REFEREE1:

The study has been improved but there is still insufficient quantification of variation in end-members, especially the oceanic DIC source, and the fact that the seagrass leaves reflect a one-three month growing period prior to sampling. Together these issues mean that the approach cannot support the conclusion regarding atmospheric carbon uptake for half the sampling events (no Δ14C gradient), and may be confounded for the other two sampling events when a gradient in Δ14C was evident. It is difficult to have confidence in the approach and conclusions without adequate quantification and assessment of end-member variability.

Responses to previous major comments

1. I am still not convinced the oceanographic variation in Δ14C has been adequately quantified and excluded as an explanation for the Δ14C of the seagrass leaves in addition to atmospheric carbon uptake. I think better quantification of the oceanic end-member is needed, e.g. a time series of Δ14C of offshore water entering the lagoon; this may already have been measured but the seasonal variability in end members should be explicitly presented in a figure. The authors state that the endmembers were sufficiently distinct during point sampling in May and July, but what about other times? The same processes that meant the approach was invalid based on end-member estimates in September and November could apply at any time, e.g. due to sporadic upwelling. This issue is especially important given the highly seasonal impact on the validity of the approach and capacity to draw conclusions about atmospheric carbon uptake.
2. The short growing season in this location seems like it should constrain the issue of turnover times somewhat, but as above, the Δ14C of the seagrass leaves likely reflects an integration of the variation in in end-members over the one to three month prior to sampling the leaves – this variation has not been adequately quantified.
3. The location map has been vastly improved, but how about showing the Δ14C of the end members here (and their seasonal range, e.g. with the currents).

REFEREE 2:

P3L5: I would provide a more comprehensive discussion of other environmental factors that drive delC13 variation in submerged macrophytes (e.g. the influence of light on photosynthetic carbon demand and isotope discrimination) Hemminga & Mateo (1996).

P3L8-11: Slightly confusing. Clearly resultant delC13 values hinge upon a multitude of factors, such as carbon source, concentration, degree of HCO3- use, and photosynthetic demand (as driven by irradiance). I would revise this paragraph after reviewing Hemminga & Mateo 1996.

P7L7-18: It appears that category (seagrass vs DIC) was not a significant explanatory variable of del14C within the full model, whose AIC score was rather similar to the reduced model, which removed the interaction between salinity and category. Examining Fig 2, it appears that at two of the higher salinity stations (20-30), seagrass del14C was similar to or lower than DIC del14C. Can you explain?

P9L1-4: It seems, in my opinion, that exposure time would be a rather large factor in regards to determining the resultant contribution of Cair. This point could be motivated by a stronger statement.

Hemminga MA, Mateo MA (1996) Stable carbon isotopes in seagrasses: Variability in ratios and use in ecological studies. Mar Ecol Prog Ser 140:285-298