

RESEARCH

Project 1.1

Project 1.4

Project 1.5

## PROJECT 1.2 Regional State of the Wet Tropics [Satellite-based] Monitoring Information System

*Project Leader: Dr Alex Held (CSIRO) and Dr Stuart Phinn (UQ)*

A fundamental requirement for regional scale environmental management is a monitoring program delivering regularly updated spatial information on the condition of the environment that is accessible to all stakeholders. In Australia's Wet Tropics this information is required by the Wet Tropics Management Authority and the various state and local agencies involved in the FNQ-2010 State of Region Reporting. There is a critical need for an operational system to deliver accurate and timely information (not just data!) that matches the needs of management agencies. Previous work in project 1.2 has identified these needs for one agency (WTMA) and matched them to information able to be derived from satellite and airborne imaging systems. Innovative techniques have also been developed for all-weather mapping of forest structure and composition as well as for measuring fragmentation. In addition, the recent approach of CSIRO's 'Sentinel Hotspots' [www.sentinel.csiro.au] near real time web-based fire mapping system, will be incorporated into our new project. This project will significantly expand on our past results and build more significant links into Program 1 by: (1) providing monthly satellite derived information on environmental health indicators relevant to tropical forest environments on the web; (2) becoming a repository for more detailed or baseline rainforest image datasets, and (3) developing operational applications for these satellite information sets and airborne image data to meet the regional scale and local scale monitoring and management needs of key Wet Tropics natural resource management agencies.

Critical collaborative links are required with Professor Geoff McDonald's project on establishing performance indicators for FNQ2010, Projects 2.3 and 6.5, and projects in the Greenhouse Accounting CRC. Linkages may also be developed with the Cape York Development Authority, who are currently using satellite imagery and the Sentinel system to quantify and track the fire regime in the Peninsula. This approach will leverage significant linkages with ongoing international remote sensing projects and funding from external projects, to provide Wet Tropics management agencies with a means to obtain and interpret regularly updated maps of key environmental indicators to meet their monitoring needs. Considerable international opportunities exists for the development of similar forest monitoring systems, especially in Papua New Guinea and parts of South-East Asia where the baselines satellite information is available already.

## POSTGRADUATE STUDENTS

Jeremy ANDERSON (UQ) Masters

*Assessing the accuracy and reliability of Landsat satellite image data sets to monitor change in forest condition and structure due to linear forest clearing for infrastructure development in the Herbert River catchment*

Andrew MULLENS (UQ) Hons

*Study of rainforest refugia and their impacts on current biodiversity using an archive of remotely-sensed data*

Joanne NIGHTINGALE (UQ) PhD

*Multi-scale simulation and monitoring of terrestrial carbon fluxes within tropical rainforest regions*

Jane SKRANDEES-MARTIN (UQ) PhD

*The influence of structure and condition of riparian buffers on water quality in tropical catchments*



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