Commonwealth Environment Research Facilities
Marine and Tropical Sciences Research Facility

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

Reef & Rainforest RESEARCH CENTRE

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

Abstract

MTSRF Program 5i: Climate Change: Great Barrier Reef

Climate Change: Understanding the threat, ecosystem impacts and mitigation for the Great Barrier Reef

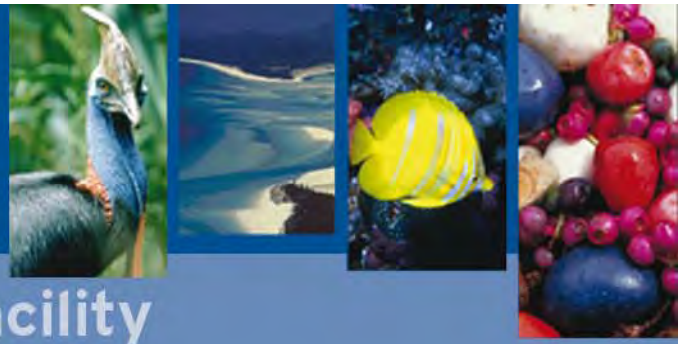
Ray Berkelmans (for Julian Caley)

Australian Institute of Marine Science, Townsville

Abstract not available. See conference presentation slides (following).

Australian Government

Department of the Environment and Water Resources



Marine and Tropical Sciences Research Facility

Climate Change

Understanding the Threat, Ecosystem Impacts and Mitigation for the Great Barrier Reef

Julian Caley,
Australian Institute of Marine Science

Australian Government

ARC Centre of Excellence Coral Reef Studies

Australian Government Great Barrier Reef Marine Park Authority

CSIRO

Australian Institute of Marine Science

Institute for Sustainable Regional Development, Central Queensland University

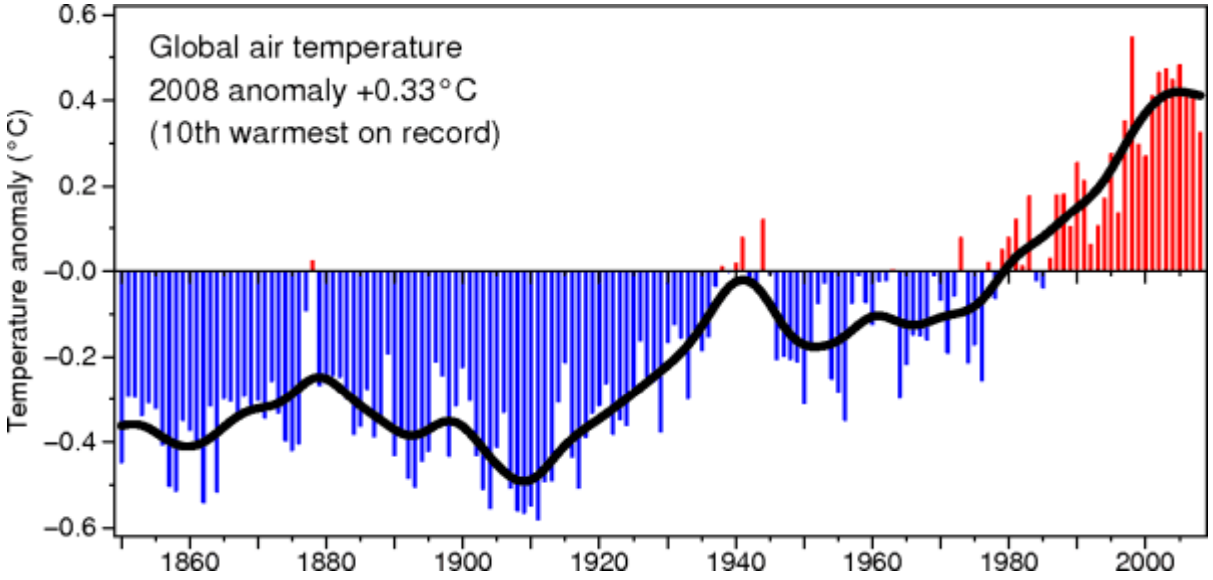
The University of Queensland Australia

JCU James Cook University

The Threat of Climate Change to the GBR

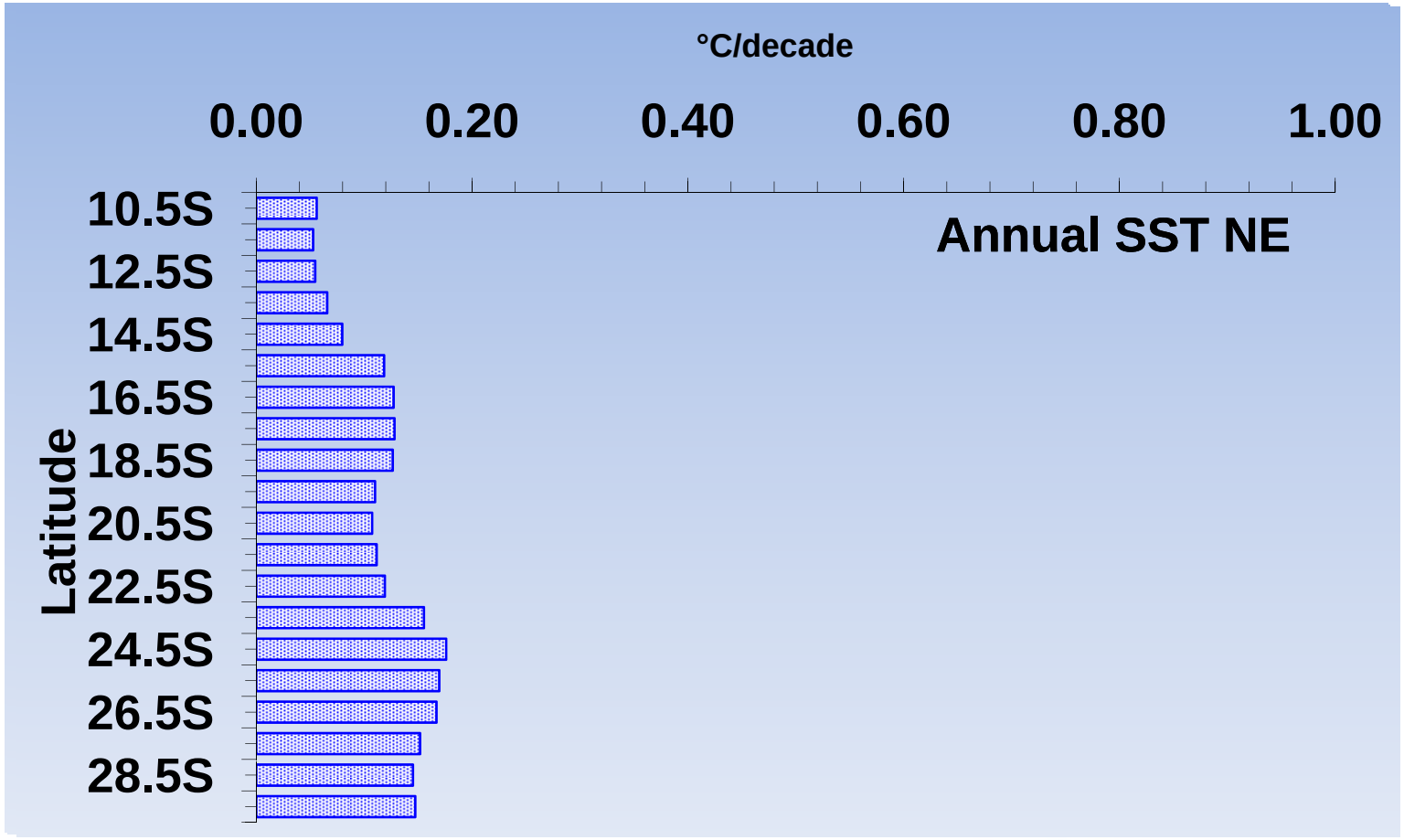
What we know:

- The climate is changing



Source: Climatic Research Unit (http://www.cru.uea.ac.uk/)

Observed GBR warming



The Threat of Climate Change to the GBR

What we know:

- The climate is changing
- Committed to further climate change through lagged effects
- Understanding the potential impacts will maximize management options for minimizing, and remediating climate change impacts


Healthy Reef


Bleached Reef


Degraded Reef


Healthy Reef


Bleached Reef


Degraded Reef

The Threat of Climate Change to the GBR

What we don't know

- How will a changing regional climate affect temperatures on the GBR?
- How will these changes impact the species that make up the reef?
- How resilient are these species to such impacts?
- What are the best management options for minimizing the risks of climate change to these reef communities?

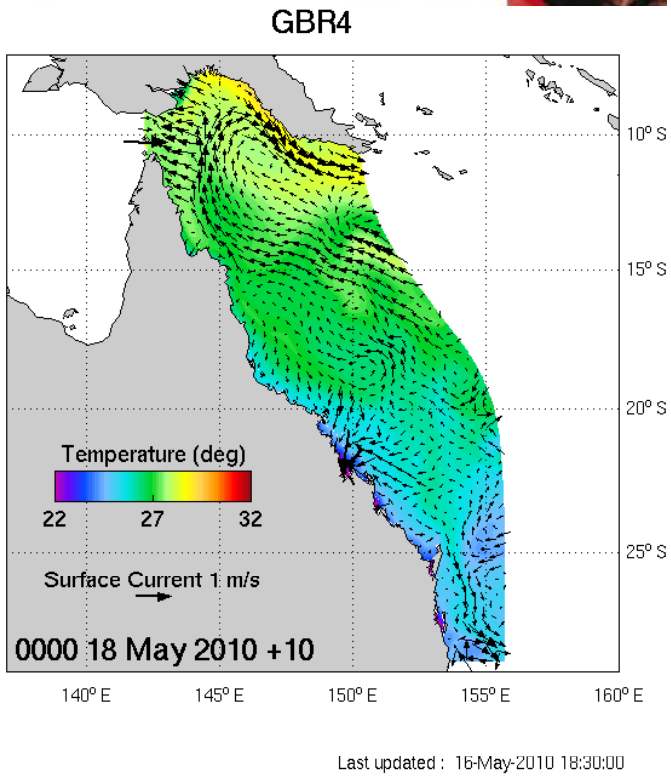
Understanding the Threat, Ecosystem Impacts and Mitigation for the Great Barrier Reef

Four Projects

1. Regional climate scenarios – Richard Brinkman
2. Early warning and assessment system for thermal stress on the GBR – Ove Hoegh-Guldberg
3. Resilience of coral reef ecosystems to climate change – Terry Hughes
4. Tools to support resilience-based management in the face of climate change – Scott Wooldridge

ARP4 - Project 1

Regional Climate Scenarios



Key objectives:

- Hydrodynamic model at whole of GBR scale
- Demonstrate proof of concept of the GBR model for wetseason dynamics
- Assess suitability of sub-grid parameterization schemes appropriate for application within finite difference models

(talks by Richard Brinkman and Robin Beaman)

ARP4 - Project 2

Early warning and assessment system for thermal stress on the GBR

Key Objectives:

- Climate change and projections for net annual growth rates.
- Oceanography, bleaching and higher trophic effects (talks by Brad Congdon, and Ray Berkelmans)
- Heritability and genetics (talk by Petra Souter)

Project 3

Resilience of coral reef ecosystems to climate change

Two major components:

- Resilience of coral assemblages to climate change (talk by Gergely Torda yesterday)
- Resilience of fish assemblages to climate change (talk by Morgan Pratchett)

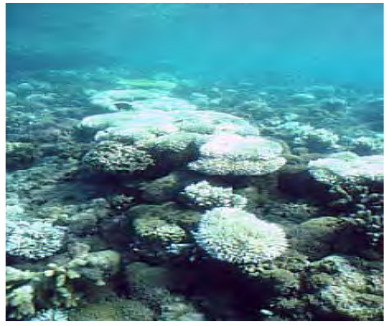
ARP4 - Project 4

Tools to support resilience-based management in the face of climate change

Specific research questions

Socio-economic

• What are the risks to and resilience of the GBR scial-ecological system (SES) to climate change (talk by Colette Thomas)



Biophysical

•Develop integrative knowledge for prioritising management response to climate change (talk by Scott Wooldridge)

GBR - Climate Change Program Contributions

- 9 talks
  - Berkelmans et al.
  - Brinkman et al.
  - Beaman
  - Pratchett et al.
  - Torda et al.
  - Souter et al.
  - Congdon et al.
  - Thomas et. al.
  - Wooldridge