Megafauna community structures at the DISCOL experimental disturbance site, 26 years after artificial disturbance. First results from ‘RV SONNE’ cruise SO242-2.

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SO242-2 the second of two summer cruises to the DISCOL experimental area in 2015.
In 1989 an area of Pacific manganese nodules was artificially ploughed, in an effort to simulate the effects of deep sea mining.

MIDAS is funded by the European Union’s Framework 7 Programme under the theme “Sustainable management of Europe’s deep sea and sub-seafloor resources”, Grant Agreement 603418.
SO242-2 utilised the fine sidescan maps provided by the SO242-1 team for localised study of areas of interest. HUGE THANKS TO JENS et al...!
For investigation of megafauna, the AWI OFOS LAUNCHER was flown at a height of (usually) 1.5m to image seafloor with a 23 megapixel camera.

Regular ship speed 0.2-0.4 kts.

Video and still images collected (hotkey and timer)

Main aim of megafauna imaging: To collect image data to determine whether or not taxa reported in Bluhm, (2001), had returned to the ploughed regions or not.... 26 yrs after experimental ploughing.
OFOS survey design planned to image roughly equal areas of habitats defined in previous DISCOL publications:

a) Nodule area within DEA (Undisturbed)

b) Nodule area outside DEA (Reference)

c) Epibenthic sled centre (new category)

d) Epibentic sled edge (new category))

e) Ploughmark (central plough)

f) Ploughmark (transition)
19.5 OFOS dives to support primarily the main objective.

1.5 OFOS dives to support AUV, historical OFOS and OFOS altitude methodology comparison.

1 OFOS dive to rescue lost GEOMAR equipment.

Total number of images: 15,442

Plough marks: 1,740

Epibentic Sled: 350

Transition: 1,065

Undisturbed DEA: 6,524

Reference: 5,763

OFOS surveys within the DISCOL Experimental Area (DEA)
Majority of publications reporting megafauna recolonisation of the DISCOL area report abundances of 16 taxa. We have continued with this approach. After 26 years, variation in abundances across the DEA habitat types differs with taxa. We have analysed approx. 20% of images.
Group 1: Crustacea
Group 1: Crustacea
Group 1: Crustacea
Group 1: Crustacea
Group 1: Crustacea
Group 1: Porifera
Group 1: Porifera
Group 1: Porifera
Group 1: Porifera
Group 1: Porifera
Group 1: Porifera
Group 1: Porifera

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Group 1: Porifera
Group 1: Ophiuroidea
Group 1: Ophiuroidea
Group 1: Ophiuroidea
Group 1: Holothuroidea
Group 1: Holothuroidea
Group 1: Holothuroidea
Group 1: Holothuroidea
Group 1: Holothuroidea
Group 2: Asteroidea
Group 2: Asteroidea

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Group 2: Actiniaria
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Group 2: Actiniaria

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Group 2: Actiniaria
Group 2: Osteichthyes

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Group 3: Cnidaria (Hydrozoa and Schipozoa)
Group 3: Cnidaria (Hydrozoa and Schipozoa)
Group 3: Ascidia
Group 3: Hemichordata
Group 3: Hemichordata
Group 3: Crinoidea
Group 3: Crinoidea
Group 3: Crinoidea
Group 4: Polychaeta
Group 4: Polychaeta
Group 4: Polychaeta
Group 4: Cnideria (Gorgonia, Pennatularia, Ceriantharia, Antipatharia)
Group 4: Cephalopoda

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Group 4: Cephalopoda
Group 4: Cephalopoda
Many, many surprises... Many, many Salp
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Many, many surprises... Many, many Salp
Preliminary results from SO242/2 (2015)

- Plough (412 images, 2250 m²)
- Transition (137 images, 876 m²)
- Undisturbed (678 images, 3326 m²)
- Reference (241 images, 1448 m²)

Total: 1482 images, 7989 m²
Thank you for listening!
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