

***Interactive comment on* “Global change effects on decomposition processes in tidal wetlands: implications from a global survey using standardized litter” by Peter Mueller et al.**

Anonymous Referee #1

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General comments

This article deals with an important aspect of carbon's fate in coastal wetlands in relation to global changes and their impacts on these ecosystems. Indeed, wetlands are receiving a growing attention in the climate change debate in relation to their high capacity to sequester blue carbon. Ecosystems considered in this “global” scale study are mainly tidal marches but some mangroves sites were counted in the selected sites. Authors are assessing OM degradation and transformation, as a proxy of Carbon sequestration using the TBI approach. Thus, authors claim that they provided indirect evidences that rising T^o and Sea Level and eutrophication will impact the capacity of

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tidal wetlands to sequester carbon. This work is worthwhile to publish although as authors cautioned, there are limits with the used method (obvious quality differences of Tea-bag OM with "real" plants) and also that they may have missed some influent factors that control OM degradation and sequestration.

Introduction was well thought and the methodology was clear however, some choices were not judicious in the context of this study and may need to be reevaluated (see specific comments). The adding of TIDE experimental site was a very interesting. The discussion is well organised but it needs to be shortened.

Specific comments I am not a specialist of meta-analysis, therefore I will not comment on the validity or not of the numerical methods, but one thing is sure, analyses need always to rely on field knowledge even if results are "counterintuitive". The discussion is based on two characteristics (k , S) that are related to the quality and the fate of the litter-bags contents (here Tea-bags) which are strongly related to sedimentation dynamic and water velocity. In absence of a clear indication on how sediments (and OM) are behaving in each site, I am concerned about the amalgam in the same meta analysis different systems in term of hydrological functioning: Salt Marches vs. Mangroves, High tide vs. low tide (in salt marches). For instance, estuarine mangroves receive loads of sediments from rivers whereas Europeans salt marches in open Bays get sediments mainly from the oceans. One way to tackle this concern is to process the same calculations/test s/figures without adding the mangrove sites to the pool of data. Same thing can be done by considering the main origin of sediments (not to confound with OM), without impacted TIDE sites, river presence or not, water velocity, human activities. . . . These factors, of ecological importance, might be those missing to explain some global, or local, differences. If these data cannot be compiled they should at least be discussed.

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