

## **STRATEGIES FOR SUBMARINE MONITORING OF CONTAMINATED GROUNDWATER DISCHARGE IN THE COASTAL ZONE**

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The present generation of submarine groundwater field programs are fundamentally limited by too few measurements, taken too slowly, at too great a cost. One approach to provide more extensive access to the submarine groundwater on the sea floor is to use robotic mobile lander platforms to characterize groundwater seepage and distribution of pollution on the seabed at different spatial and temporal resolutions. The term Lander in sub-sea technology refers to vehicles that descend to the sea floor, carry out a series of tasks autonomously for period of days to years storing data on board, and then ascend to the surface at the end of the mission for recovery by a surface ship. A range of mobile lander platforms are under development, from relatively fast survey vehicles, to much slower but longer endurance buoyancy driven systems. However, design of sampling strategies to make best use of many mobile lander platforms is an unsolved problem for all but the simplest circumstances. Such strategies are necessary because even with the increase in sensing capability provided by many small lander platforms, most processes will still be undersampled. Thus the emerging challenge is to determine the most effective use of available observational assets to obtain the desired information, given the physics of the phenomena under study and the constraints of the lander platforms and sensors available. This presentation will review some emerging paradigms for employing the lander platforms for seabed environmental monitoring and will present results from some field experiments.