



Australian Government

Department of the Environment, Water, Heritage and the Arts

Marine and Tropical Sciences Research Facility (MTSRF)
November 2007 Milestone Report

Project 2.5i.4 – Tools to support resilience-based management in the face of climate change

Project Leader: Dr Scott Wooldridge, Australian Institute of Marine Science.

Summary

The goal of project 2.5i.4 is to develop tools and frameworks that enable greater characterisation of the risks posed to the linked GBR social-ecological system due to the effects of climate change. Recent achievements towards this goal include:

- The development of a novel modelling framework that allows the end-of-river outcomes of modelled land-use improvement scenarios (e.g. fertiliser reduction) to be tested for their significance in terms of improving inshore reef water quality. This new modelling capability will form the basis of future efforts to formally characterise the synergistic relations between GBR water quality and thermal bleaching susceptibility.
- The development of a formal socioeconomic characterisation of the Mackay Whitsunday's, Townsville and Cairns regions as well as the Tourism, Recreation and Commercial Fisheries. In most instances the submitted report is based on 2006 statistics, but will be updated as new ABS data becomes available.
- The development of a regional questionnaire to better understand (a) business awareness of climate change, (b) business attitudes towards the possible risk(s) posed by climate change on the Great Barrier Reef, (c) the likely impacts of climate change on key industry sectors, and (d) the preparedness of local communities to meet and overcome the challenges associated with climate. The survey is currently being prepared for posting with the targeted address files (random cross section of businesses in target region) now completed.

Overall, the project is progressing well, and no problems are envisaged with the future delivery of agreed milestones. The recent employment of a Bayesian Network modeller (CSIRO) will assist the future modelling efforts of this project.

For reference: Milestone extracted from Project Schedule

Description

- Describe the methodology developed to facilitate the spatial linkage between end-of-catchment water quality scenarios (CSIRO), and the follow-on flood plume dilution across the GBR lagoon [AIMS]
- Describe the findings from a high level socio-economic and demographic characterisation of the region using ABS, OESR and other statistical sources [CQU]
- Present summary from workshop on the spatial linkage model and its outputs with end users and define targets based on reef outcomes (e.g. Reef Partnership and GBRMPA) [CSIRO]
- Summary of any communication activities undertaken to date by the project team, including minutes of meetings/workshops if applicable, schedule of future communication activities.[AIMS]

Project Results

Description of the results achieved for this milestone

1. *Describe the methodology developed to facilitate the spatial linkage between end-of-catchment water quality scenarios (CSIRO), and the follow-on flood plume dilution across the GBR lagoon [AIMS]*

A modelling methodology was successfully developed that enables end-of-river values of dissolved inorganic nitrogen (DIN) to be spatially extrapolated across the inner-shelf region of the GBR lagoon. Importantly, this allows the end-of-river outcomes of modelled land-use improvement scenarios (e.g. SedNet/Annex) to be tested for their relevance in terms of improving inshore reef water quality. To demonstrate this new modelling capability, consideration was given to recent SedNet land-use scenarios for the future management of sugarcane land within the Tully River Basin (i) Scenario B1 = 18% reduction in fertiliser N application, (ii) Scenario B2 = 35% reduction in fertiliser N application.

It is expected that the new modelling methodology will form the basis of future efforts (to be detailed in the next milestone report) to formally characterise the synergistic relations between GBR water quality and thermal bleaching susceptibility.

2. *Describe the findings from a high level socio-economic and demographic characterisation of the region using ABS, OESR and other statistical sources [CQU]*

The socio-economic characterisation is progressing well, though the slow release of the 2006 ABS data has created some additional work. Early attempts to secure the most recent data resulted in projections on the 2001 stats being provided by OESR. This data provided our default data set but now that the 2006 data is being rolled out we have progressively updated the data used in the characterisation. In most instances this submitted report contains the 2006 statistics. This document however will be dynamic and will continue to be updated as new data becomes available. While some data are still to be released sufficient information has now been accessed to facilitate progression.

In addition to this socioeconomic characterisation, details are reported here of work currently underway into the development of a regional questionnaire that endeavours to elicit the perceived significance of future coral bleaching scenarios for both business and the wider community. The bleaching scenarios were developed from an expert technical panel that included representatives of CSIRO, GBRMPA, JCU, CQU and AIMS. The panel provided what was considered to be insight into the successional changes in floristic and reef assemblages that might arise from future bleaching events. These changes included the expected impacts on obligate and other fish species.

The regional business survey questionnaire has now been completed, along with human ethics committee approval. The survey is divided into two stages. The first stage involves a survey of over 6,000 businesses in the target regions. Once this is completed more detailed targeted focus group and survey work of the respondents will be undertaken. The initial survey will be done as a postal survey— response rates to these sorts of surveys are usually low (20%) but funding prohibits a more comprehensive approach. The survey is currently being prepared for posting with the targeted address files (random cross section of businesses in the target regions) now completed.

It is expected that all the survey work will be completed by the next milestone report and preliminary analysis available

3. *Present summary from workshop on the spatial linkage model and its outputs with end users and define targets based on reef outcomes (e.g. Reef Partnership and GBRMPA) [CSIRO]*

As a consequence of the continued difficulty in the recruiting a Bayesian Belief network modeller required to facilitate the completion of this milestone, the workshop has been postponed. However, the recruitment process has now been finalised, with the new appointee set to start employment with CSIRO Townsville on 12th November 2007. We would like to extend the milestone delivery date to 3 months post the BBN modeller taking up her position (see forecast variations to planned milestones)