



Impacts and Achievements of the MTSRF

Copy of abstract and presentation given at the
2010 Annual Conference of the
Marine and Tropical Sciences Research Facility (MTSRF)
http://www.rrrc.org.au/news/2010_conference.html

Showcasing the Australian Government's investment
in the MTSRF for improved sustainability of the
North Queensland region, and Australia

18-20 May 2010
Pullman Reef Hotel & Casino
Cairns, North Queensland



Abstract

[MTSRF Project Number 1.2.1c](#)

Vegetation change in the Wet Tropics, 1972 - 2006

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Time series of mapped vegetation extent provide information not only on the status, trends and condition of the resource per se, but also on several ecosystem services provided by vegetation such as carbon sequestration, biodiversity value and water infiltration. As part of MTSRF Project 1.2.1c, we determined change in the extent of native vegetation across the Wet Tropics region from 1972 - 2006. We used the National Carbon Accounting System's (NCAS) satellite-derived 'forest' dataset as our base data layer and optimised its accuracy through a joint process incorporating manual editing and automated decision rules within a GIS.

We derived results for both different reporting extents and time periods. Our results indicate there has been a net loss of native vegetation across three of the four extents we assessed of 3.4% (MTSRF study area, 1972 to 2006), 1.6% (Wet Tropics Bioregion, 1988-2006) and 0.5% (Terrain NRM catchments, 2004-2006). Native vegetation within the Wet Tropics World Heritage Area remained steady (0.0% change, 1988-2006). Our analysis shows that the Tully (15.3%) and Herbert (8.7%) subregions have lost the highest proportion of native vegetation since 1988 and could be priorities for revegetation. For Terrain, over the shorter reporting period of 2004-2006, the South Johnstone catchment has had the highest relative loss of native vegetation (2.4%), followed by the Murray and North Johnstone catchments (1.7% and 1.2%, respectively). These results must be considered in light of the accuracy assessment we determined (about 94% overall classification accuracy) and significance of the temporal trend.

Beyond its use in determining historical trends in vegetation extent across the region, the optimised dataset has been applied to assessment of vegetation condition and trends as part of the broader Project. Extension of the analysis to incorporate future data as it becomes available from NCAS would enhance the dataset's value and allow better determination of trends.



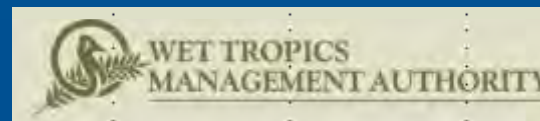
Australian Government
Department of the Environment, Water, Heritage and the Arts



Marine and Tropical Sciences Research Facility

Vegetation change in the Wet Tropics, 1972 - 2006

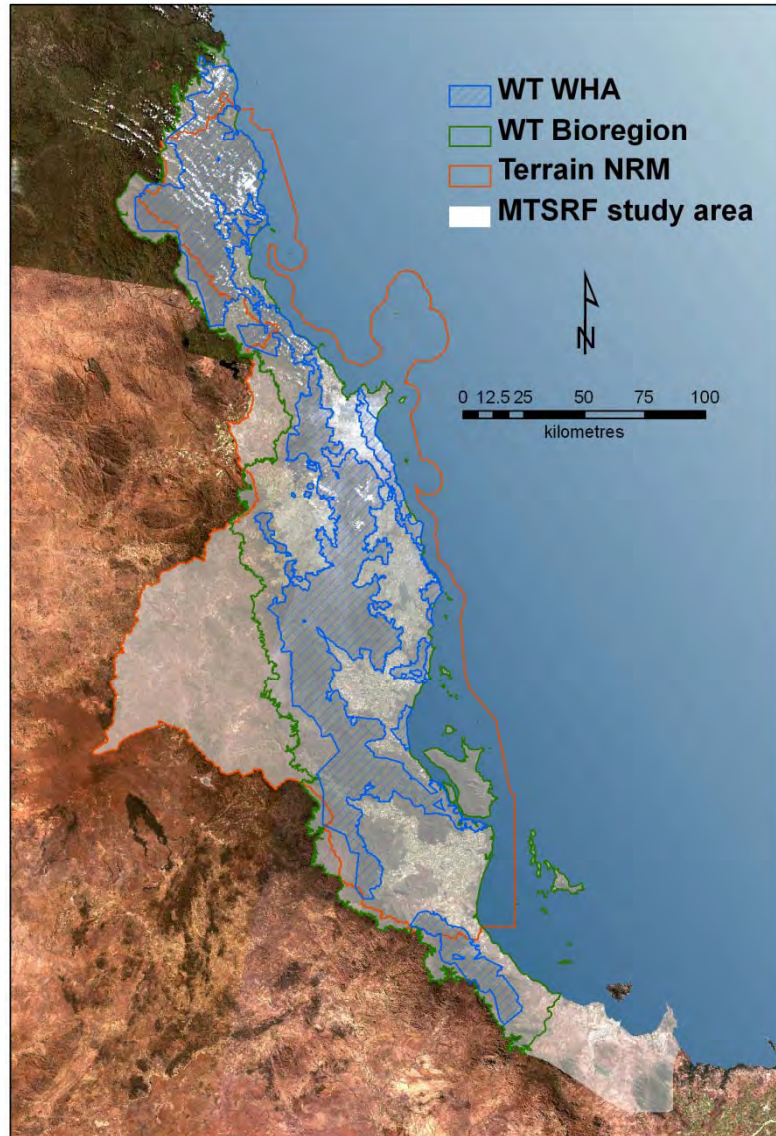
Caroline Bruce, Petina Pert, James Butler, Dan Metcalfe





Outline

- Reporting areas
- Process
- Results
- Applications



Reporting areas

WTMA, 1988 – 2004:

- WHA
- Wet Tropics Bioregion
- Wet Tropics Subregions

Terrain, 2004 – 2006:

- Wet Tropics NRM catchments

MTSRF, 1972 – 2006:

- whole region





Process

ESRI ArcGIS:

- reviewed and compared existing relevant data layers
- converted to standard format and projection suitable for processing and statistics generation (ESRI shapefile, UTM55)
- clipped to MTSRF study boundary
- unioned data with reporting unit layers (Bioregion, Subregions, catchments, WT WHA)
- generated maps

- created correction mask (manual editing and GIS)

Microsoft Excel and Access:

- derived area statistics
- generated graphs





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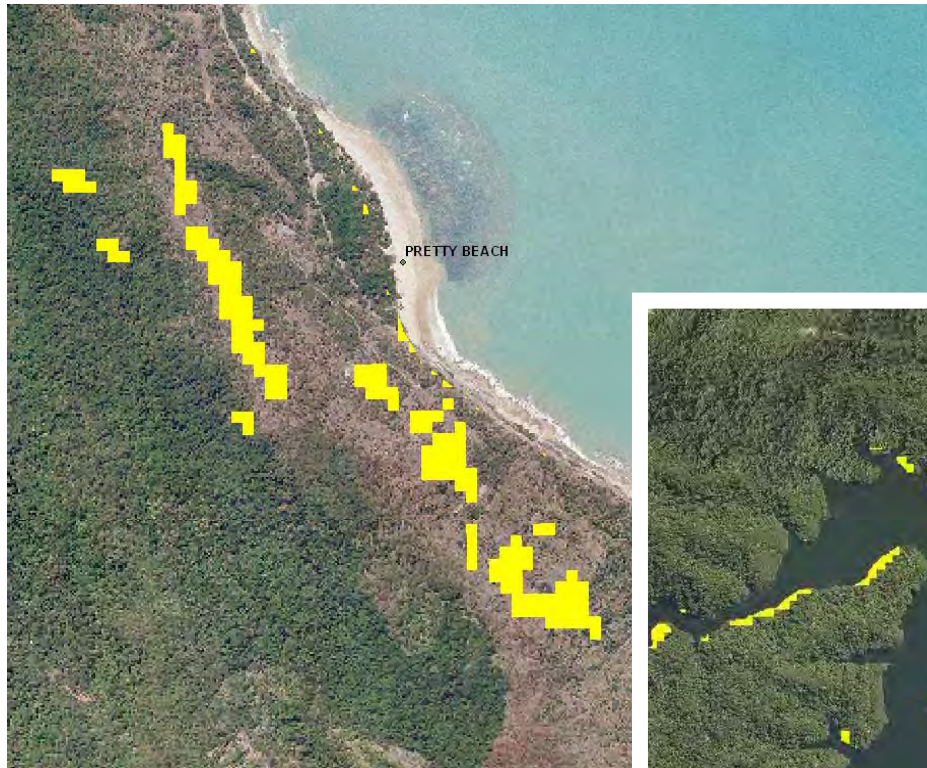
Why a decline in forest extent of 3.8% from 1988 across the WT WHA?



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Firescar



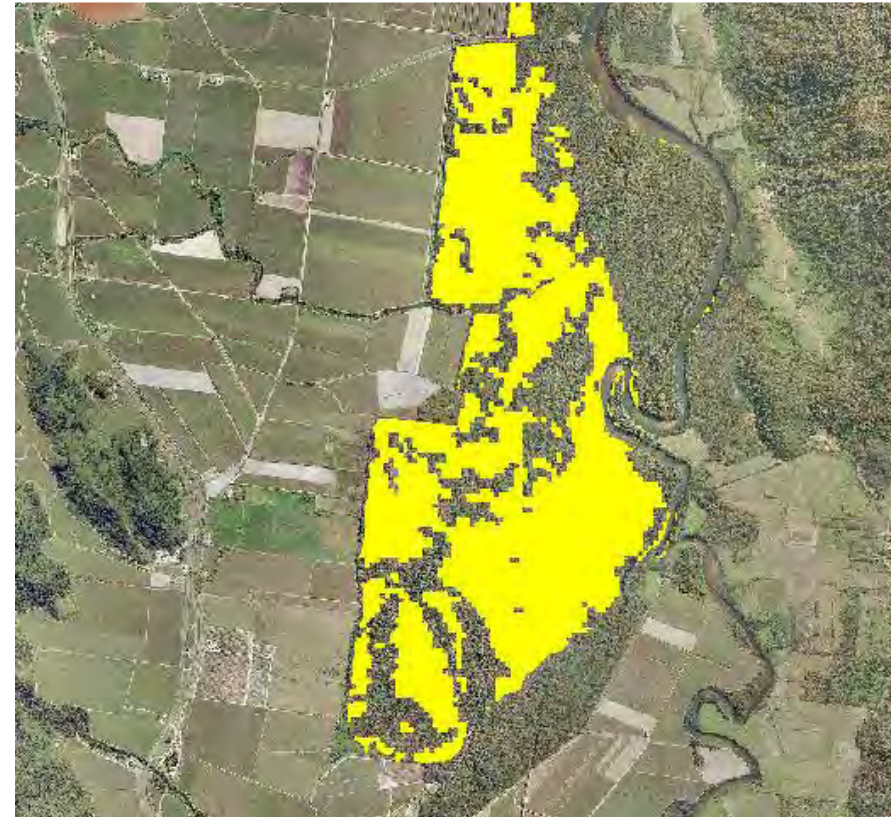
Edge effects



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Shading, brightening



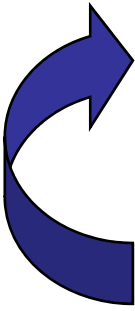
Drying, cyclone damage





Process

ESRI ArcGIS:

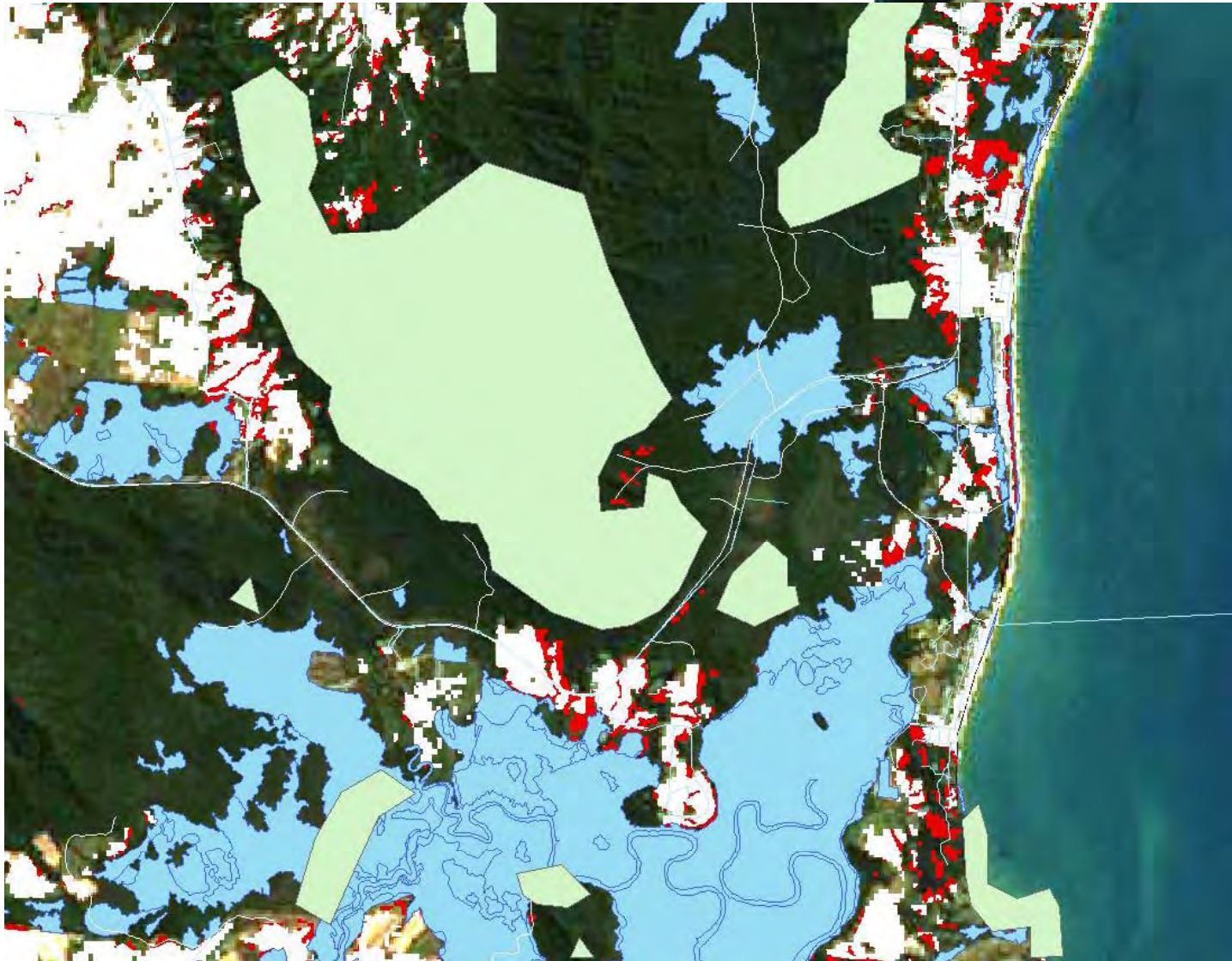
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 - clipped to MTSRF study boundary
 - unioned data with reporting unit layers (Bioregion, Subregions, catchments, WT WHA)
 - generated maps
- 
- enhanced original NCAS dataset (manual editing and GIS)

Microsoft Excel and Access:

- derived area statistics
- generated graphs



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Accuracy assessment

Classification accuracy:

- Overall: 94.8%
- Kappa: 0.84
- cleared: 100.4%, forest 99.5%

Ground-truth data:

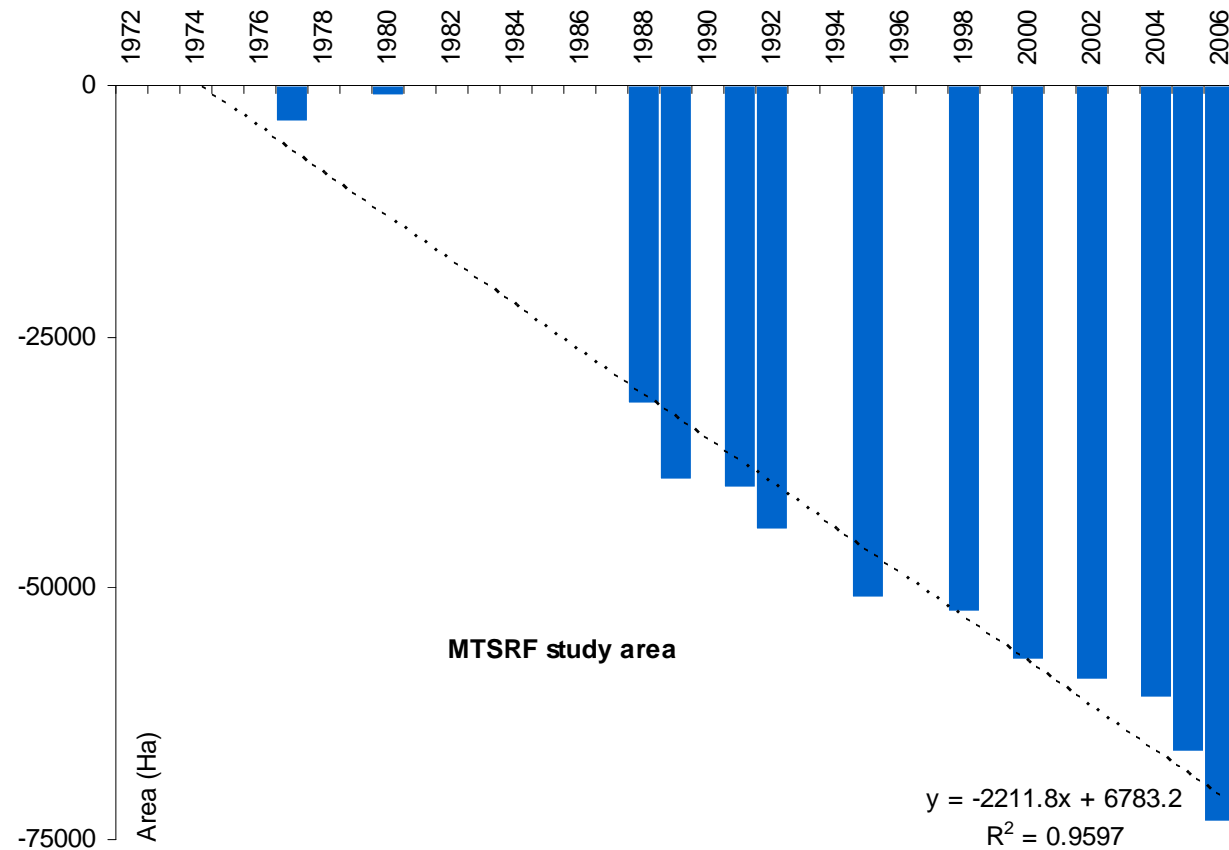
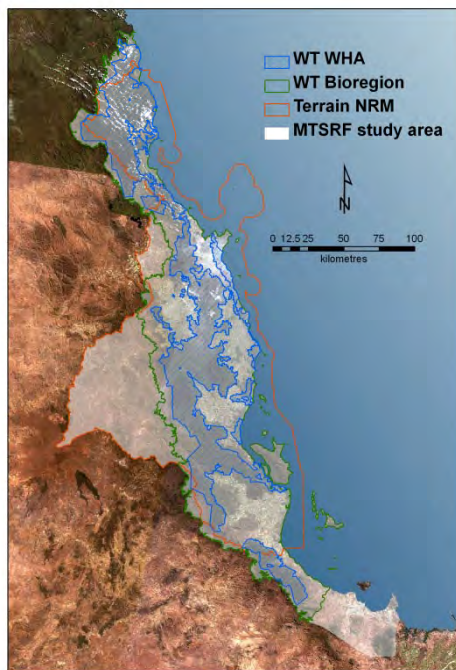
- SLATS 1991 and 1995 landcover, recoded

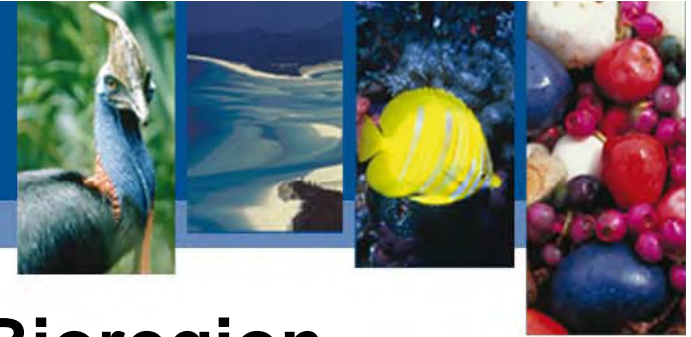




Results: MTSRF 1972 - 2006

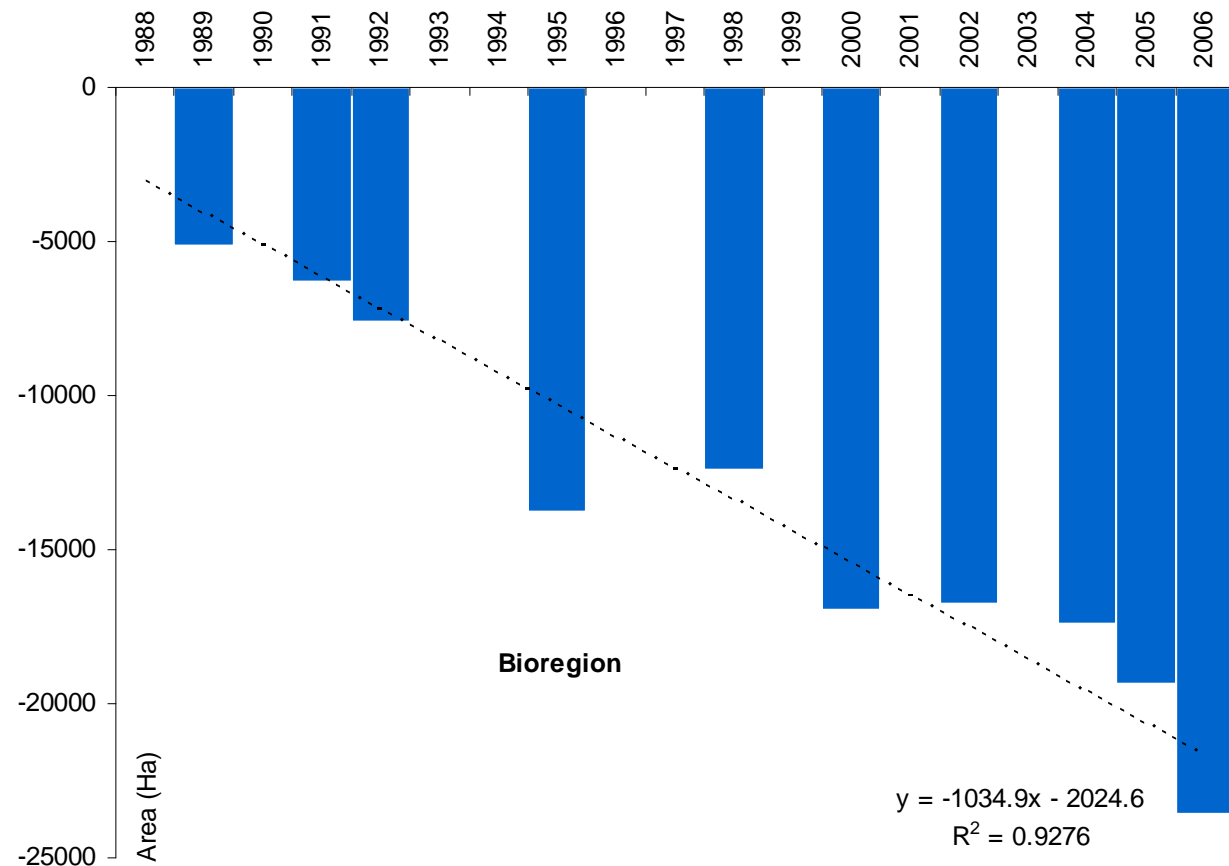
Change: -3.4% (73 280 ha):





Results: WTMA 1988 – 2006, WT Bioregion

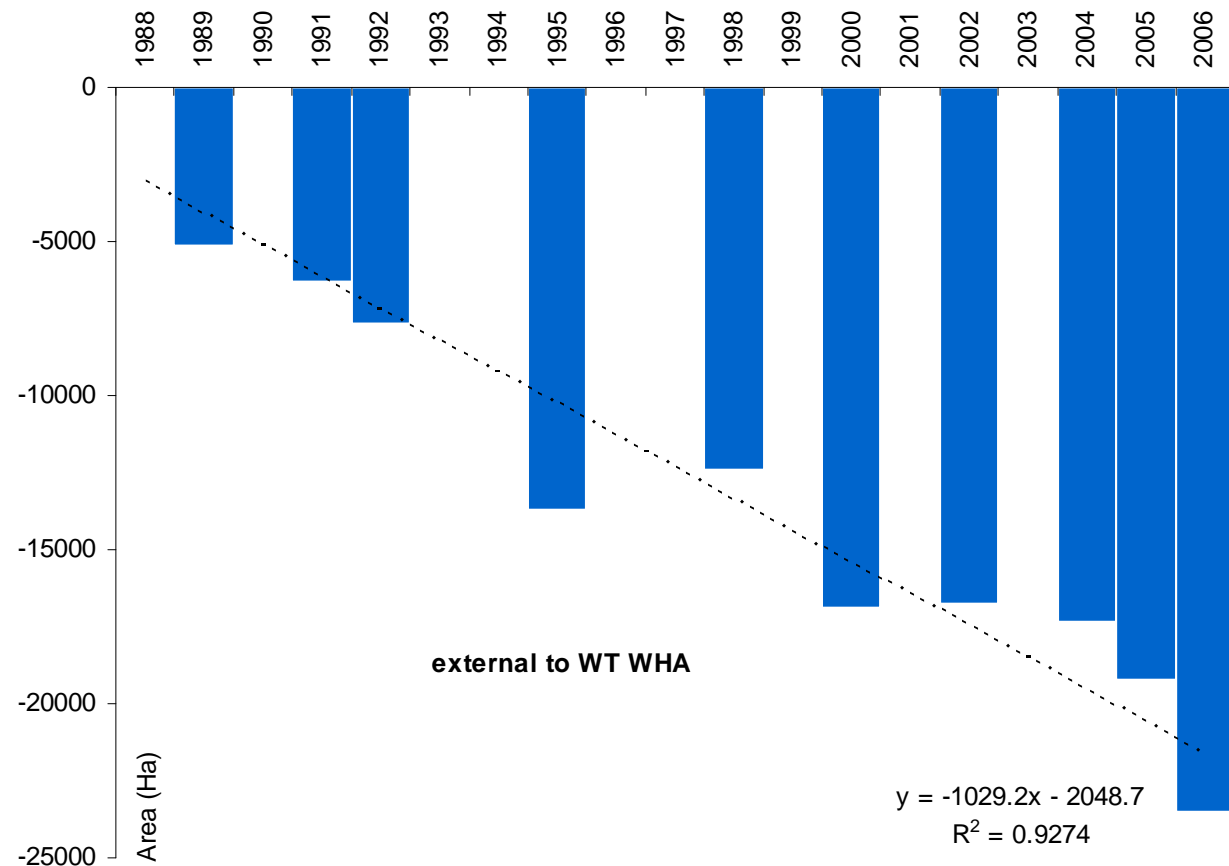
Change: -1.6% (23 592 ha):





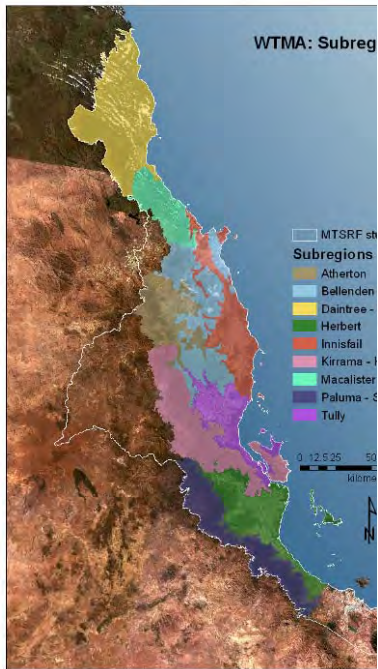
Results: WTMA 1988 – 2006, ext. WT WHA

Change: -3.6% (23 484 ha):

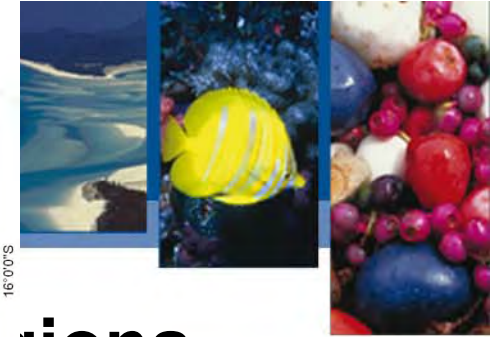
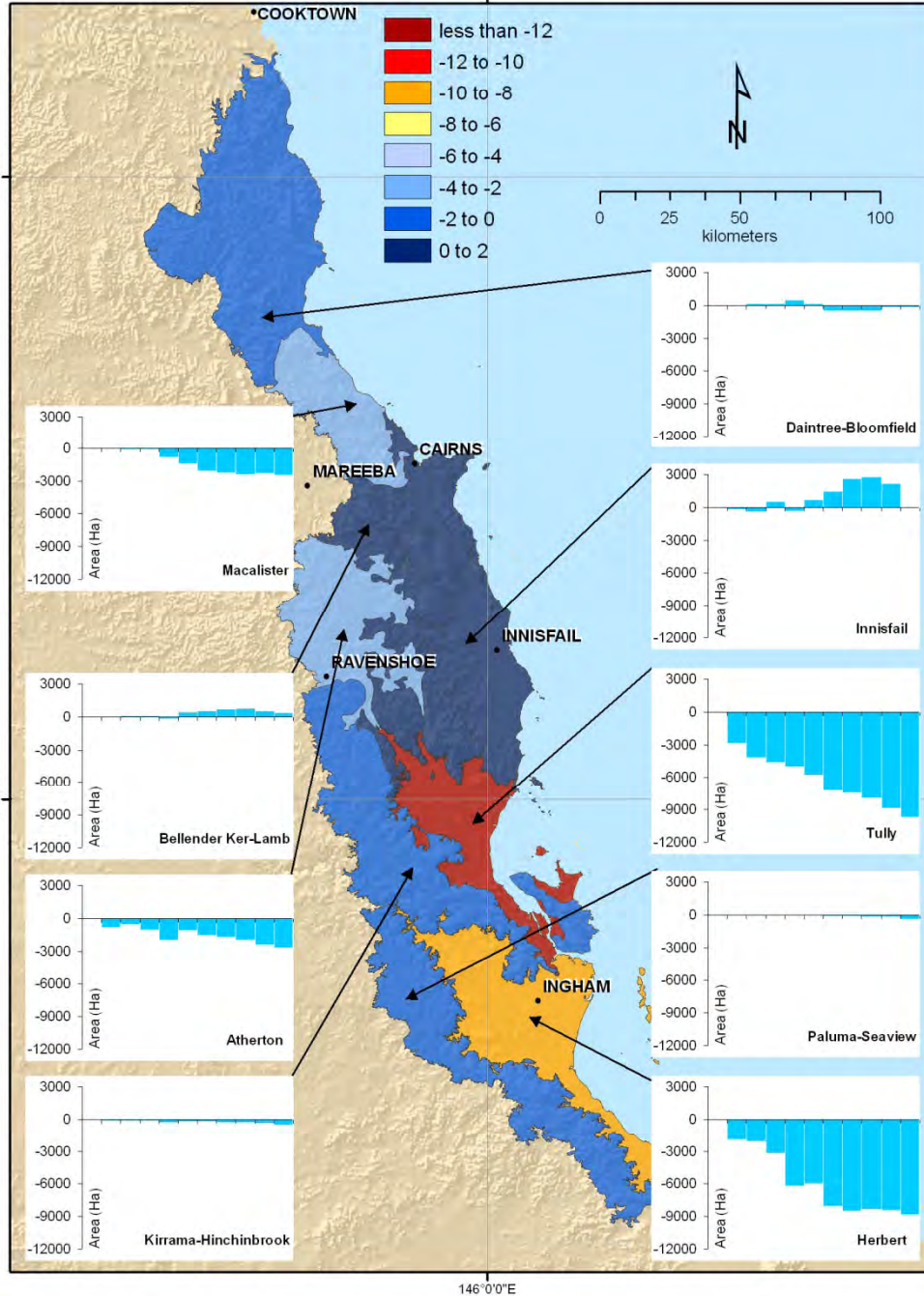


Results: Wet Tropics

Change: -1.6% (2006)



CHANGE TO 'NATIVE VEGETATION', 1988 - 2006, WET TROPICS SUBREGIONS

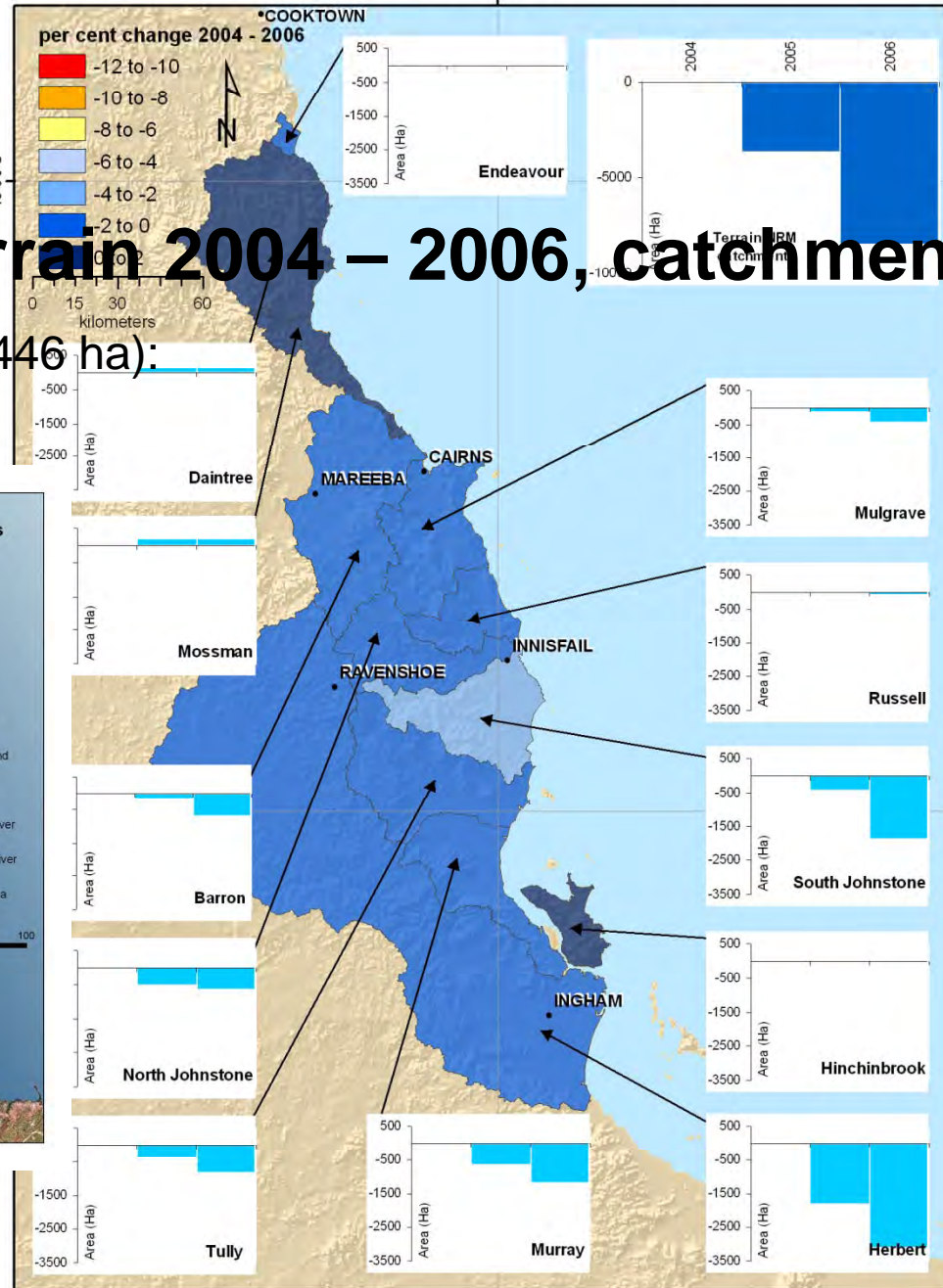
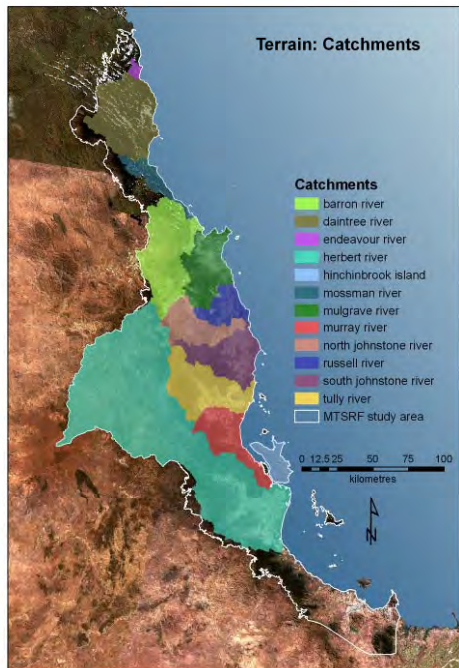


ions

CHANGE TO 'NATIVE VEGETATION', 2004 - 2006,
TERRAIN NRM CATCHMENTS

Results: Terrain 2004 – 2006, catchments

Change: -0.5% (8 446 ha):





Application of optimised dataset

- assessment of vegetation extent, condition
 - MTSRF milestone reports
 - Ecosystem Services report card
 - journal papers

