

Anonymous Referee #2

The manuscript addresses parameterisation of gas exchange, an area being in focus for long - without being clearly resolved. It is important to address various types of basins, in this case an inland sea with lower salinity, being valid in addition to other studies.

- We appreciate your comments. We modified the paper based on your comments.

There are some limitations to the manuscript, the description of the observations are to some extent limited - making the evaluation of the results difficult. For example it would have been interesting to see a more clear comparison between the dual tracer data and the eddy covariance data from the study. The integration over time and space of dual tracer data (and the impact on such a comparison) should be included.

- The comparison between $^3\text{He}/\text{SF}_6$ and eddy covariance k is presented in Dong et al. (2026b). We compared them with the data presented here briefly using mean and standard deviation in section 3.2 and cited the paper as follows.

The measured $k(600)$ by $^3\text{He}/\text{SF}_6$ tracer technique was $10.8 \pm 2.9 \text{ cm h}^{-1}$ for the whole period (Fig. 1 and Table 3). The observed $k(600)$ was similar to offshore regions at the same wind speed. During the experiment, concurrent measurements of $k(600)$ was made using closed-path eddy covariance. $k(600)$ from closed-path eddy covariance was $11.0 \pm 4.4 \text{ cm h}^{-1}$ for the corresponding period, which is similar to $^3\text{He}/\text{SF}_6$ $k(600)$. A detailed explanation and comparison between eddy covariance and $^3\text{He}/\text{SF}_6$ $k(600)$ are presented in Dong et al. (2026b).

What are the variations in forcing parameters (wind speed, wave conditions and temperature) during each observational period with the dual tracer.

- There are already plots of timeseries of wind speed, wave height, and inverse wave age. We have added the plots of wind vector and temperature in Fig. 3.

The discussion with respect to other forcing factors is too limited. For bubbles it is suggested that limited fetch inhibited wave development, but information about fetch (or wind direction) is not provided.

- We added plot of wind direction in Fig. 3. The calculated fetch length was written explicitly in section 3.1 as follows.

The fetch length, calculated from wind direction and topography, was 198 ± 62 km (range=69–338 km).

Surfactant activity is mentioned, I find one value given, but no variation during the experiment. This would also have been a very interesting information.

- There is already mean and standard deviation value given. We added the range in section 3.1 as follows.

The surfactant activity, measured inside the tracer patch, was 0.57 ± 0.07 (range=0.44–0.68) mg L⁻¹ TX-100 equivalent (Karnatz et al. 2026).

it is stated in section 4.3 that k-U is different in the near-shore and central Baltic Sea but I cannot see the results supporting this statement.

- OK. In the modified manuscript, we explained it clearly in section 3.3 as follows.

During Baltic GasEx 1 and 2, $k(600)$ was 6.6 ± 3.1 cm h⁻¹ and 8.0 ± 1.2 cm h⁻¹, respectively, which were lower than in other coastal and offshore regions, including the central Baltic Sea, at the same wind speeds (Fig. 1).