



Australian Government

Department of the Environment, Water, Heritage and the Arts

Marine and Tropical Sciences Research Facility (MTSRF) e-Atlas Project Milestone Report, 11 June 2009

This milestone report addresses objectives under the following MTSRF Projects:

Program 1:	Status and Trends of Species and Ecosystems in the Great Barrier Reef
Project 1.1.5:	Reef Atlas: Risk, Resilience and Response http://www.rrrc.org.au/mtsr/theme_1/project_1_1_5.html
Led by:	Dr Katharina Fabricius, Australian Institute of Marine Science (AIMS)

Program 5i:	Climate Change: Great Barrier Reef
Project 2.5i.1:	Regional climate scenarios http://www.rrrc.org.au/mtsr/theme_2/project_2_5i_1.html
Led by:	Dr Andreas Schiller, CSIRO Marine and Atmospheric Research (CSIRO)

Report prepared by Dr Katharina Fabricius, AIMS

Report Summary

The e-Atlas is developing rapidly. We have continued to design and implement the e-Atlas content management and mapping systems. The system is based on open-source software and uses existing off-the-shelf software where possible, but also includes modification, adaptation and creation of additional tools (including Java extensions). We have gone 'live' (<http://e-atlas.org.au/>), and have also developed a new caching system for faster map serving. We have started to provide tools to provide access to the maps from desktop GIS systems such as *ArcMap*. The mapping tools have reached a high level of sophistication, including interactive visual inspection of GBR data, side-by-side displays and panning of maps from different organisations.

We have added substantial content to the e-Atlas. Text pages are being produced, and some of the most important data sets have been compiled and converted into grided data by statistical tools for graphic display in the e-Atlas. Metadata for AIMS data are being created by the AIMS Data Centre. The content management system also allows users to upload and structure text, data and images, and to download data sets from other users, or to contact data owners. Other users have now started to contribute material, and about 450 maps and layers are now available online. We have made the transition from Reef-Atlas to e-Atlas, and now also cater for terrestrial data. We have conducted numerous presentations and workshops for potential end users and other interested parties.

Project Outputs / Milestones

Objectives	Targeted Activity	Due Completion Date
1.1.5 (a)	Web delivery: Complete the framework of an integrated content management system as a repository and portal to data, web pages and reports.	June 2009
1.1.5 (b)	Mapping: Complete the development of a framework for integrated web-based mapping of spatial and process-based data from GBR related research, and compile and upload priority data sets.	June 2009
1.1.5 (c)	Modelling: Statistical analysis and synthesis of selected GBR data sets, with particular emphasis on risks, and the biological implications of management actions such as water quality improvement or the GBR zoning system.	June 2009
2.5i.1 (a)	Design, develop and implement the e-Atlas system.	June 2009
2.5i.1 (b)	Establish and maintain contact with complementary parties and users to maximise compatibility and uptake.	June 2009

Milestone Reporting Requirements

2008/2009 Outputs Milestones	Date
Report 2 submission (with appropriate attribution of MTSRF funding) [AIMS]: <ul style="list-style-type: none"> • Summary of new contents for the e-Atlas; and • Summary of the newly developed tools for mapping and modelling for the e-Atlas. 	11 June 2009
Report submission [AIMS]: <ul style="list-style-type: none"> • Summary of the newly developed e-Atlas architecture. 	11 June 2009

Project Results

Description of the results achieved for this milestone

The e-Atlas project consists of three components: (1) the web delivery system, (2) the mapping tools, and (3) the modelling of data sets displayed in the atlas. A fourth significant activity is a large planning, reporting and outreach component to establish and maintain links with external parties and users. Substantial progress has been in all four areas included the following activities:

- Continued improvement in technical performance, speed and functionality, and improved mapping features (e.g. mapping several independent and distributed data sets side by side). Integration of two of the four mapping systems, and simplification of the configuration and deployment of new layers.
- Continued addition of numerous new features to the work flow system and the contents management system, including the data upload and data cataloguing systems.
- The e-Atlas mapping system was shifted to an alternative virtual server, however, the investigation of load testing and capacity requirements showed the current server is

unable to meet the mapping requirements. Additionally, discussions with ERIN (Department of the Environment, Water, Heritage and the Arts) indicated that their main use of the e-Atlas will be via desktop GIS clients. These will place a much greater load (10 to 100-fold) on the server, significantly exceeding the existing capacity. A new dedicated server will be purchased and established in the coming months.

- The domain name has been changed from 'demo.reefatlas.org.au' to 'e-atlas.org.au' to cater for a wider range of data on *Australia's Tropical Lands and Seas*.
- A set of tools in the statistical program R has been created to process data, to create additional data layers and automatically generate KML files. These tools provide spatial modelling and mapping tools, and will now be embedded into the web site for public use. Further relevant data sets have been statistically analysed and the spatial data processed to deliver about 450 new maps that are now available online in the e-Atlas. Selected data layers and maps were provided to GBRMPA for the Outlook Report.
- The GBRMPA 'Atlas Reference group' presented their report of testing and operationalisation of the e-Atlas within GBRMPA. The team is working on implementation of some of the main requests.
- The content of the e-Atlas has increased significantly. Numerous new data sets and text pages have been added (see <http://e-atlas.org.au>)
- New feeds from other servers are now being embedded. For example, the AIMS Datacentre will port their real time satellite data (SST, K490, Chlorophyll) to the e-Atlas, and the AIMS Long Term Monitoring Program will create a layer in the e-Atlas that provide access to the existing report cards on all reefs studied by the LTMP. Reef Check Australia is also providing a similar dynamic layer from up to date access to their reef reports. This is a first step in providing a "reef resume" that summarises all the known information about a given reef. This feature was requested by the GBRMPA reference group.
- Together with David Souter (RRRC), we gave numerous presentations and workshops to maintain and establish links to external parties (see below).

Problems and Opportunities

The development of the e-Atlas was greatly supported by the ongoing efforts of David Souter and the RRRC Office. This support network has made major contributions to establishing linkages to external parties.

The timely establishment of a governance structure appears essential for the long-term future of the e-Atlas.

Data sharing issues remain an unresolved hurdle. This cannot be resolved until the governance issue is resolved.

Staffing shortages dictate the speed of development and the speed at which new content can be added. There is an urgent need for an additional person to take charge of the contribution of content by users, and to help with data sharing agreements. This is essential in the next year in order to hasten the development of the e-Atlas user base and to increase the content.

Communications, Major Activities and Events

During this milestone reporting period

- A large number of presentations, workshops and information sessions on the e-Atlas were given in during the past year (2008/2009), mostly done or facilitated by staff of the RRRC. These included presentations about the e-Atlas to several government leaders, including The Hon. Ministers Peter Garrett and Penny Wong.
- Three metadata tutorial sessions for MTSRF research providers and a presentation about the e-Atlas were given at the MTSRF Annual Conference in Townsville (April 2009).
- Presentation of the e-Atlas to the Premier of Queensland, The Hon. Anna Bligh at Russell Island, 29 January 2009 by David Souter (RRRC). The presentation emphasised the need for Queensland Government involvement in the e-Atlas to ensure that the atlas reaches its full potential.
- Presentation of the e-Atlas at the Mini-Symposium, *The Ecosystem Services of the Great Barrier Reef*, 9 February 2009 by Katharina Fabricius.
- Updates on e-Atlas progress were also given to David Wachenfeld, Bruce Wallner and Sharon King of the Great Barrier Reef Marine Park Authority (GBRMPA) for the purposes of operationalising the atlas within the GBRMPA.
- Presentation of the e-Atlas to Queensland Trade Commissioner Peter Beattie and US delegation, 22 October 2008.
- Presentation of the e-Atlas to a delegation of US Senators, 24 October 2008.
- Presentation to the ERIN Group, DEWHA, in Canberra (17 March 2009) which established how DEWHA users are likely to use the e-Atlas, and an agreement to create a Memorandum of Understanding for data sharing between ERIN and the e-Atlas.
- Meeting with Bureau of Rural Sciences (BRS) about inclusion of their Multi-Criteria Analysis for *Reef Rescue* in the e-Atlas.
- Meeting with Steve Williams, James Cook University (MTSRF Project 2.5ii.4), resulting in Williams committing to using and contributing to the e-Atlas.
- A half-day workshop with the GBRMPA 'Atlas Reference group' for the purposes of testing and operationalising the e-Atlas within GBRMPA. The Reference Group submitted a feedback document with valuable suggestions, which are now being implemented, after a follow-up meeting between Margaret Johnston, Sharon Kong and David Souter, 6 April 2009, about how to operationalise the e-Atlas for GBRMPA.
- User workshop at AIMS, that resulted in several AIMS scientists contributing material.