

## O11.2

### **Assessing Marsh Ecosystem Response to Increased Temperature (MERIT) - A new ecosystem warming experiment in tidal wetlands**

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#### **Abstract**

Salt marshes are a vital habitat for many plant, bird and invertebrate species, including soil fauna, and therefore, they play an important role in the protection of biodiversity. In addition, salt marshes are recognized for their high potential for ecosystem services such as coastal protection and carbon sequestration. Therefore, we need to understand how the valuable and sensitive salt marshes are affected by the on-going global change. The aim of this project is to better understand effects of warming on the interplay between plants, soils, and ecosystem functions in Wadden Sea salt marshes. To do so, a world-unique ecosystem warming experiment was installed at Hamburger Hallig including experimental passive aboveground and active belowground heating in three vegetation zones. In each zone nine plots are subjected to one of three warming treatments since summer 2018. The warming treatments include a +1.5°C and a +3.0°C experimental warming, as well as a control treatment with ambient temperature. We study how plants and soil fauna, as well as their interactions, are affected by natural abiotic conditions and by experimental warming. Furthermore, we investigate how this interplay in turn affects critical ecosystem functions and services, especially in relation to carbon sequestration, coastal protection and greenhouse gas emissions. Here, we present an overview of the experimental design with a focus on the active electrical belowground heating in this tidal environment. Overall, our results are expected to contribute to the development of sustainable management strategies for salt marshes in the Wadden Sea National Parks and elsewhere in times of climate change.

#### **Keywords**

salt marsh, rising temperature, climate change, blue carbon