



## **An assessment of the tea bag index method as a proxy for organic matter decomposition in intertidal environments**

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Globally intertidal wetlands capture and store carbon (C) for long periods of time reducing the quantity of CO<sub>2</sub> released to the atmosphere. Yet the processes which govern the decomposition and subsequent storage of organic matter (OM) and C in these habitats remains poorly understood. The Tea Bag Index (TBI) uses a standardized OM (green and Rooibos tea) and has the potential to shed light on OM decomposition in intertidal wetlands. Here, we apply the TBI to two saltmarshes within the same estuary reducing the influence of climatic variables to determine the role of the soil characteristics in the decomposition of OM, further the incubation period was over one year to investigate the long-term decomposition processes. The initial results (3 month incubation) partially support previous studies that the early stages of decomposition (leaching of the water soluble fraction) is governed by climatic conditions but it is also likely this further enhanced in intertidal environments by tidal flushing. Through extending the incubation period beyond the standard 3 months we observed mid to late stage decomposition (Cellulose and Lignin degradation) which the soil characteristics are likely the main control, this highlights the importance for long-term TBI incubations. Additionally, as the TBI is being used as a proxy for C decomposition we tested the relationship between tea mass loss and C loss with our results indicating that there is no relationship between the two indicating that in intertidal environments caution should be applied when using the TBI as a proxy for C degradation.