THE CORAL RISK ASSESSMENT, MONITORING AND MODELLING (CORAMM) PROJECT


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INTRODUCTION

The CORAMM project is aimed at improving the understanding of the impacts of high suspended sediment loads and drift cuttings on cold water coral communities. The project is multidisciplinary in approach with sedimentologists, biologists, modellers and representatives from StatOilHydro all involved in furthering the current understanding of these ecosystems. The project has four work packages. WP1 concentrates on the development of novel video and image analysis tools to enable a better and faster evaluation of coral reef structure and varying health status. WP2 assembles and further develops sensor systems for environmental monitoring with special emphasis on particle dynamics. These systems can be used as autonomous stand-alone units or can be linked to the internet. WP3 carries out specific experiments with live coral colonies to better understand and predict the effect of different particle size and microalgal composition. WP4 will build advanced ecosystem models for cold water corals and use a physiological based approach to predict the effect of different sediment loads on the performance of coldwater corals. This poster presents the first insights of the first 18 months of research.

Workpackage 1

WP1 aims to develop innovative video and image analysis techniques to improve understanding of coral community structure and health issues. This has been focused on two main topics:

1. Developing methodologies to record video and images from coral communities by ROVs, submarines and satellites and to interpret these images into biological data.

2. Developing automated classification methods to assess coral reef health and distribution from all images including images returned from a remote element.

Automated classification of coral reef health and distribution

The main effort in this work is to develop automated image classification methods that allow for robust, accurate and efficient image analysis. These methods will be validated using existing expert datasets and will then be tested against new images. The ultimate goal is to develop automated methods that can be used to quickly and accurately assess the health of coral reefs worldwide.

Workpackage 2

WP2 has had a strong focus on imaging and developing a number of novel sensors for monitoring and modelling of cold water coral reef ecosystems. The research has been focused on the development of new imaging techniques and data processing algorithms that are able to accurately and efficiently extract information from images of cold water coral reefs. The methods developed in WP2 are being tested in both the laboratory and the field, and they are being evaluated against existing methods to assess their reliability and performance. The results of this work are expected to provide new insights into the structure and function of cold water coral ecosystems and will be used to improve our understanding of the impacts of climate change on these ecosystems.

Workpackage 3

WP3 has focused on the development and testing of new methodologies for monitoring and assessing the health of cold water coral reefs. The research has been focused on the development of new imaging techniques and data processing algorithms that are able to accurately and efficiently extract information from images of cold water coral reefs. The methods developed in WP3 are being tested in both the laboratory and the field, and they are being evaluated against existing methods to assess their reliability and performance. The results of this work are expected to provide new insights into the structure and function of cold water coral ecosystems and will be used to improve our understanding of the impacts of climate change on these ecosystems.

Workpackage 4

WP4 focuses on the development of new models for predicting the response of coral reefs to climate change. The models developed in WP4 are being tested against existing datasets to assess their reliability and performance. The results of this work are expected to provide new insights into the factors that influence the health of cold water coral reefs and will be used to develop new strategies for the conservation and management of these ecosystems.

Acknowledgments

The project is funded by the European Commission under the 7th Framework Programme (FP7) and is managed by the European Commission's Joint Research Centre. The project is coordinated by the University of Göttingen and is a collaboration between a number of European and international partners. The project is expected to run for 4 years and to produce a range of new insights into the structure and function of cold water coral ecosystems.