
Equilibration Chamber	Acrylic tube (Ø 48 mm × 200 mm)	Acrylic tube (Ø 48 mm × 300 mm)	–
Detector	IRGA; LI820 (LI-COR, USA)		Diffusion-type IRGA; GMP222 (sensor probe) + GMT222 (sensor transmitter) (Vaisala, Finland)
Logger	Laptop		CR10X or CR1000 (Campbell Scientific Inc., USA)
Water flow	Bilge pump; Tsunami T800 (Attwood Co., USA)		–
Air flow	Diaphragm pump (NMP 830 KNDC, KNF Neuberger Ltd., Germany) Desiccant; Drierite (W.A. Hammond Drierite Co. Ltd., USA) Air filter; Balston 25 micron air filter (Parker Hannifin Co., USA)		–
Power	12 V DC		24 V DC (2 × 12 V in series)
Barometric pressure and temperature compensation	Internal compensation function supported by LI820		Barometric pressure: Watchdog 1650 Micro Station (Spectrum Technologies Inc., USA), Water temperature: Orion 5-Star Portable (Thermo Scientific, USA)

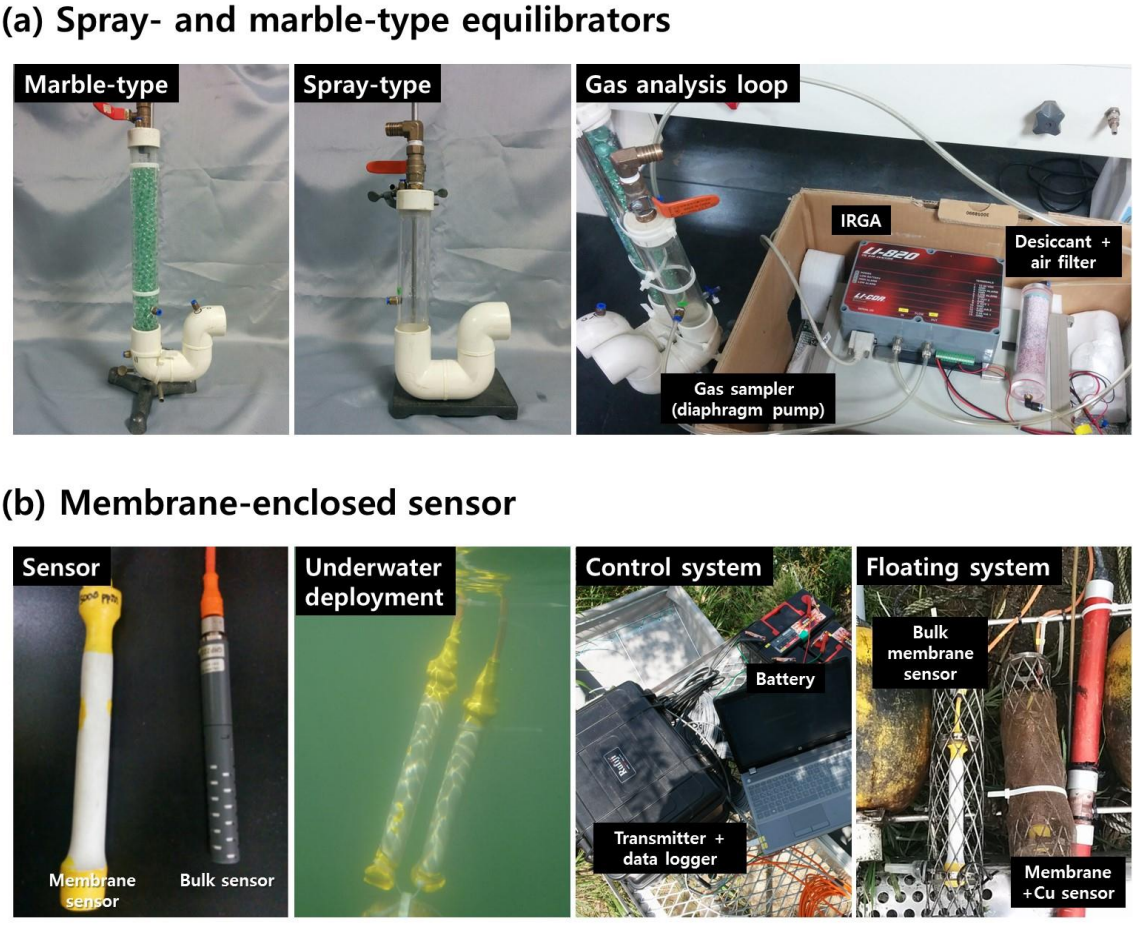

Figure S2. Pictures showing three tested equilibration systems. The system components are listed in Table S1.

Figure S2. Biofouling on the membrane surface following a 2-week underwater deployment in (a) a eutrophic tidal river reach and (b) oligotrophic reservoir surface water. Antifouling with copper-mesh screening ("membrane+Cu") reduced the biofouling on the Cu-protected membrane surface in the eutrophic tidal reach. The unprotected membrane sensor ("bulk membrane") did not show noticeable biofouling in the oligotrophic reservoir.

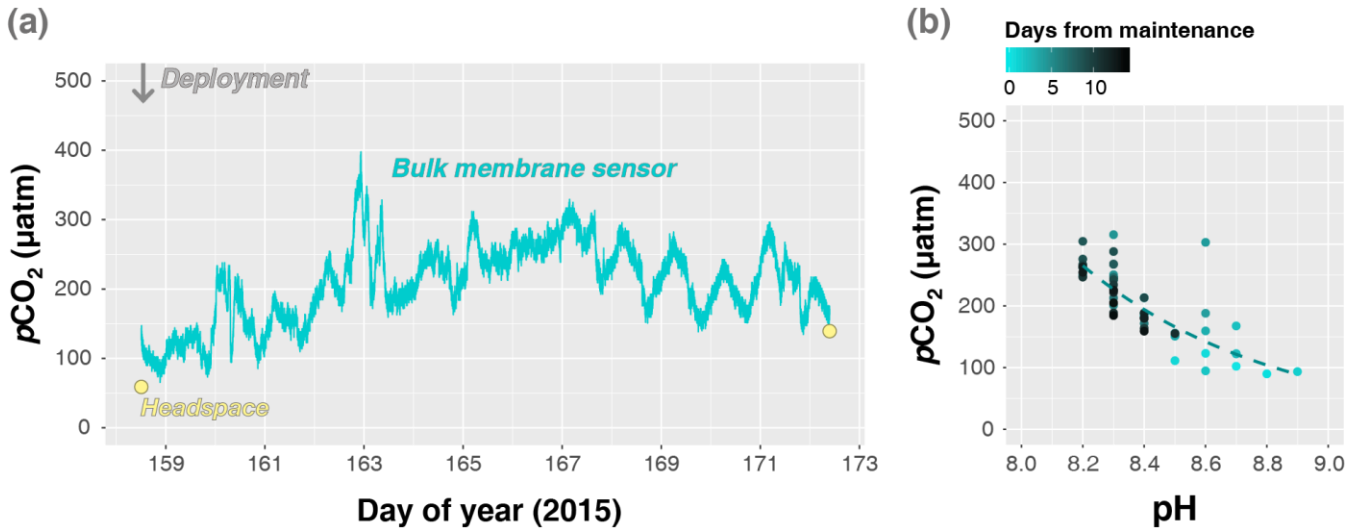

Figure S3. Continuous pCO_2 measurements at an oligotrophic reservoir surface water of the Han River using a membrane-enclosed sensor (a) and the relationship between pH and pCO_2 during successive monitoring periods from deployment (b).