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CORRECTION
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Corrigendum: Disparate Responses of Carbonate System in Two Adjacent Subtropical Estuaries to the Influence of Hurricane Harvey – A Case Study

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A Corrigendum on

Disparate Responses of Carbonate System in Two Adjacent Subtropical Estuaries to the Influence of Hurricane Harvey – A Case Study

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In the original article, there was a mistake in **Figure 5** as published. This is due to an incorrect formulation of gas transfer velocity in the flux calculations. The corrected **Figure 5** appears below.

In the original article, there were errors. The errors were caused by an incorrect formulation of gas transfer velocity in the flux calculations; hence all the flux values need to be corrected.

A correction has been made to ***Results, CO_2 partial pressure, Normalized pCO_2, and Air-Water CO_2 flux, paragraph 3***:

As defined in Eq. (1), CO_2 flux is a function of wind speed (gas transfer) and air-water pCO_2 gradient. Contrary to the pCO_2 values (**Figure 4A**), the post-Harvey maximum pCO_2 in GE did not translate into the highest CO_2 efflux in our study period (164 ± 122 mmol m^{-2} d^{-1} on Sept 1, 2017). Instead, the highest calculated CO_2 efflux occurred in mid-2015 (181 ± 100 mmol m^{-2} d^{-1} on July 8, 2015) (**Figure 5A**), and the wind speed 9.3 m s^{-1} on the 2015 observation date was much higher than the post-Harvey date (3.6 m s^{-1}) (**Figure 5B**). In comparison, MAE did not exhibit significant changes in CO_2 flux before and after the hurricane (**Figure 5A**).

A correction has been made to ***Discussion, Air-water CO_2 flux, paragraph 2-5***:

Compared to these east coast studies, we did not have data during Harvey except the single bottom water monitoring station (Walker et al. ms in prep.). However, the post-Harvey CO_2 flux in GE increased from the pre-hurricane near neutral levels (-0.2 ± 5.0 mmol m^{-2} d^{-1}) to 164 ± 122 mmol m^{-2} d^{-1} on September 1 and then 94 ± 161 mmol m^{-2} d^{-1} on September 13, both were greater than or similar to post-storm CO_2 flux observed in the east coast estuaries (Crosswell et al., 2014; Van Dam et al., 2018). In comparison, post-Harvey CO_2 flux in MAE (4 ± 3 mmol m^{-2} d^{-1}) was much lower but on par with those values obtained from those east coast estuaries. The reason for such distinct difference in CO_2 flux may be explained by the different extents of nutrient pollution that these estuaries experience (see below).

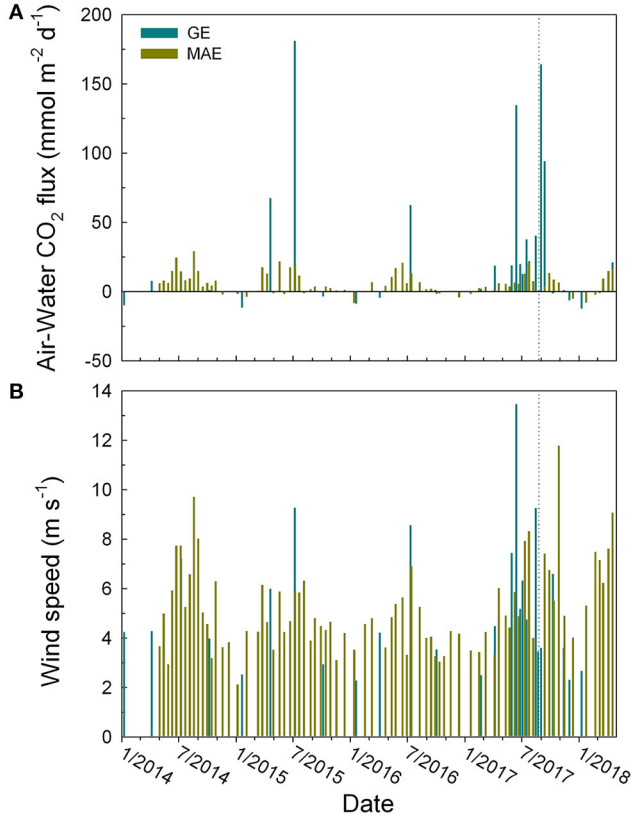

FIGURE 5 | Temporal distributions of **(A)** air–water CO_2 flux (unit mmol m^{-2} d^{-1}) and **(B)** daily wind speed on the sampling days in GE (dark green) and MAE (dark yellow). The dotted lines represent the date (August 25, 2017) on which Hurricane Harvey made landfall.

In fact, despite that observed pCO_2 (hence water-air pCO_2 gradient) was the largest in GE after Harvey, water-to-air CO_2 flux was not the highest at that time (**Figure 5A**). The difference mainly stemmed from the higher gas transfer velocity in 7.8 m d^{-1} (at wind speed 9.3 m s^{-1}) on the sampling day in mid-2015 vs. 1.9 m d^{-1} (at wind speed 3.6 m s^{-1}) after Harvey.

Overall, water-to-air CO_2 flux during the 1-month period after Harvey (August 27-Septemebr 26, 2017) was estimated to be 1.6×10^9 mol. Integrating the 2017 flux values to the whole year the CO_2 efflux in GE in 2017 was 4.7×10^9 mol. Therefore, this 1-month period accounted for ∼35% annual CO_2 emission in that year, and this estimate should represent a lower limit because CO_2 flux could have been higher during the storm due to much higher gas transfer velocity and potential sediment resuspension in this shallow estuary. In comparison, much sparser measurements in 2015 and 2016 suggested that the flood-induced CO_2 emission accounted for 78 and 132% of annual values, respectively. Note all calculated CO_2 efflux values were negative in 2016 except that from the flooding period that year. Considering the limited observations in these 2 years and that both river discharge and wind speed both played an important role in controlling CO_2 flux, these two estimates thus probably had high uncertainties.

CO_2 flux in MAE during the 2015 and 2016 flooding periods reached as much as 21–22 mmol m^{-2} d^{-1}, much greater than that from the post-Harvey value. Furthermore, the latter flux from August 26 to September 25 (6.6×10^7 mol) was not only much smaller than the GE values, but also appeared not extraordinary in the integrated annual CO_2 flux (close to monthly mean of 5.0×10^7 mol), although again the CO_2 flux during the storm is unknown so this value can only be considered as a conservative estimate.

The authors apologize for this error and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.

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