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Understanding our impacts on the Mediterranean Sea and Arabian Gulf Trilateral collaboration between universities and research institutes in Israel, United Arab Emirates and Germany agreed at COP27

16.11.2022/Kiel/Haifa/Abu Dhabi/Sharm El Sheikh. Human activities are affecting our ocean. Warming, pollution and changes in nutrient supply have various impacts on marine ecosystems. This has consequences for our food supply and the ocean's uptake of atmospheric carbon dioxide – and thus its ability to mitigate climate change. A trilateral collaboration between universities and research institutes in Israel, the United Arab Emirates and Germany aims to investigate the consequences of these changes in the eastern Mediterranean Sea and Arabian Gulf. The Memorandum of Understanding was recently signed at the world climate change conference COP27 by the University of Haifa (Israel), Khalifa University and the United Arab Emirates University (United Arab Emirates) as well as GEOMAR Helmholtz Centre for Ocean Research Kiel (Germany). The partners plan to initiate a five-year study to enhance our understanding and develop mitigation strategies for the marine ecosystems of the Eastern Mediterranean Sea and Arabian Gulf.

Our ocean is facing a range of pressures related to climate change and pollution. The Eastern Mediterranean Sea and Arabian Gulf are marine environments that are strongly impacted by ocean warming, de-oxygenation, dust deposition, expansion of sea-water desalination plants, exploitation of deep-sea energy resources, intensive shipping, invasive species, mariculture, expanding tourism and geopolitical turmoil. While essential understanding of the consequences of these pressures on the ecosystems of the Eastern Mediterranean Sea and Arabian Gulf is still lacking, awareness has grown that these ecosystems need to be protected and managed in a sustainable way that will look after and enhance biodiversity, ecosystem services and ensure economic viability and growth for local populations.

To address these challenges, a trilateral collaboration was established between the University of Haifa (Israel), Khalifa University and United Arab Emirates University (United Arab Emirates, UAE) and GEOMAR Helmholtz Centre for Ocean Research Kiel (Germany). The Memorandum of Understanding for the Trilateral Collaboration was signed on November 14 at the world climate change conference COP27 in Sharm El Sheikh (Egypt).

The trilateral collaboration will extend the existing partnership between GEOMAR and the University of Haifa on the project Eastern Mediterranean Sea as a model for Future Ocean Research (EMS FORE). This project of the United Nations Decade of Ocean Science for Sustainable Development focuses on impacts of climate and pollution pressures in the Eastern Mediterranean Sea. The inclusion of the UAE institutes in the work of EMS FORE in the Eastern Mediterranean and the extension into the Arabian Gulf will facilitate understanding of these marine systems and build bridges between the nations.

The waters of the Eastern Mediterranean Sea and the Arabian Gulf are warming at some of the fastest rates globally with unknown consequences for their ecosystems and ocean carbon dioxide (CO₂) uptake. The regions are also strongly industrialised and urbanised, and face increasing dust deposition and heat waves that impact their ecosystems, including coral reefs. The trilateral

partnership will use the combined knowledge, expertise, and infrastructure of the partners to study the consequences of these impacts and work towards mitigation and adaptation measures.

The researchers involved in the collaboration will use advanced ocean observing technologies, such as underwater vehicles, novel cameras, and chemical sensors but also proteomics, metagenomics, and marine ecosystem models to integrate the data and predict future ocean responses. With the help of multidisciplinary investigations, they want to gain information about the past as well as insights into current processes in the water column and seafloor, and develop models to find out what the future will look like for the Mediterranean and Arabian Gulf.

Inclusion of the public and other stakeholders forms an important part of the activities of the trilateral partnership. Education of a new generation of early career scientists, doctoral and master students is also central, especially in geographical regions of cultural, political and religious conflicts where joint work on sustainable use of marine systems will benefit all populations and can help to build bridges and establish trust and partnerships for a better future.

Links:

www.emsfore.eu EMS FORE

<https://marsci.haifa.ac.il/en> Leon H. Charney School of Marine Sciences, University of Haifa

<https://www.ku.ac.ae> Khalifa University

<https://www.uaeu.ac.ae/en> United Arab Emirates University

<https://www.geomar.de/en> GEOMAR Helmholtz Centre for Ocean Research Kiel

Images:

Images are available for download at <http://www.geomar.de/n8711-e>

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