

Interactive comment on “Plant genotype determines biomass response to flooding frequency in tidal wetlands” by Svenja Reents et al.

Anonymous Referee #1

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The response of saltmarshes to increased flooding is a highly relevant research topic in times of accelerated sea level rise. This manuscript investigated the response of two genotypes of *Elymus athericus* to different flooding frequencies. They find that the low marsh genotype is better adapted to higher flooding frequency by allocating resources from below- to aboveground biomass. Generally, I think this is a novel and well-written paper with convincing results and significant implications. This paper likely inspires more research on how genetic effects and evolution of plant species may shape the fate of saltmarshes under SLR, which to my knowledge is currently missing in this field.

Besides, I have some minor comments for improvement, as listed below.

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Introduction:

Line 34: ‘...because their aboveground biomass reduces water flow velocity...’ marsh plants facilitate sediment settlement, not only by reducing flow velocity, but also through damping waves. Moreover, references are needed here.

Line 48-49: ‘highly species-specific depended’, ‘depended’ should be ‘dependent’

Line 53: ‘However, such studies on ... community level’, references are needed here.

Methods:

Regarding the experimental set-up, more details are needed.

Line 83: It is not clear to me how you transplanted plants from trays to the pots. How many pots were there in total and how many plants per pot? What were the inundation depths for different steps? Please also provide the reason for choosing these three flooding frequency treatments.

Discussion: Line 192: You put it here as ‘4.1’, but there is no ‘4.2’, ‘4.3’ etc..

What I am missing from the discussion is the implications beyond the species *Elymus athericus*. How common is genetic variation of saltmarsh plants? Are there other examples that shows marsh plants adapt to changing environment via genetic change/evolution? Moreover, I think the consequences of changing biomass allocation of *Elymus athericus* for saltmarsh accretion and its response to SLR should also be discussed.

Figure.2 Regarding the results of the post hoc tests (stars), it seems that only Figure. 2a has shown where the difference is significant. For the rest subfigures such as Fig.2 c & d, no stars are added, yet there are obvious differences between the two genotypes for the high flooding frequency treatment.

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