Quantification of sediment reworking activity in Weddell Sea sediments Universit Rostoc

Christopher Gebhardt | Martin Powilleit | Heike Link

Faculty of Mathematics and Natural Sciences | Marine Biology | Albert-Einstein-Straße 3 & 21 | 18059 Rostock



Aim

- As the Southern Ocean region faces increasing climate change pressures, international initiatives aim to protect this unique ecosystem.
- A precise understanding of the underlying ecologic functions is necessary for the establishment of effective conservation measures.
- In this context, the contribution of Antarctic seafloor organisms to ecosystem services is still under-researched.

2 What is bioturbation?

- All transport processes carried out by animals and affecting the seafloor sediment are known as bioturbation.
- This includes the **mixing of particles** and **solutes** (bioirrigation).
- Bioturbation processes can facilitate important ecosystem services, such as **nutrient release** and marine carbon storage.



Ine **BEnToolsMaPs** project

This work is part of the BEnToolsMaPs project, which aims to



link seafloor biodiversity



to ecosystem functions veduell Sea sediment sample showing burlow structures _____ transfer knowledge to conservation planning and management **Bioturbation quantification Different particle and solute tracers** are used for quantification, representing different transport processes. In this study were analysed: **bromide** (pore water transport) radialdiffusion chlorophyll a (fresh organic material tr.) \leftarrow sediment reworking **luminophores** (ambient sediment transport) particle mixing bioirrigation \mathbf{C} пн **5** What's next? Results 4 Br⁻ (mM) chl a (µg/ml) **Iuminophores (RFU)** solute transport 12 16 10000 20000 0,0 0,2 0,4 0,6 0 8 determination 0 0 0

2

depth profile modelling



irrigation potential relating transport processes to fauna

biodiversity

BEnToolsMaPs Project Partners

(cm)

Alfred Wegener Institute, Bremerhaven, Germany University of Rostock, Rostock, Germany Helmholtz Institute for Functional Marine Biodiversity at the University of Oldenburg, Germany Senckenberg am Meer, Wilhelmshaven, Germany

Key references

Kristensen, E., et al. (2012). "What is bioturbation? The need for a precise definition for fauna in aquatic sciences." Marine Ecology Progress Series, 446, 285-302. Renz et al. (2017). "On the necessity of simplification when bioirrigation is treated as

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