

Abstract

Multiscale Analysis of Abiotic Parameters For Automated Deep Sea Habitat Mapping

Khaira Ismail^{1,2}, Veerle A.I. Huvenne¹, Paul A. Tyler², Doug G. Masson¹

¹National Oceanography Centre, Southampton, UK

²University of Southampton, UK

Automated habitat mapping is a useful tool in making ecosystem-based, marine spatial management a reality. It has been implemented in shallow waters but is less common in the deep sea. With numerous developments in technology, a broad spectrum of data is increasingly available and can be incorporated into marine habitat mapping. The aim of automated habitat mapping methods is to be statistically robust, objective, repeatable and applicable at a variety of scales.

Following on from previous research, a technique to automate deep-sea habitat mapping has been established. The procedure consists of the three main steps: (1) reduction of data dimensionality, (2) determination of optimal number of clusters and (3) data clustering. However, questions remain about scale and scaling methods to integrate data of different resolution into the automated classification. Additional to that, another important step is to ensure that information from these datasets is optimized even after potential rescaling.

Cell-based multiscale analysis was used to combine datasets with different resolution, applying different window sizes to generate the input parameters. Results from initial trials show that when multiscale parameters were added into the automated habitat mapping process, the step facilitated the delineation of different terrain features at different scales. Additionally, multiscale analysis helped the detection of meaningful classes in the habitat maps and reduced noise with increasing window size.