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Interactive comment on "Stomatal control of leaf fluxes of carbonyl sulfide and CO_2 in a *Typha* freshwater marsh" *by* Wu Sun et al.

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This is a short note to clarify some concerns raised by Reviewer #1. A complete, formal response will follow later.

Chamber system

The leaf chamber was not operated as a static enclosure. There was always airflow passing through the chamber. The difference between measurement and non-measurement phase was that the flowrate through the chamber during the measurement period was lower than that provided by the high-speed fan at all other times.

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During the measurement period, the flowrate entering the enclosure was the same as that leaving.

In addition to the high-speed ventilation fan, there was a mixing fan in the chamber that was always on to make sure the air inside the chamber was well mixed at all times. See Line 12–14, Page 4 in the Methods section.

We will report more details on the blank chamber measurements as requested in a revised manuscript version. Blank chamber fluxes were negligible.

We did not use a Nafion dryer or other water trap. We applied the water broadening corrections supplied by TDLWintel (see Table 4 and related discussion in Kooijmans et al. 2016).

Stomatal conductance data

We do have stomatal conductance estimates, and will add the data, figure, and relevant discussion in the revised manuscript. For now, we have attached a figure of diurnal stomatal conductance estimated from water measurements, and the total conductance of COS (see page C4 of this note).

Leaf relative uptake (LRU)

The low LRU observed at this site is not unique to *T. latifolia*. Similar low values were reported by Maseyk et al. (2014) and Commane et al. (2015) for whole-ecosystem relative uptake at high light (1.1 to 1.3, the leaf-level LRU would likely be even lower). We have also seen unpublished data from other sites showing similar low LRU values under high light. Therefore we don't think the low LRU is related to something unusual

about this species.

We have included data on calculated 24-hour mean LRU as it is relevant for large-scale applications of COS, e.g., the inverse estimation of terrestrial gross CO_2 uptake from airborne COS measurements. In large-scale applications, daytime and nighttime air masses are mixed and cannot be separated. Since nighttime COS uptake can happen, which leads to different patterns of boundary layer COS and CO_2 concentrations compared with the daytime, it must be considered in the surface COS budget in simulations of atmospheric transport models. The 24-hour mean LRU would then be a diagnostic of simulated COS versus CO_2 drawdown patterns. We will aim to clarify the reason for including the 24-hour LRU in the revised version.

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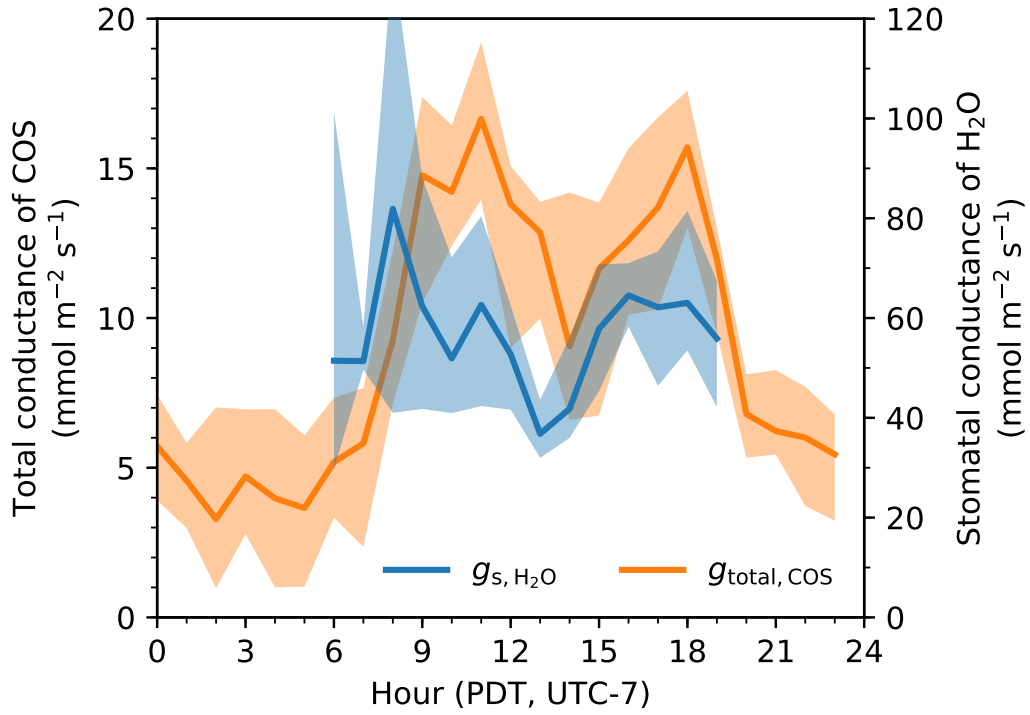

Fig. 1. Hourly median stomatal conductance of water (blue; right axis) and total conductance of COS (orange; left axis). The shaded areas indicate the ranges between 25% and 75% percentiles.

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