Exploring the potential of cold-water corals as (paleo-)environmental indicators for the Mozambique and Agulhas Current systems

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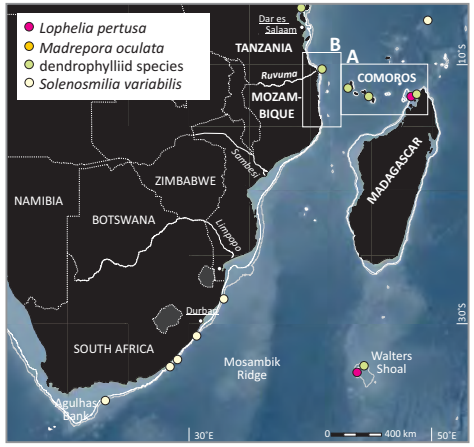
Cold-water corals of the West Indian Ocean (COWIO)

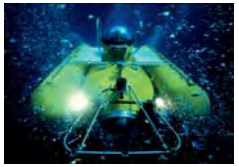
An expedition with the **German RV SONNE**, planned for **2015**, will focus on the first dedicated investigation of scleractinian **cold-water corals** along the Southeast African continental margin. The overall aim is to get first insights into the distribution, appearance and biodiversity of these so far largely unexplored ecosystems of the Southwest Indian Ocean, and to identify the most important environmental forcing factors controlling their development. The occurrence of these ecosystems in this region in water depths of 200 m to 700 m has been proven e.g. by former dives with the **German submersible JAGO** as well as by scientific reports compiled for the global cold-water coral database of the UNEP World Conservation Monitor Centre (UNEP-WCMC).

Live scleractinian cold-water corals detected in the Ruvuma canyon (Tansania, Mozambique) during a dive with the submersible JAGO in 200-700 m water depth. Images courtesy of K. Hissmann, GEOMAR, Kiel, Germany.

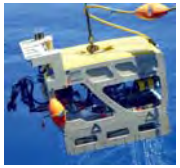


Documented scleractinian cold-water coral occurrences along the SE-African margin (data source: UNEP). Working areas of the planned RV SONNE cruise are indicated (A: Madagascar, Comoros & B: Tanzania-Mozambique margin).

Existing data reveal that cold-water corals live off NW- and S-Madagascar and along the **SE-African continental margin** from South Africa as far north as Tanzania. From this region, a total of 36 azooxanthellate scleractinian cold-water corals has been reported. Among these are the important framework- or even reef-building species *Lophelia pertusa*, *Solenosmilia variabilis*, *Madrepora oculata* and some dendrophylliid corals.

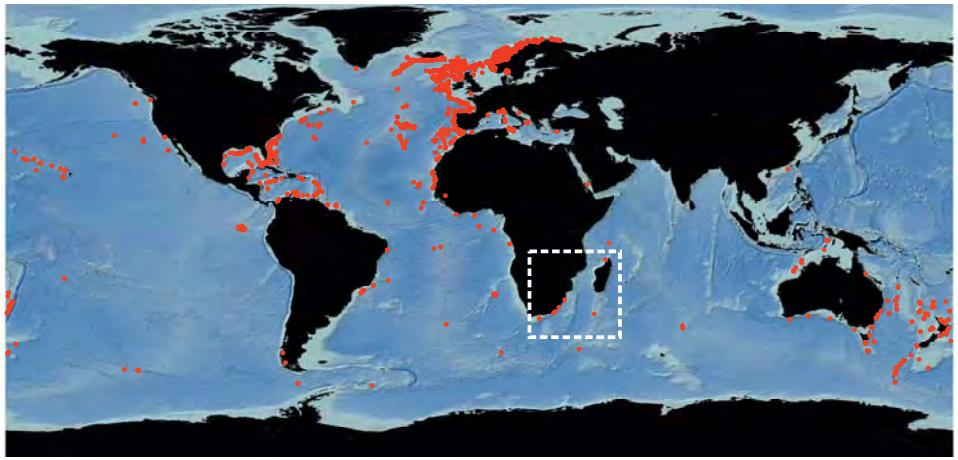


***Manned submersible JAGO**; operating depth: 400m. ©GEOMAR, Kiel, Germany, JAGO-Team.*



***ROV CHEROKEE**; operating depth: 800m. ©MARUM, Bremen, Germany.*

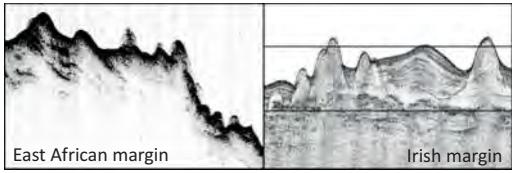
Global distribution of cold-water corals



Current global distribution of reef framework-forming cold-water corals. Data are extracted from UNEP World Conservation Monitor Centre (UNEP-WCMC) global cold water coral dataset V2.0, 2006 (plottet by J. Titschack, MARUM). For further details see Roberts et al. 2006, Science 312, 543-547.

RV SONNE cruise „COWIO“ in 2015

To assess their distribution, their relation with the ambient environmental conditions and their imprint on the sea floor (note up to ~350 m high coral carbonate mounds off Ireland) detailed video-based characterisation of the facies and fauna (**JAGO/ROV**) supplemented by an extensive sampling programme will be conducted. As proven also for other ocean basins, geochemical signatures in the cold-water coral skeletons can provide very valuable **paleo-archives** of past water mass characteristics. Thus, skeletal material from living as well as of fossil scleractinian cold-water corals will be collected and analysed for their paleoceanographic potential. With sufficient planning time being left, involvement of new colleagues in this expedition is still possible.



Cold-water coral carbonate mounds

Seismic profiles showing „potential“ cold-water coral carbonate mounds north of the Ruvuma canyon (left; 500-600m water depth; image courtesy of H. Keil, Univ. Bremen), and coral mounds along the Irish margin (right; 700-900m water depth; Van Rooij et al. 2003).

The new German research vessel SONNE to put into service in 2015

Planned RV SONNE cold-water coral research expedition to the SE-African margin:

Interested to join?

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