

8th July 2019

**Letter in support to the AWI MUSE proposal**

Dear Prof. Boetius,

SAON would like to provide support to your proposal for the funding of the MUSE proposal (Marine Environmental Robotics for Sustainable Research and Management of Coastal, Ocean and Polar Regions) as a Helmholtz Infrastructure.

The Sustaining Arctic Observing Networks (SAON) is a joint initiative of the Arctic Council and the International Arctic Science Committee (IASC) that aims to strengthen multinational engagement in pan-Arctic observing. SAON's vision is a connected, collaborative, and comprehensive long-term pan- Arctic Observing System that serves societal needs.

The rapid on-going changes in the Arctic present an urgent need to better observe, characterize and quantify processes and properties of the Arctic system. SAON engages and facilitates connections among the producers and end-users of Arctic observations in order to create and sustain an Arctic Observing System. SAON is currently creating a roadmap to well-integrated Arctic observing that is responsive to societal needs. This roadmap will also be used to identify funding sources to support infrastructure required for sustaining or adding new observational capabilities as well as technological innovations to improve observation capacity.

The MUSE proposal applies for 49.7 million € as a Helmholtz Infrastructure and is planned for submission on 15th of July 2019 by the coordinating centre Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung (AWI) in cooperation with GEOMAR Helmholtz-Zentrum für Ozeanforschung Kiel (GEOMAR) and Helmholtz-Zentrum Geesthacht, Zentrum für Material- und Küstenforschung (HZG).

Key components of MUSE are two full-ocean-depth rated next-generation ROVs, two deep-sea AUVs, as well as coastal water swarm AUVs and their novel and innovative environmental sensor payload.

The automated and interactive observation systems implemented as part of MUSE will improve and increase capacities of currently operated modular and mobile infrastructures, such as FRAM (Frontiers in Artic Marine Monitoring), MOSES, and the Coastal Observing System for Northern and Arctic Seas (COSYNA). Data and data products will be made freely available via the AWI data portal (https://data.awi.de).

MUSE will support sustained Arctic Observing by

1. Implementing novel ship-based technologies such as a full ocean depth rated ROV, and a novel AUV, both configured for deployment via moonpools (e.g. on the planned RV Polarstern II) in ice covered regions.
2. MUSE addresses implementation, optimization, and development of novel solutions for deployment/servicing of instruments that account for specificities of environments (e.g. ice cover).
3. Sensor infrastructure will focus on common modules that can be used on ROVs, AUVs, as well as on state-of-the-art platforms such as benthic crawlers, profiling moorings, and ice-tethered installations, which are capable for long-term applications also in extreme environments like the Arctic.
4. MUSE will improve and increase capacities of currently operated modular and mobile infrastructures in the Arctic, such as FRAM (Frontiers in Artic Marine Monitoring) and the Coastal Observing System for Northern and Arctic Seas (COSYNA).

SAON supports the development of MUSE since the data gathered in MUSE will close important gaps in observing the Arctic Ocean. In addition, the development of novel ship-based technologies and new sensors for remotely operated vehicles will make a step change in autonomous observations of the deep Arctic Ocean. SAON is looking forward to work with the MUSE infrastructure. We are prepared to support this initiative through cooperation with our committees on observation and data management.

Sincerely,

Thorsteinn Gunnarsson, SAON Chair

Jan Rene Larsen, SAON Secretary

SAON Secretariat

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