Environmental impacts assessment

Environmental impacts and risks of deep-sea mining (MiningImpact 2)

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In Short

- study regional connectivity of species in the deep-sea and their resilience to the sediment impacts.
- numerical simulation of different monitoring concepts and strategies for deep-sea mining operations in order to reduce the environmental impacts.
- to explore the constraints of the ecosystem recovery by comparing the model results and the measurements obtained from the visit of impacted and non-impacted regions after 2 years.
- to investigate the change of transport paths caused by variable ocean currents due to El Niño and La Niña conditions.

For economical reasons, particularly an anticipated lack of metal resources in the near future, deep-sea mining has attracted a remarkable attention during the last two decades. Of great interest are, for example, manganese nodules that are found on the ocean floor at deep ocean. Possible future industrial mining of manganese nodules would exert a significant pressure on the seafloor marine life. Benthic communities are strongly adapted to stable conditions in the deep sea. They are expected to be vulnerable to a sediment plume that would be caused by mining activities. To reliably predict the sediment transport and the spreading of a sediment plume in the deep sea, numerical modeling with a series of precise input parameters is required. Most of the modeling knowledge of deep-sea sediment transport is due to a few studies that were carried out in different regions of Pacific Ocean. Despite of a comprehensive modeling approaches in these studies, some knowledge gaps i.e. considering the flocculation process and its impact on the faith of sediment deposition will be addressed in our study. Most of the modeling knowledge of deep-sea sediment transport is due to a few studies that were carried out in different regions of Pacific Ocean. Despite of a comprehensive modeling approaches in these studies, some knowledge gaps i.e. considering the flocculation process and its impact on the faith of sediment deposition will be addressed in our study.

WWW

https://www.marum.de/Michael-Schulz.html

More Information

[1] K. Nakata, M. Kubota,S. Aoki, *Deep-Sea Mining,Tokyo* **51**, 169-186 (1997). doi: 10.1063/1.3382344

[2] J. Jankowski, W. Zielke *Deep Sea Research Part II: Topical Studies in Oceanography 48(17)* **48(17)**, 169-186 (2001). http://mirrors.ctan.org/info/lshort/english/lshort.pdf

Project Partners

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Funding

Federal Ministry of Education and Science (BMBF)