

Detection and Characterisation of Seafloor Evolution from Sonar Sensor Data

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Abstract

As part of the Great Barrier Reef Seabed Biodiversity Mapping Project, large quantities of acoustic data derived from a single beam sonar sensor have been generated during several research vessel cruises, limited subsets of which are accompanied by underwater video imaging. Such data constitutes a plethora of seafloor signatures containing information on a range of properties relevant to benthic habitat studies such as depth, vegetation, sediment, hardness and roughness. Extraction of these properties and their evolution behaviour from the available data is a key component in this study, and several tools are being applied, including discrete wavelet/packet transforms and the singular value decomposition. This presentation will outline and demonstrate the application of these techniques to selected data portions, both large and small, indicating basic insights gained with a particular focus on evolution behaviour. Future classification goals will also be discussed, with an emphasis on feature extraction and dimension reduction via an appropriate choice of basis in which the data will be represented.