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Application of Marine Autonomous Systems to oil spill response and monitoring

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Abstract (technical conference):

The technology and methods available for in-water surveillance are developing rapidly, with the capability to develop and expand the monitoring of oil spills. We present the findings of a six-month industry/academia collaborative project between Oil Spill Response Limited (OSRL) and the National Oceanography Centre (NOC), funded by the Natural Environment Research Council and supported by BP and Shell to investigate the roles for Marine Autonomous Systems (MAS) in oil spill response and monitoring.

This project draws on extensive review of the literature, experiences of the NOC Marine Robotics Innovation Centre, OSRL's operational expertise and advice from manufacturers and service providers to review the capabilities of different systems. This information is used to detail how the application of MAS such as Autonomous Underwater Vehicles (AUVs) and Autonomous Surface Vehicles (ASV) improve data collection and increase situational awareness in oil spills.

This project included practical exercises and demonstrations to validate the technology in real operational environments. In combination with other tools such as modelling and aerial surveillance, MAS observations in spill scenarios have the potential to drive improved decision making, to assist reduction of environmental and societal impacts and reduce risk to personnel by removing them from hazardous locations.

Following on from the successful demonstrations there remain technological and logistical challenges to be addressed to enable the routine application of these emerging technologies to real oil spill scenarios. Furthermore, the rapid pace of technological development raises challenges for regulators and industry bodies to set regulations and develop good practice guidelines.

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