

Appendix A: Lamington Workshop Agenda

Satellite monitoring of reef vulnerability in a changing climate

Sponsored by:

*NOAA Coral Reef Watch
and
University of Queensland, Centre for Marine Studies*

Agenda

Venue: O'Reilly's, Lamington National Park (www.oreillys.com.au)

Note to Readers: An * indicates that an Author contributed to the presentation but did not attend the workshop.

Note to Authors: *Your talks are there to prime the audience for the group discussions at the end of your session, they are not intended to be a normal conference talk about your work, so please leave plenty of room at the end of your talk for questions. I expect that those who have 30 minutes allocated to their talks will talk for between 15 and 20 minutes, no longer please.*

Monday 15th February

9:00am – 9:10am

Welcome: Why are we here, what outcomes do we expect to get?

Mark Eakin and Ove Hoegh-Guldberg

1) Preliminaries:

9:10am – 9:35am

Managing coral reefs 101

Randy Kosaki

Appendix A: Lamington Workshop Agenda

9:35am – 10:00am

Remote Sensing 101

William Skirving, Kelvin Michael

2) Introduction:

10:00am – 10:30am

Vulnerabilities and resilience of coral reefs in a changing climate

Ove Hoegh-Guldberg, Roberto Iglesias-Prieto

10:30am - 11:00am - Morning tea

11:00am – 11:30am

Managing coral reefs in a changing climate

Billy Causey, Paul Marshall*

11:30am – 12:00pm

Remote sensing coral reef environmental stress

Mark Eakin, Dwight Gledhill*, Gang Liu

12:00pm – 12:30pm

U.S. coral reef managers' requests for remote sensing products

Jessica Morgan

12:30pm – 1:30pm - Lunch

1:30pm – 2:00pm

Group discussion: William Skirving – facilitator

Brainstorming for ideas for new remote sensing products

3) Ground-based monitoring:

2:00pm – 2:30pm

Monitoring the biological state of coral reefs: current technology

Hugh Sweatman, Rusty Brainard*

2:30pm – 3:00pm

In situ monitoring of environmental coral stress

Al Strong, Jim Hendee*, Craig Steinberg, Rusty Brainard*

3:00pm – 3:30pm - Afternoon tea

3:30pm – 4:00pm

Use of coral stress monitoring for management

Billy Causey

Appendix A: Lamington Workshop Agenda

4:00pm – 5:00pm

Group discussion: *Billy Causey - facilitator*

Integrating *in situ* measurements with remote sensing to provide improved tools for management

Tuesday 16th February

4) Use of models:

9:00am – 9:30am

Use of weather forecast and climate models to predict coral vulnerability

*Claire Spillman, Mark Eakin, Simon Donner**

9:30am – 10:00am

Integrating remote sensing data into ecosystem models to predict vulnerability

Mark Eakin, Pete Mumby, Ian Elliott**

10:00am – 10:30am

Group discussion: *Scott Heron – facilitator*

How can use of models improve management of coral reefs?

10:30am – 11:00am - *Morning tea*

11:00am – 11:30am

Group discussion: *Scott Heron – facilitator*

How can use of models improve management of coral reefs?

11:30am – 12:00pm

Group discussion: *Mark Eakin – facilitator*

Improving links between science and management

5) Environmental variables:

12:00pm – 12:40pm

What are the key environmental variables that contribute to coral vulnerability and resilience?

Roberto Iglesias-Prieto, Susana Enriquez

- 1) Temperature
- 2) Light (PAR, UV, *etc.*)
- 3) Water quality
- 4) Ocean chemistry (Ocean acidification)
- 5) Waves

12:40pm – 1:40pm - *Lunch*

6) How can satellites be used to monitor these variables?

1:40pm – 2:00pm

SST: Heat stress leading to bleaching and coral disease (current CRW, ReefTemp and disease algorithms)

Scott Heron, Al Strong

2:00pm – 2:20pm

Light and SST: Combining heat stress and light to produce a new bleaching product

William Skirving, Tim Burgess, Susana Rodriquez, Roberto Iglesias-Prieto

2:20pm – 2:30pm

Water quality: What is the current capability of ocean colour products in shallow coastal waters?

Arnold Dekker

2:30pm – 2:40pm

What is being done to make ocean colour products work over reefs?

Scarla Weeks

2:40pm – 3:00pm

The future of ocean colour products on coral reefs: what can we expect in the near future?

Peter Fearn, Arnold Dekker

3:00pm – 3:30pm - Afternoon tea

3:30pm – 4:00pm

Monitoring coral-surface UV & light from Space

Kelvin Michael, John Hedley, William Skirving*

4:00pm – 5:00pm

Group discussion: *Arnold Dekker – facilitator*

Use of water quality and light over coral reefs for future management products

Wednesday 17th February

7) Other considerations:

9:00am – 9:30am

Potential links between nutrients and bleaching

Scott Wooldridge

Appendix A: Lamington Workshop Agenda

9:30am – 10:00am

Oceanography, mechanical damage and wave-induced upwelling

Scott Heron, Craig Steinberg

10:00am – 10:30am

The zooxanthellae story: Does it matter for management? How can satellites help?

Ray Berkelmans, Madeleine van Oppen*

10:30am – 11:00am - Morning tea

11:00am – 11:30am

What are the key environmental variables for management of coral reefs? What aspects of the resultant stress would be useful to be able to monitor, why?

Randy Kosaki

11:30am – 12:30pm

Group discussion: *Tyler Christensen – facilitator*

Brainstorming session: What novel uses of any environmental variables can assist management of coral reefs?

12:30pm – 1:30pm - Lunch

8) New approaches:

1:30pm – 2:00pm

Advances in machine learning and how this could be used to develop new and improved satellite products

Vic Ciesielski, Tim Burgess and William Skirving

2:00pm – 2:30pm

Modelling bleaching, climate change and coral vulnerability: a holistic view

Sophie Dove, Ken Anthony*

2:30pm – 3:00pm

Can we develop other useful satellite-based management tools: a sea grass algorithm?

Susana Enriquez, John Hedley*, William Skirving

3:00pm – 3:30pm – Afternoon tea

3:30pm – 4:00pm

Managing coral reefs: aspects other than those directly related to corals

Billy Causey

4:00pm – 5:00pm

Group discussion: *Mark Eakin – facilitator*

Is there too much emphasis placed on corals and coral health? Do we need to be providing non-coral specific tools to assist in management of coral reefs? Brainstorming on what those tools might be

Thursday 18th February

9) Product delivery and tools:

9:00am – 10:00am – Free time for collaborative talks and/or looking around the area

10:00am – 10:30am – *Morning tea*

10:30am – 11:00am

Web-based delivery of CRW products

Gang Liu, Tyler Christensen

11:00am – 11:30am

Delivering Tools to Managers Through Trainings and Workshops: Taking the Next Steps

Britt Parker, Tyler Christensen, Paul Marshall* Christy Loper*

12:00pm – 12:30pm

Development of a new GIS-style delivery tool

Jane Hunter, Ove Hoegh-Guldberg, Rusty Brainard*

12:30pm – 1:30pm - *Lunch*

1:30pm – 2:30pm

Group discussion: ***Randy Kosaki – facilitator***

From the management perspective: what are examples of good product delivery, what could/should be developed to help managers ingest satellite products? How to best help managers with uptake of the use of satellite products?

10) General discussion and wrap-up:

2:30pm – 3:00pm

Group discussion: ***William Skirving – facilitator***

Examples of 11th hour management decisions that need to be made with little to no scientific data support

3:00pm – 3:30pm - *Afternoon tea*

Appendix A: Lamington Workshop Agenda

3:30pm – 4:00pm

Group discussion: *Roberto Iglesias-Prieto – facilitator*

What other variables/tools/information would be useful for managing coral reefs? *e.g.*, measures of mechanical damage; other aspects of ocean acidification, bleaching, disease, *etc.*; predictive tools; *etc.*

4:00pm – 5:00pm

Wrap-up

Mark Eakin