

Schatten in de diepzee

Treasures in the deep sea

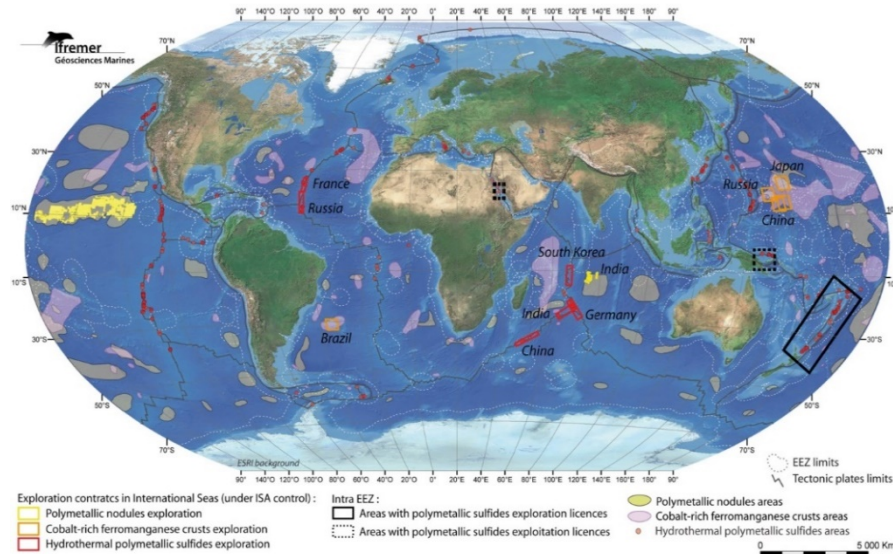
Dr. Sabine Gollner
sabine.gollner@nioz.nl

Mineral treasures in the deep sea

The ocean covers ~70% of the earth's surface and the deep sea is the largest biome on earth. On the deep seafloor, some of the richest deposits of minerals and metals for green technologies are found and the international mining industry is preparing to start exploitation of mineral resources from the deep sea.

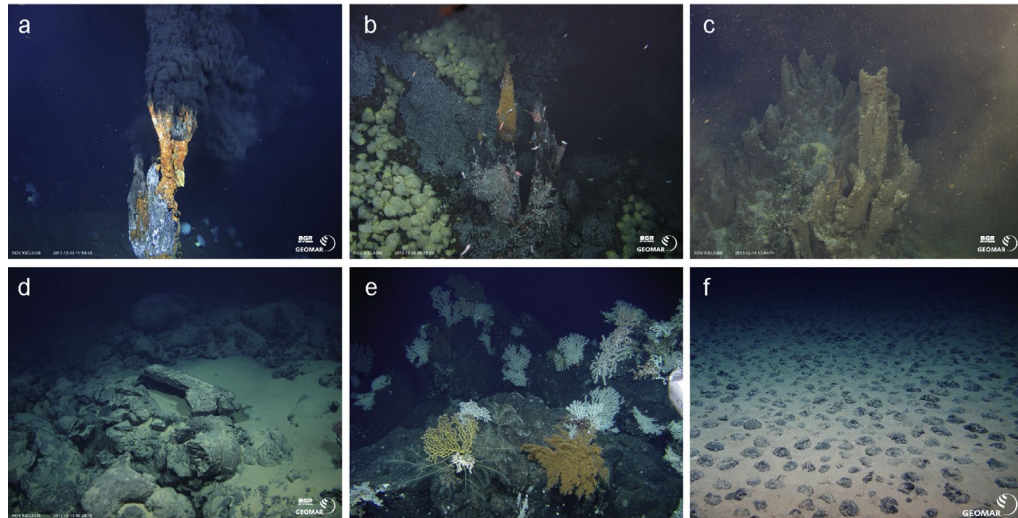


Deep-sea mineral resources occur in the form of polymetallic nodules found at the bottom of the deep ocean basins, seafloor massive sulphide deposits around hydrothermal vents, and polymetallic crusts on seamounts. These deep-sea mineral resources could serve as an additional source for strategically important resources found on land. A global increasing demand of mineral and metals is expected for the transition into a low-carbon future.



Biological treasures in the deep sea

The deep sea harbors thousands if not million(s) of yet unknown species and provides important ecosystem services and functions, such as carbon storage, food supply or marine genetic resources. Organisms living at deep-sea hydrothermal vents have inspired for example new materials, new medical applications and enzyme use. The study of deep-sea organism enhances our understanding of the origin and evolution of life.



Examples of ecosystems/habitats and associated biological communities potentially affected by mineral mining. a. Active black smoker. b. Vent field colonized by shrimps, anemones, and mussels. c. Inactive vent field. d. Pillow lava in vent peripheral areas. e. Coral gardens on inactive vent/seamount. f. Nodule field. (Figure from Gollner et al. 2017, MERE 129: 76-101)

The sea belongs to everyone

Knowledge of the deep sea is crucial for managing deep-sea mining in a most responsible way. It is important to share and communicate the newest scientific knowledge with for example policy makers, but also with everyone, as the seabed beyond national jurisdiction is common heritage of mankind. The ISA (International Seabed Authority; www.isa.jm.org) is currently drafting the “mining code”, which will regulate any future deep-sea mining in international waters. The mandate of the ISA includes the protection of the marine environment.