Supplement of Comparing float pCO_2 profiles in the Southern Ocean to ship data reveals discrepancies

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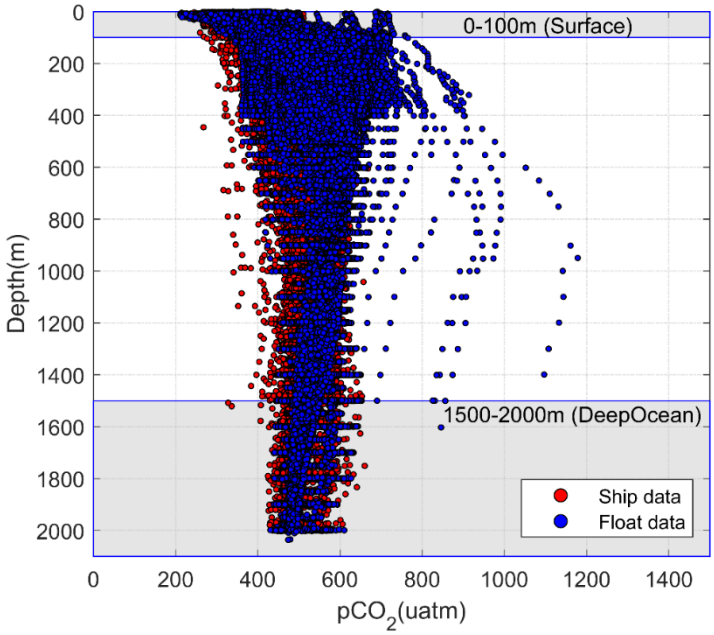

Figure S1. Scatterplot of pCO_2 at different depths in the Southern Ocean. Ship data (red) is plotted first and float data (blue) second.

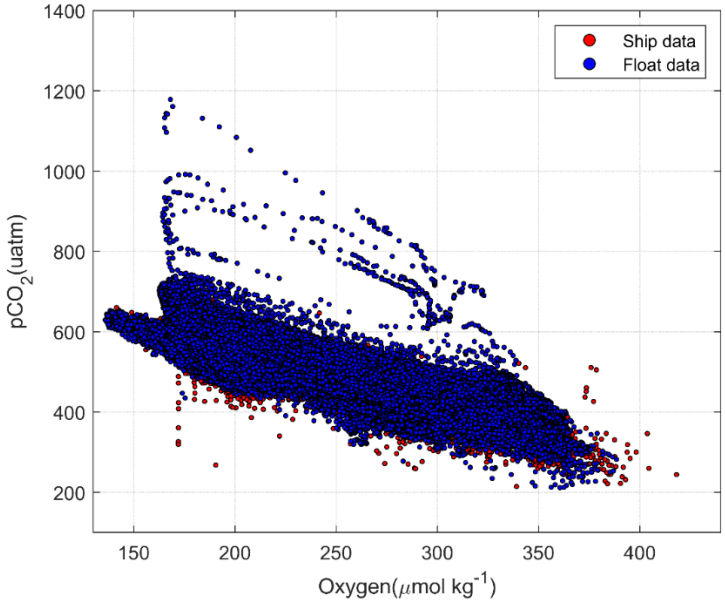

Figure S2. Scatterplot of pCO_2 against oxygen (ship data and float data) in the SO region. (Ship data (red) is plotted first and float data (blue) second).

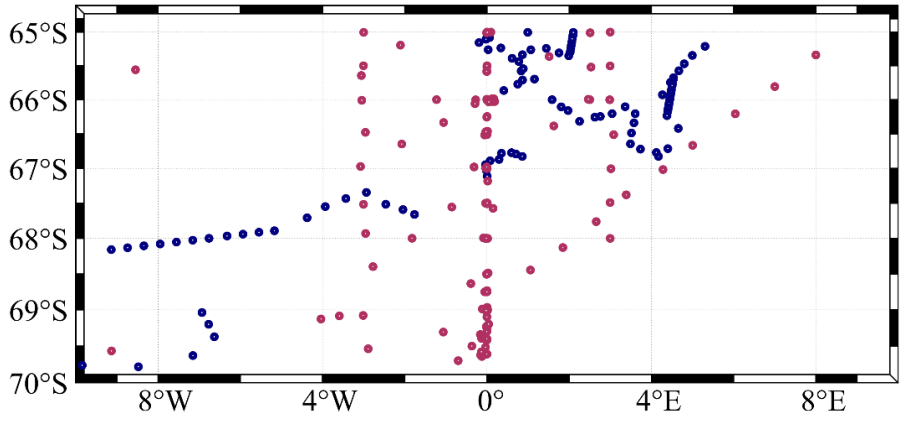

Figure S3. Location of ship data (red) and float data (blue) in the region around the prime meridian, near Antarctica (70°S-65°S, 10°W-10°E)

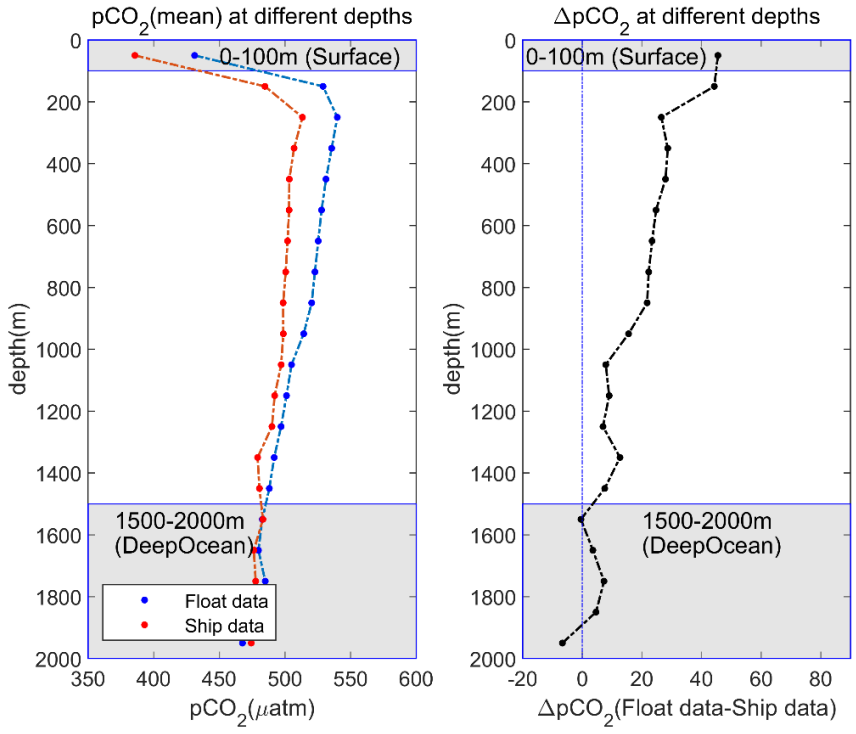

Figure S4. pCO_2 (mean) at different depths (left), and difference between float pCO_2 minus ship pCO_2 at different depths (right) in the region around the prime meridian, near Antarctica (70°S-65°S, 10°W-10°E).

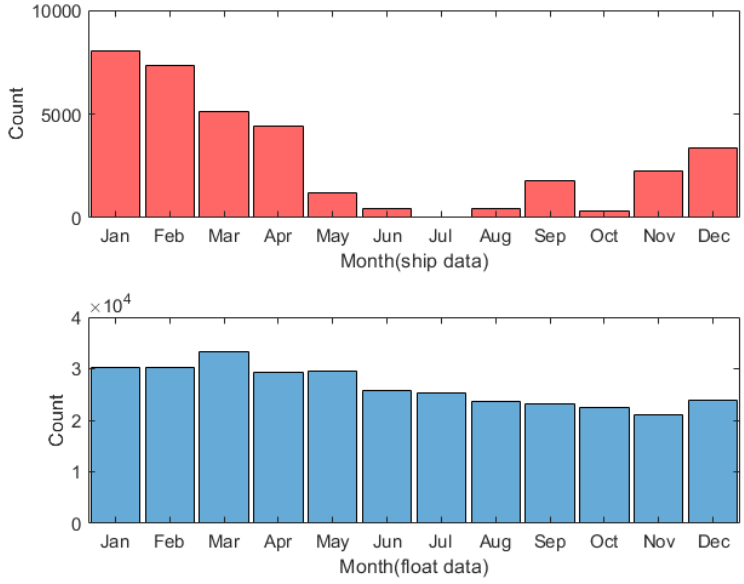

Figure S5. Distribution of ship data (red) and float data (blue) across different months in Southern Ocean. Severe weather conditions create difficulties for data collection by ship during southern hemisphere winter.

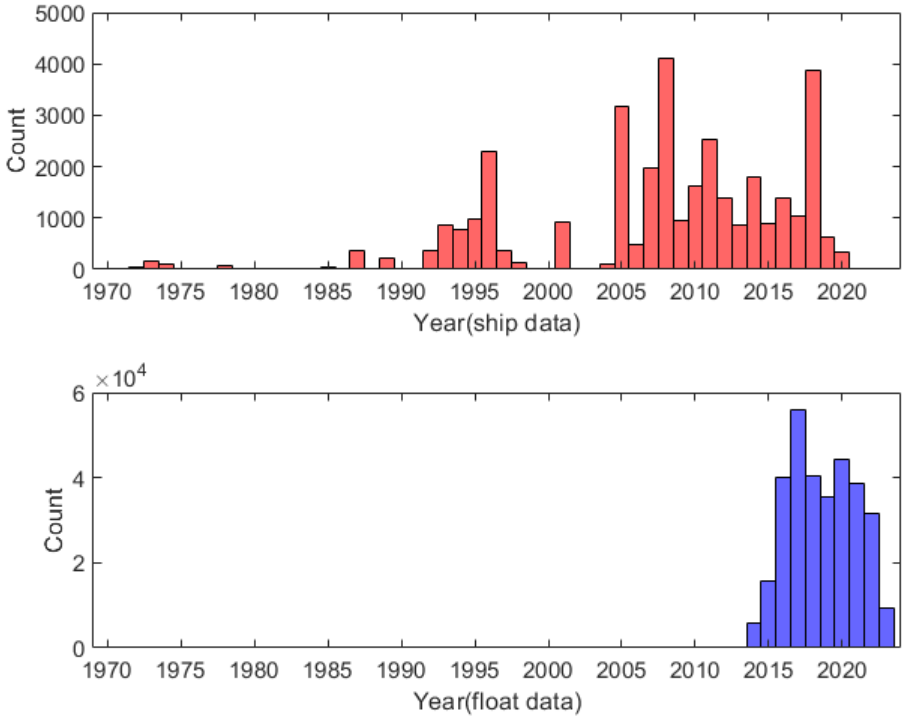

Figure S6. Distribution of ship data (red) and float data (blue) across different years in Southern Ocean. The recently collected float data implies a greater influence of anthropogenic carbon trends.

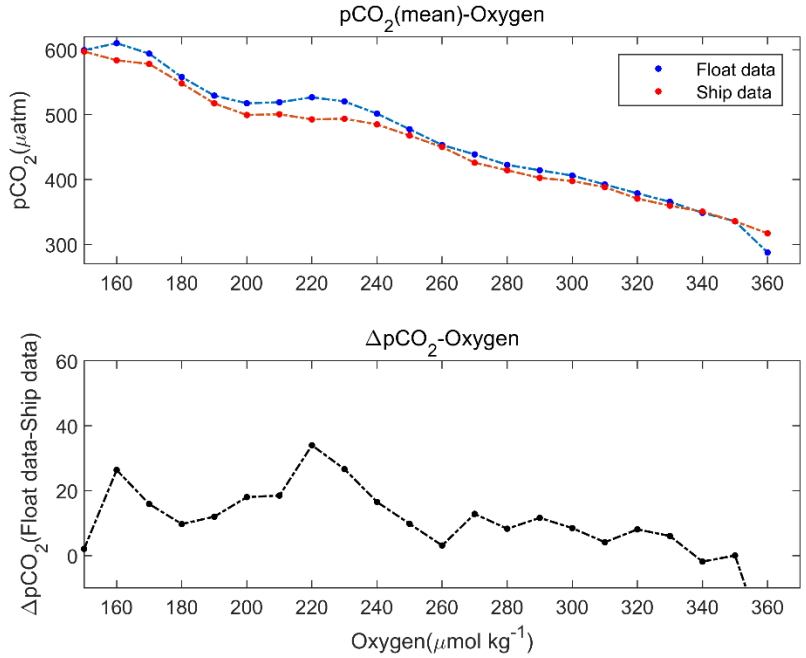

Figure S7. Adjusted pCO_2 (mean) (incorporating factors 2, 3 & 5 in Table 1) against oxygen of float and ship data (above); the difference (ΔpCO_2, below) is calculated as float pCO_2 minus ship pCO_2.

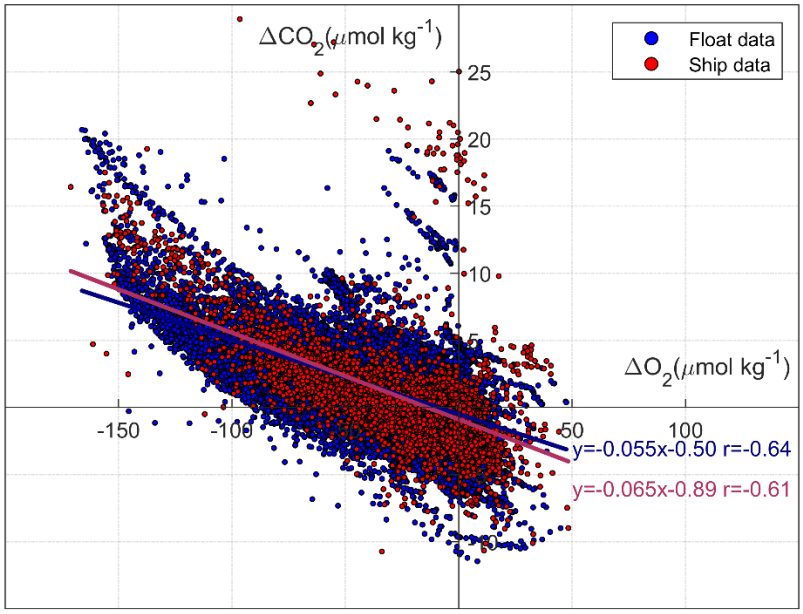

Figure S8. Adjusted CORS plots based on float data (blue) and ship data (red), the blue line is the best-fit lines of float data and the pink line is the best-fit lines of ship data, r is the associated Pearson correlation coefficient.

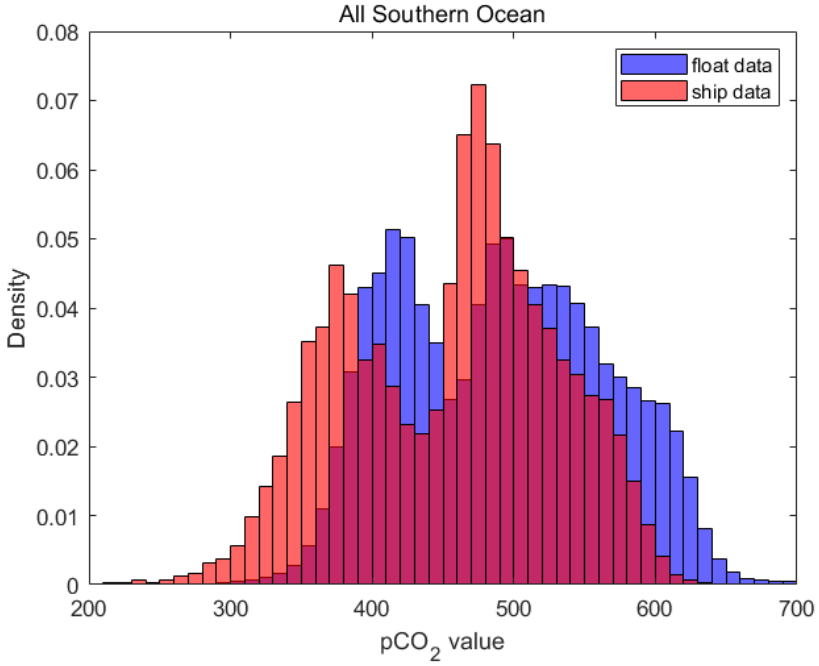

Figure S9. Frequency distributions of adjusted float pCO_2 and ship pCO_2 (all depths between surface and 2000 m)

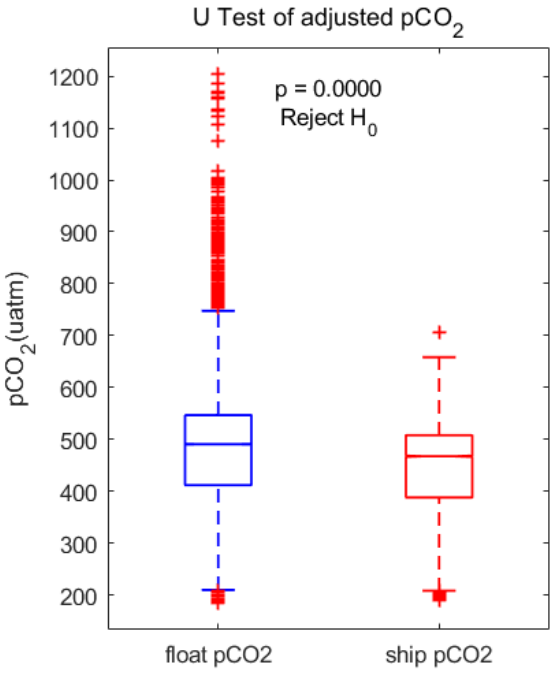

Figure S10. Boxplots and Mann Whitney U Test results for adjusted pCO_2, comparing adjusted ship and float pCO_2 data in all the Southern Ocean. The null hypothesis for the Mann-Whitney U Test is that both populations are identically distributed (equal medians).