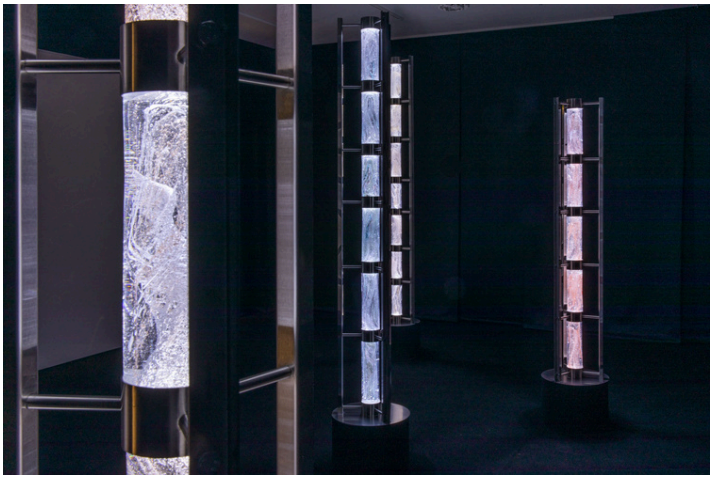
DEEP TIME

Impact Report

EMBracing the Ocean artist-in-residence project
Reporting period April 2023 - August 2024

> ***"The work has given rise to many good talks about the development of the planet, the time of man versus the deep time of the Earth, man's influence on the sea and the Earth and the importance of the sea for man. The work has made it easy to talk about these things and has created a fine space for conversation and reflection."***
>
> *- Pia Bitter, Communications lead at the Glass Museum, Denmark*



Co-design process:

During their EMBracing the Ocean project artists Rhoda Ting and Mikkel Dahlin collaborated with geologist, Prof. Giuliana Panieri, and her team from the Department of Geosciences at Arctic University of Norway (UiT). They worked to co-develop glass cores from Ocean sediments aiming to connect audiences with life in extreme environments such as methane and hydrothermal vents. The work takes a 'deep time' perspective (i.e. geological time) to speculate future evolution. In addition, the use of glass blowing as a method for scientific research on the deep sea was investigated.

Project outputs:

- Creation of glass cores from seven different Ocean sediment samples of varying geological content received from the Arctic University Of Norway (UiT); University of Milan, Italy (UNIMI); and the National Institute of Geophysics and Volcanology, Catania, Italy (INGV). The sediment samples originated from the Maldives, the Barents Sea and the Gakkel Ridge in the Arctic Ocean. The samples contain different minerals that show up as varying colours and patterns in the glass cores as a result of their reaction with the hot glass.
- Creation of documentary film by IDOART communication agency, available on the EMB YouTube channel.
- Exhibition of five glass cores and the documentary film at the "Evolutions" exhibition at the Glass Museum, Denmark from 29 April 2023 - January 7 2024.
- Exhibition of six glass cores as solo exhibition "Extremophila" at Gether Contemporary art gallery, Copenhagen, Denmark from 29 September - 11 November 2023.
- Exhibition of glass cores at the "Sensing the Sea" group exhibition at the Nordic Contemporary Arts Centre in Xiamen, China, July 2024, including local media coverage.
- Talk during 'Imagining Earth' event at Louisiana Museum of Modern Art, Denmark, 8 June 2023.
- Talk at the Fine Art Teachers Union, Denmark, 12 April 2024.
- Talk for students at the Textile School, Denmark, 18 April 2024.
- Talk for design students at Brno Art Week, Czech Republic, 28 April 2024.
- News article in Danish newspaper Jyllands-Posten, 3 July 2023.
- Screening of documentary film at the European Geosciences Union Conference (EGU24) and EurOCEAN 2023.
- Scientific analysis of glass cores visually and using scanning electron microscopy with energy dispersive X-ray spectroscopy (SEM/EDX) to understand the thermal stability and transformation of various minerals and organic compounds within the sediment samples when exposed to the high temperatures during glass formation.
- Incorporation of the concept of 'deep time' and lessons learnt from art-science collaborations into Ocean Leadership Executive Master (UiT) lectures.

Key impact:

- Raising public awareness of geological deep time, the importance of the deep sea, and future thinking on evolution and climate change.
- Developing a deeper connection of artistic work to science and demonstration of how art and science can come together to engage in creative processes to develop innovative approaches to problem solving and communication.
- Raising awareness of the value of artistic collaboration within the scientific community, particularly for scientists to think of alternative, less destructive ways to explore the Ocean with aesthetics in mind.
- Raising scientific questions about the implications of the high thermal stability of some minerals for geological processes and the history of the sediments. In particular, how the oxidation of iron sulfides might affect the geochemical environment of the sediment.

Project longevity:

- The artists plan to continue to exhibit the work to reach new audiences.
- The artist/scientist team have collected further sediment samples and analysed their eDNA content to produce a new series of work "HYBRIDS". This work includes sculptures created from eDNA showing "hybrid" creatures using artificial intelligence as speculation for future evolution.
- Art historian Dr. Micael Kjær (University of Copenhagen) has been commissioned to write an article linked to the project entitled 'Deep presence - surfacing knowledge on extreme marine environments in the Arctic region'. It will be published by Strandberg Publishing in late 2024 in the 'Adenda Earth' publication linked to the Imagine Earth event at the Louisiana Museum.

IMPACT IN NUMBERS

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

European MARINE BOARD Advancing Seas & Ocean Science

3 EXHIBITIONS
Showing the work

24,207 VISITORS
At evolutions exhibition, Glass Museum, Denmark

4 TALKS
Highlighting the work

363 YOUTUBE VIEWS
Of the documentary film 'Studio Thinkinghand - Deep Time IDOART Agency'

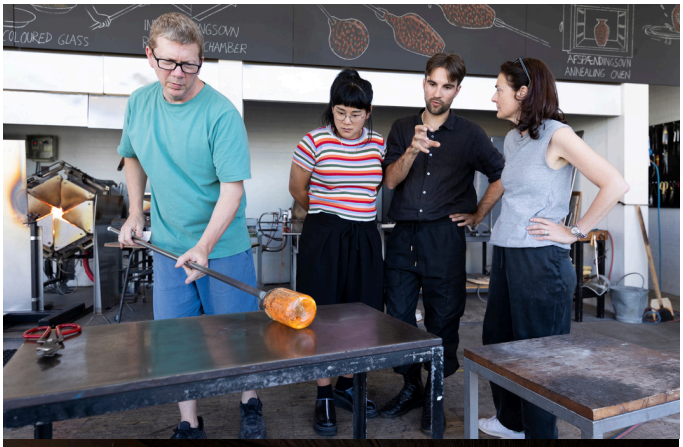
322 PAGE VISITS
To project webpage on EMB website

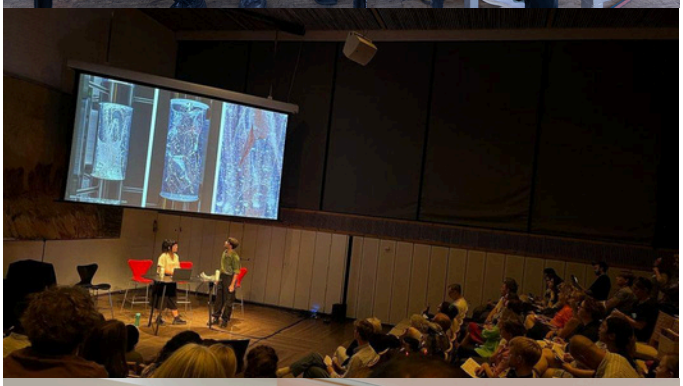
10 INSTAGRAM POSTS
From the EMB and other instagram accounts

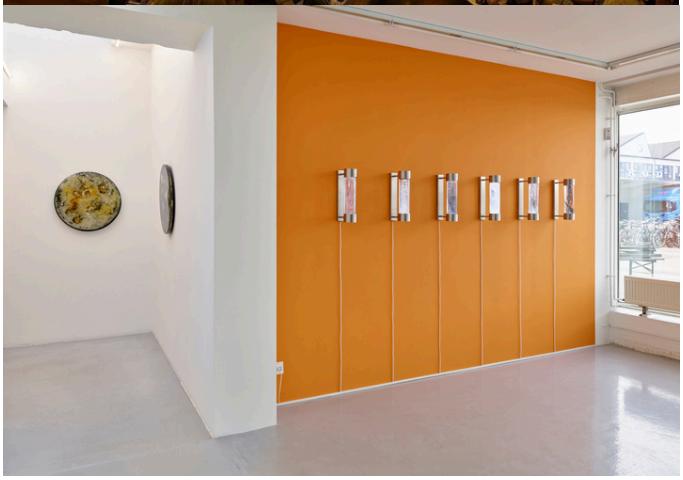
1 NEWS ARTICLE
By Danish newspaper Jyllands-Posten

"Collaborating with Rhoda and Mikkel has been positive. As a geoscientist, it has been an enlightening and transformative experience. It has opened a new way of observing geological processes and changed the way in which I observe the Arctic seafloor. I've gained a deeper appreciation for the aesthetic of the natural world, and I am more careful now in the way in which I collect my samples"

- Prof. Giuliana Panieri, Scientific Collaborator







https://www.marineboard.eu/studio-thinking-hand