Supplement of

Surface CO_2 Gradients Challenge Conventional CO_2 Emission Quantification in Lentic Water Bodies under Calm Conditions.

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S1. Setup

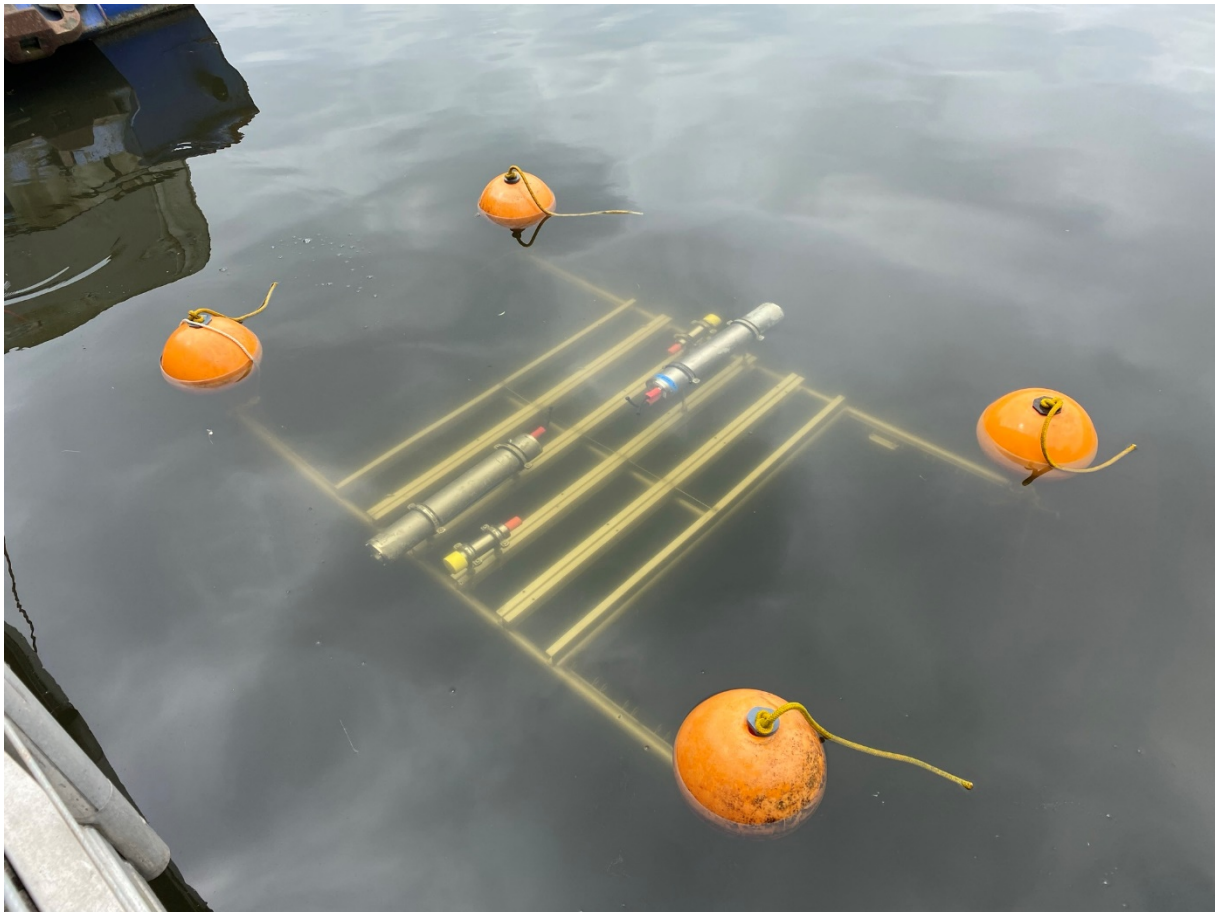

Figure S 1: Photograph of the CO_2 sensors (large metallic probes, Contros HydroC, -4H- JENA engineering, Germany) installed on the floating frame. The mounts of the probes could be extended to adjust the distance between the probes to 20 cm, and the ropes on the buoyancy bodies could be extended to lower the entire frame. By that, the depth of the probes could be adjusted to allow measurements in 5 cm and 25 cm depth.

S2. Calibration

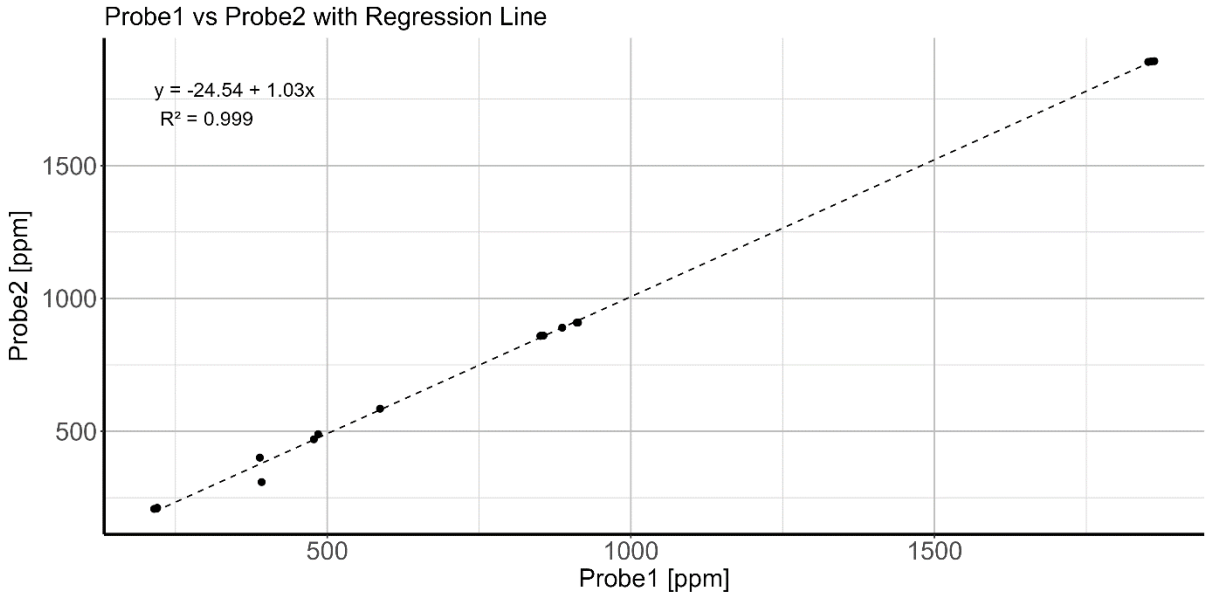

Figure S 2: pCO_2 measurement comparison between the two CO_2 probes. Dots indicate measurements, dashed line is a linear regression. CO_2 Probe calibration was performed in a sink with both probes being deployed at the same time. The probe measurements align well to each other with a correlation coefficient of 0.99. In addition, an infrared gas analyser (EGM-4, PP-Systems, USA) coupled to a membrane contactor (MiniModule, Liqui-Cel, USA) was used as a reference system to quantify probe errors. The mean absolute errors of pCO_2 were 55.4 ppm and 66.2 ppm for Probe1 and Probe2, respectively. Relative errors were -6.14 % and -4.6 % for Probe1 and Probe2, respectively.