

## ***Interactive comment on “Dynamics of environmental conditions during a decline of a *Cymodocea nodosa* meadow” by Mirjana Najdek et al.***

### **Anonymous Referee #2**

Received and published: 5 March 2020

The paper entitled “dynamics of environmental conditions during a decline of cymodocean nodosa meadow” reported biomass changes of the seagrass along with environmental changes in both seawater and sediments during one year period of 2017 to 2018. The results showed that *C. nodosa* successfully adapted to the changes of environmental conditions and prevented H<sub>2</sub>S accumulation by its re-oxidation, supplying the sediment with O<sub>2</sub> from the water column and/or leaf photosynthesis, implying that the *C. nodosa* die-off would be most likely caused in April 2018 by a reduction of light availability. Unfortunately, solar irradiances changes either at the surface of water column or in water were not supplied. Especially, the light levels during investigation periods were not provided. Attenuation of light in water during different seasons

C1

with different amounts of PM can be directly link to photosynthetic performance of the seagrass. While the authors showed that in the sediment, depletion of oxygen due to intense oxidation of H<sub>2</sub>S led to anoxic conditions in most of the rooted areas. This could negatively affect respiration of the plant root, therefore, its growth. With reduced growth capacity, high concentrations of H<sub>2</sub>S were observed in the sediment cores and bottom waters. This is an interesting result indicating the relationship of H<sub>2</sub>S levels with photosynthetic O<sub>2</sub> evolution. Generally speaking, the paper has scientific significance, and is suitable to be accepted to BG after revision.

Specific comments: 1. Daily sunlight doses should be in parallel with water temperature, and should be provided, which can be easily obtained from local meteorological stations if the authors did not measure. 2. Decline of the seagrass meadow can hardly be attributed to light availability, grazing pressure or others. It must be a result of multiple drivers impact. Therefore, the discussion should be re-sorted and holistically analyzed. 3. Decreased root respiration may also contribute to the dying off 4. Changes of unsaturated fatty acids could be attributed to many sources, since phytoplankton or microalgae are the main producers of these compounds, it is hard to guess. 5. While grazing rate might be responsible for the changes in seasonal change of stand crop of the seagrass, the authors did not provide any record that grazing rate is higher in the Saline Bay. 6. During summer period, high light and temperature may synergistically reduce the biomass of the seagrass due to higher respiration and higher photoinhibition.

Technical corrections: 1. Repeated wordings should be avoided in a sentence or paragraph. 2. Unit of silicate should be double checked, might be mistaken

Line 83 change shorter to shorten

---

Interactive comment on Biogeosciences Discuss., https://doi.org/10.5194/bg-2019-484, 2020.

C2