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TITLE: Autonomous surface and underwater vehicles reveal new discoveries in the Arctic Ocean

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ABSTRACT:

The overall aim of the GLIDER project is to demonstrate an innovative, flexible and cost-efficient offshore monitoring and data management approach. GLIDER consists in the deployment of 3 ocean autonomous and mobile platforms, a Sea glider (Kongsberg), a Sailbuoy (Offshore Sensing) and a Wave Glider (Maritime Robotics), fitted with a well proven suite of sensors to collect chemical, physical and biological data of the ocean space. The aim is to increase the sampling of high quality marine environmental data and provide more flexible sampling schemes. These state-of-the-art platforms can move in space, provide long-term and real-time monitoring, and in addition reduce costs and CO2 emission compared to other traditional measurement approaches. A data management e-platform has been developed along with scientists and consultants to ensure a high integration of the collected data. The e-platform will allow to manage the data from storage approach, to visualization tools, and finally to allow interpretation and use for different end users. We have successfully deployed the three vehicles fitted with sensors from March to September 2018 in the Lofoten - Vesterålen area along the Norwegian coast above the Arctic circle (67°16'48"N 14°24'00"E ) with the objective to get a better understanding of the ecosystem during the spawning period of the Atlantic cod. The data collected revealed that the autonomous vehicles provide scientific information of a completely undisturbed ecosystem unlike what is collected from traditional research vessels from which instruments are deployed. The survey provided significant gain on the understanding on the dynamic and timing of biological events over large spatial and temporal scale. Furthermore, we have successfully assimilated data in real time into oceanographic model in order to improve the forecast. Currently, data are being analyzed to understand the ecosystem from the primary production to zooplankton, fish larvae, adult fish and sea mammals. Analysis will offer i) baseline data on a large spatial scale ii) professional solutions to industry operating in the marine environment iii) scientific data for improving knowledge in ecosystem functioning and structure and iv) input data into existing models (oceanography, weather and ecology).

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