**Oceanography and Polar Science through Agile Robotic Systems (OSPARS)**

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**Abstract**

We propose to investigate the feasibility of a disruptive technology for the rapid deployment of oceanographic and polar science instruments through an unmanned system comprising aerial and marine vehicles. This offers a significant step change in range and speed of deployment over current capabilities of comparable costs. Based on the outcomes of this design and operational analysis study, OPSARS will be developed into a large-scale bid (~£750k) for the development of the proposed system and trial deployment of the prototype as part of a science campaign.

A generic OPSARS system will consist of a long range Unmanned Air Vehicle (UAV), which delivers a light Autonomous Underwater Vehicle (AUV) to a precisely determined location, where the AUV is deployed (the UAV performs the deployment in-flight). This enables the rapid long-range deployment of the AUV to remote or inaccessible locations, including to cracks in the Arctic ice. Upon deployment the UAV returns to base, performs a broad aerial survey or holds on station above the deployment area, acting as a communications relay platform, while the AUV conducts an underwater survey or intervention.

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