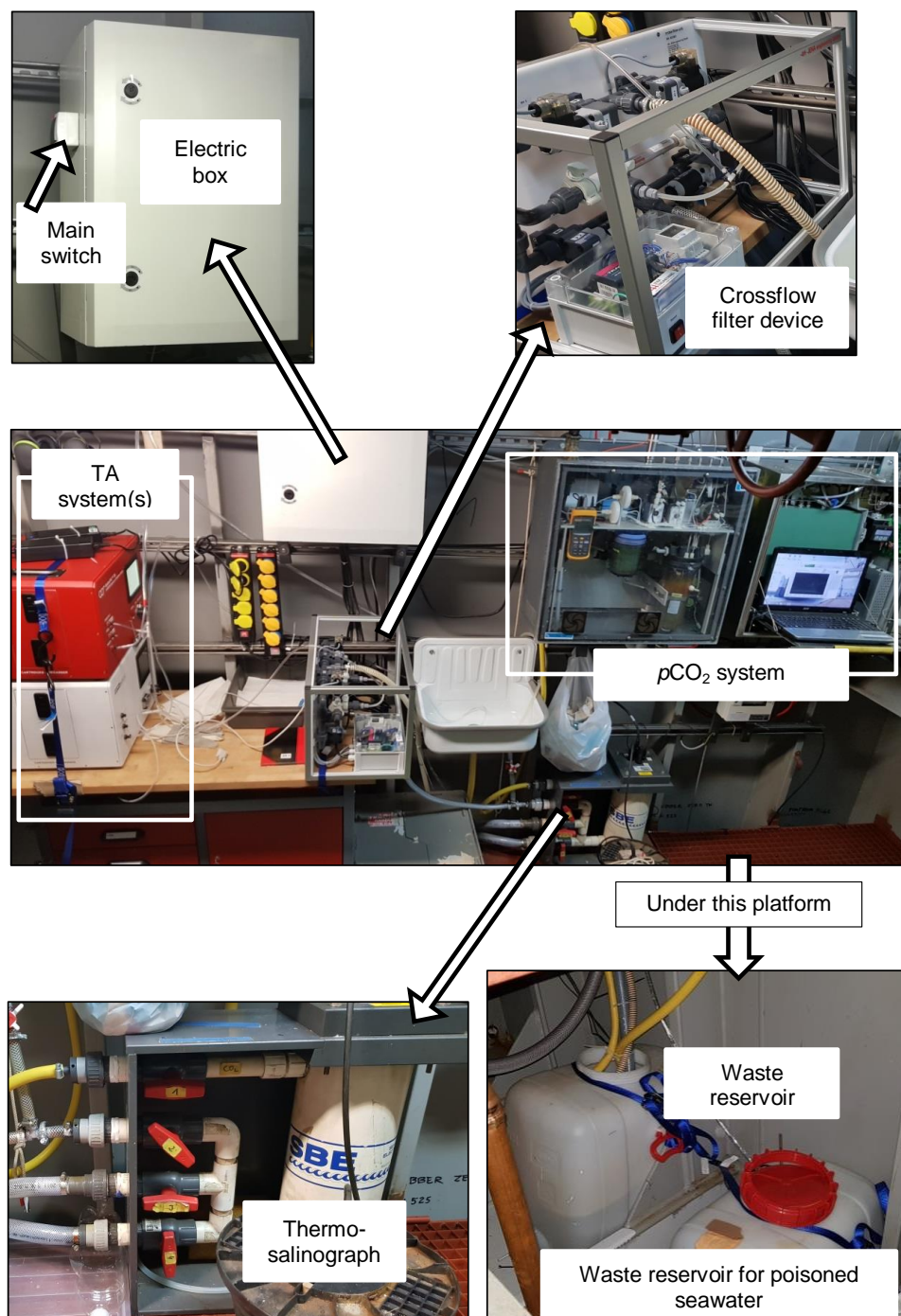# Supplementary Material

1 SUPPLEMENTARY FIGURES

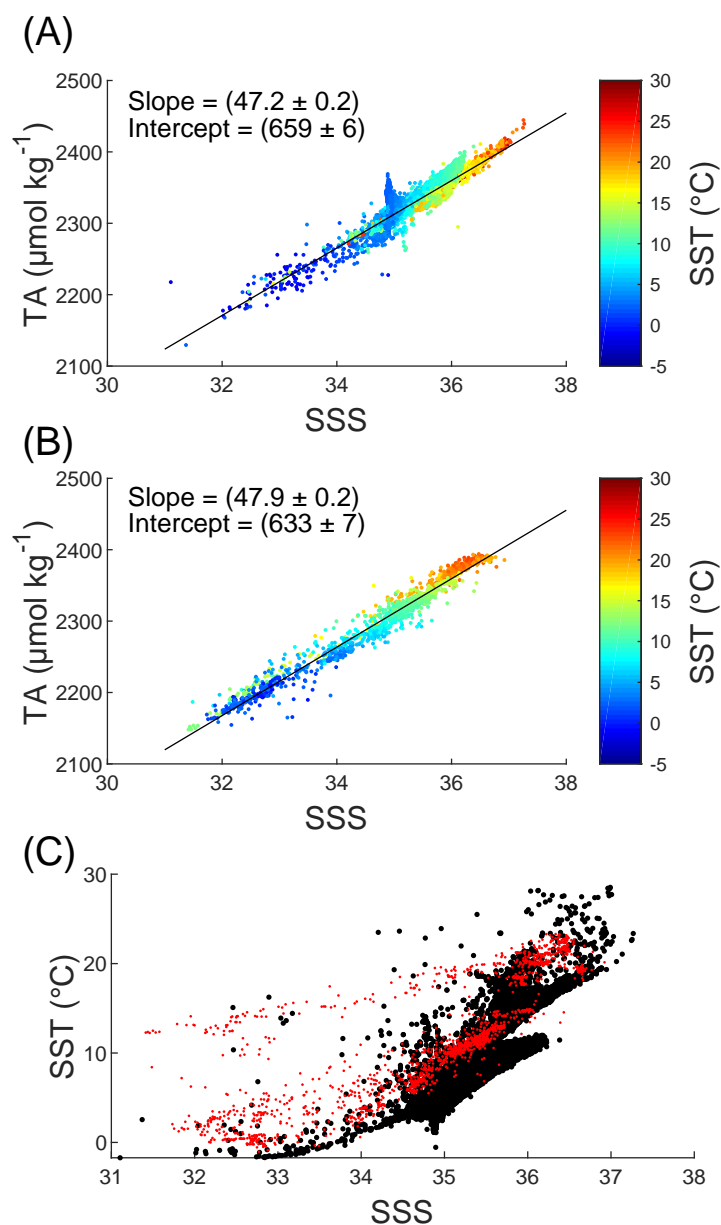**Figure S1.** Photos of the onboard system

Figure S2. TA as a function of SSS from the GLODAPv1 data set for the North Atlantic Ocean (A), and for the SOOP-based data (B), respectively. The colors of the data points represent the SST. The solid black line indicates the TA-SSS-relationship with the named slope and intercept. (C) SST as a function of SSS from the GLODAPv1 data set (black filled circles), and the SOOP-based data (red filled circles).
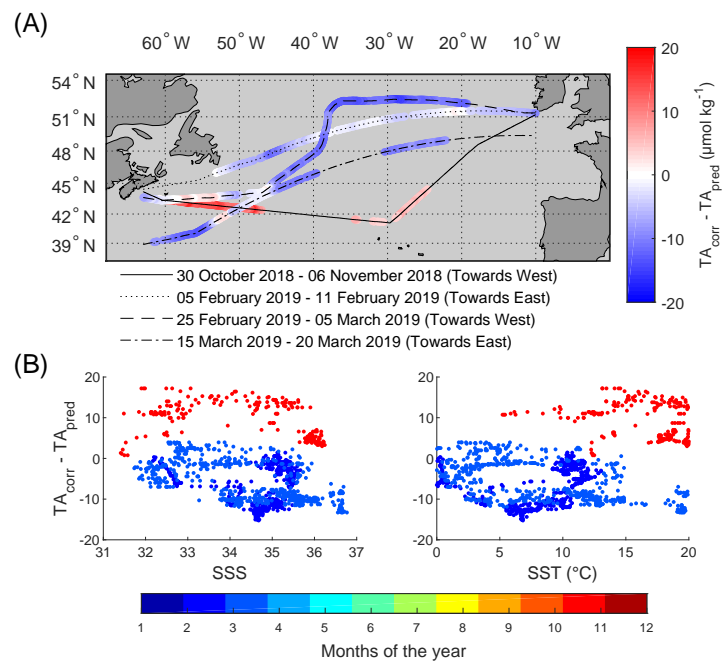
(A)

(B)

Figure S3. (A) Residuals between the measured TA values (TA$_{corr}$) and the predicted TA values (TA$_{pred}$) using the parameterization by Lee at al. (2006) over the cruise tracks of the campaigns of the North Atlantic SOOP line. (B) Residuals as a function of the SSS, and SST. The colors of the data points represent the month, when the measurements took place.
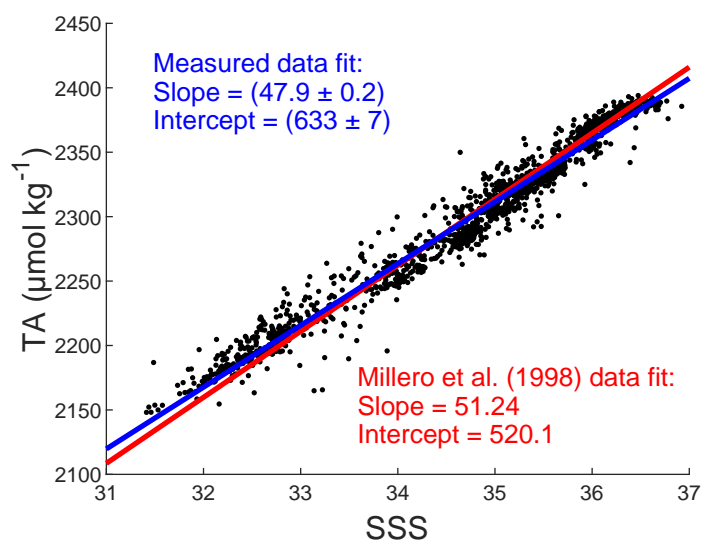
Figure S4. Measured TA values (black filled circles) from the four measurement campaigns as a function of the SSS. The red solid line indicates the TA-SSS-relationship described by Millero et al. (1998) for the Atlantic Ocean, and the blue solid line indicates the TA-SSS-relationship resulted from the SOOP-based data.