

Averting the coral reef crisis: Partnerships in the Great Barrier Reef

Paul Marshall, PhD

Great Barrier Reef Marine Park Authority

Dave Orgill

Queensland Parks & Wildlife Service

Alan Wallish

Association of Marine Park Tourism Operators
& Passions of Paradise

The Nature Conservancy 

SAVING THE LAST GREAT PLACES ON EARTH



Australian Government

Great Barrier Reef
Marine Park Authority

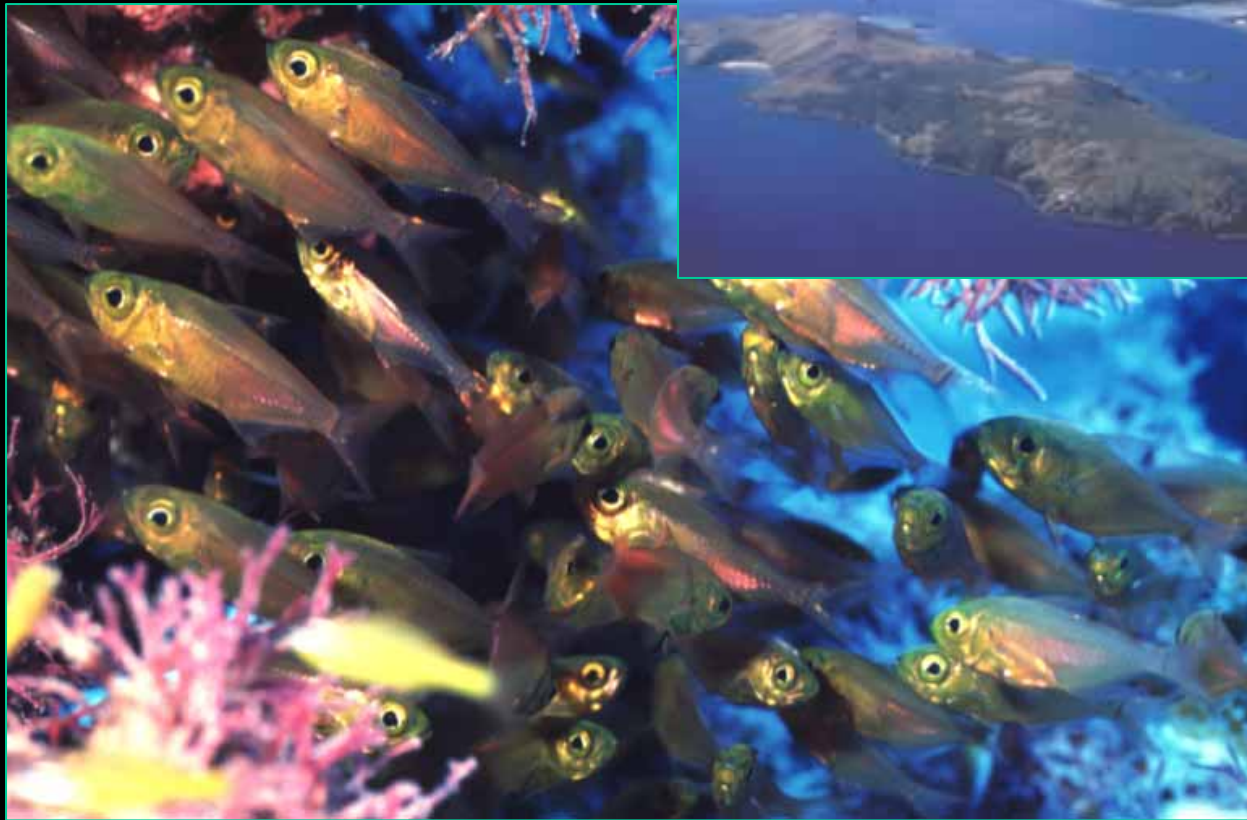
Florida Reef Resilience Program

Great Barrier Reef



◆ 124,000 miles² ◆ 1380 miles long ◆ Up to 150 miles wide

Great Barrier Reef



◆ 2000 reefs ◆ 900 islands

Great Barrier Reef

^{2nd}
World's largest
marine
protected area
World Heritage
Area
One system of
management



Change: global consensus

Scientific Consensus



Political Consensus

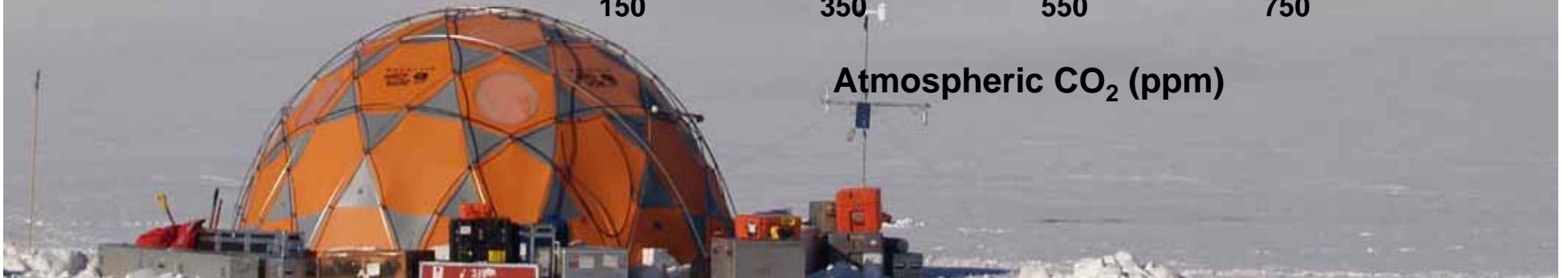
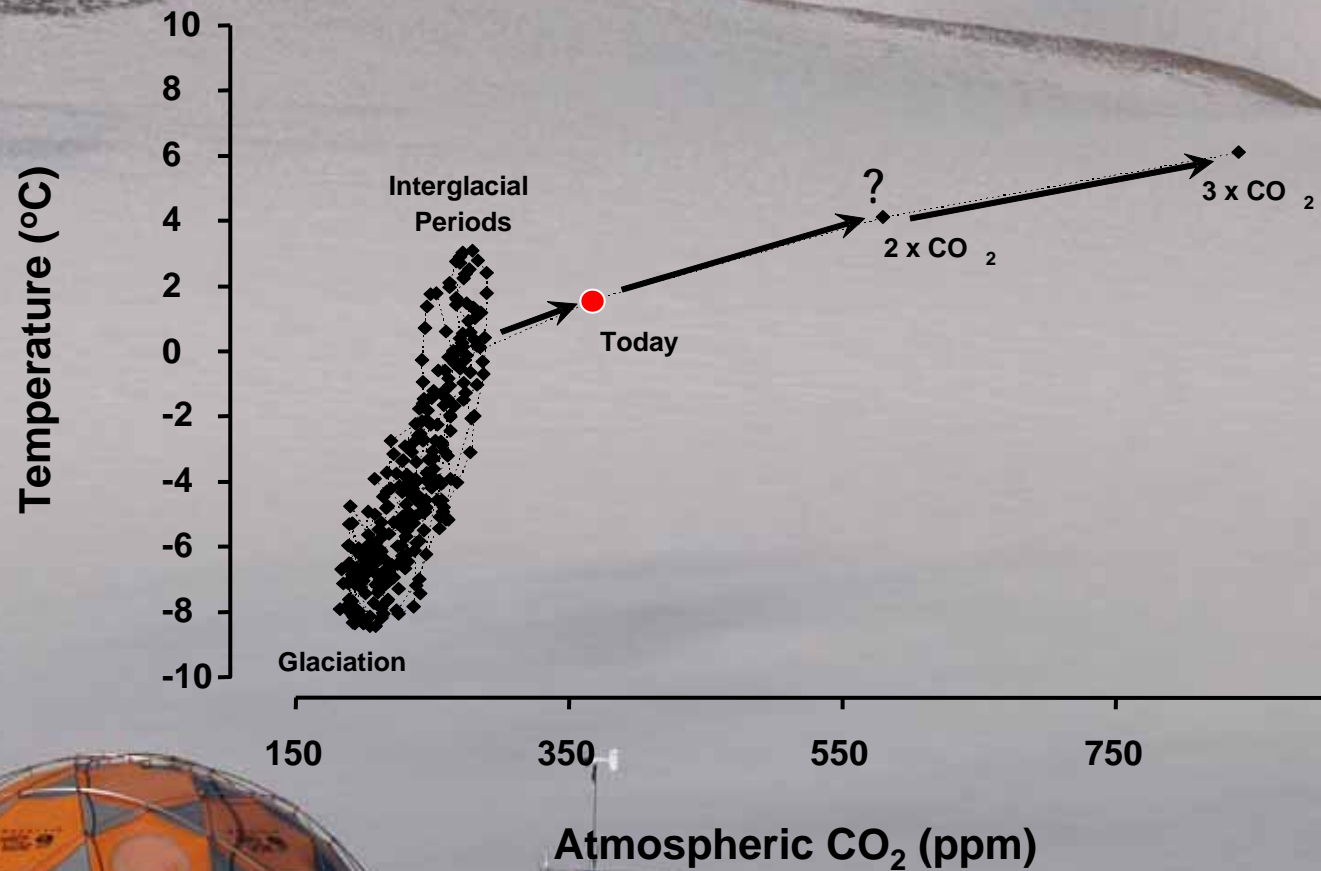


G8

USA Canada France Japan
UK Germany Russia Italy

**USA, China, Australia, UK,
France, Russia, India,
Italy, Japan, Germany, Brazil**

Change: outside the envelope

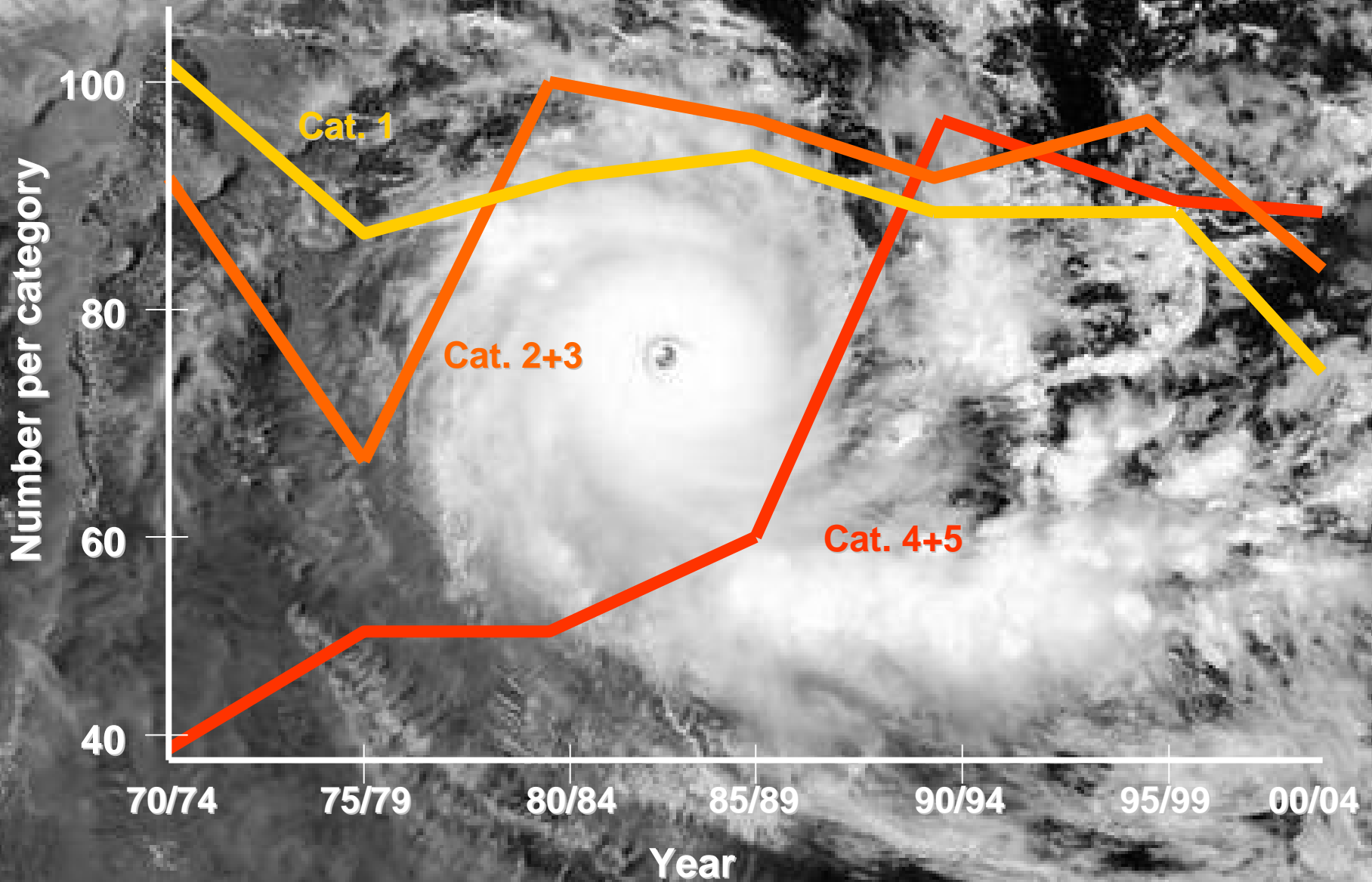


Change: happening now

Hottest years since 1861

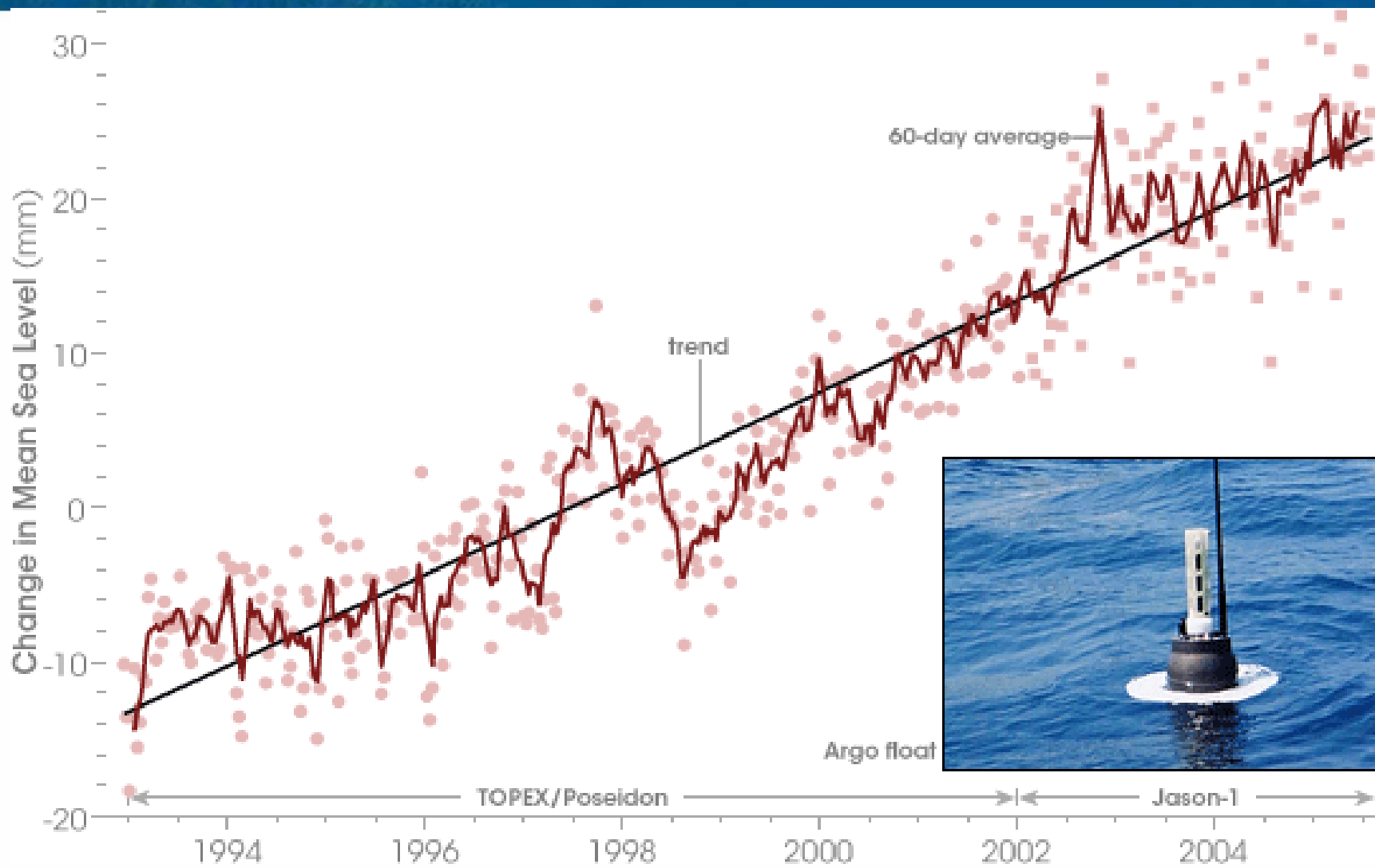
1 st	2005
2 nd	1998
3 rd	2002
4 th	2007
5 th	2003
6 th	2004

Number of intense hurricanes



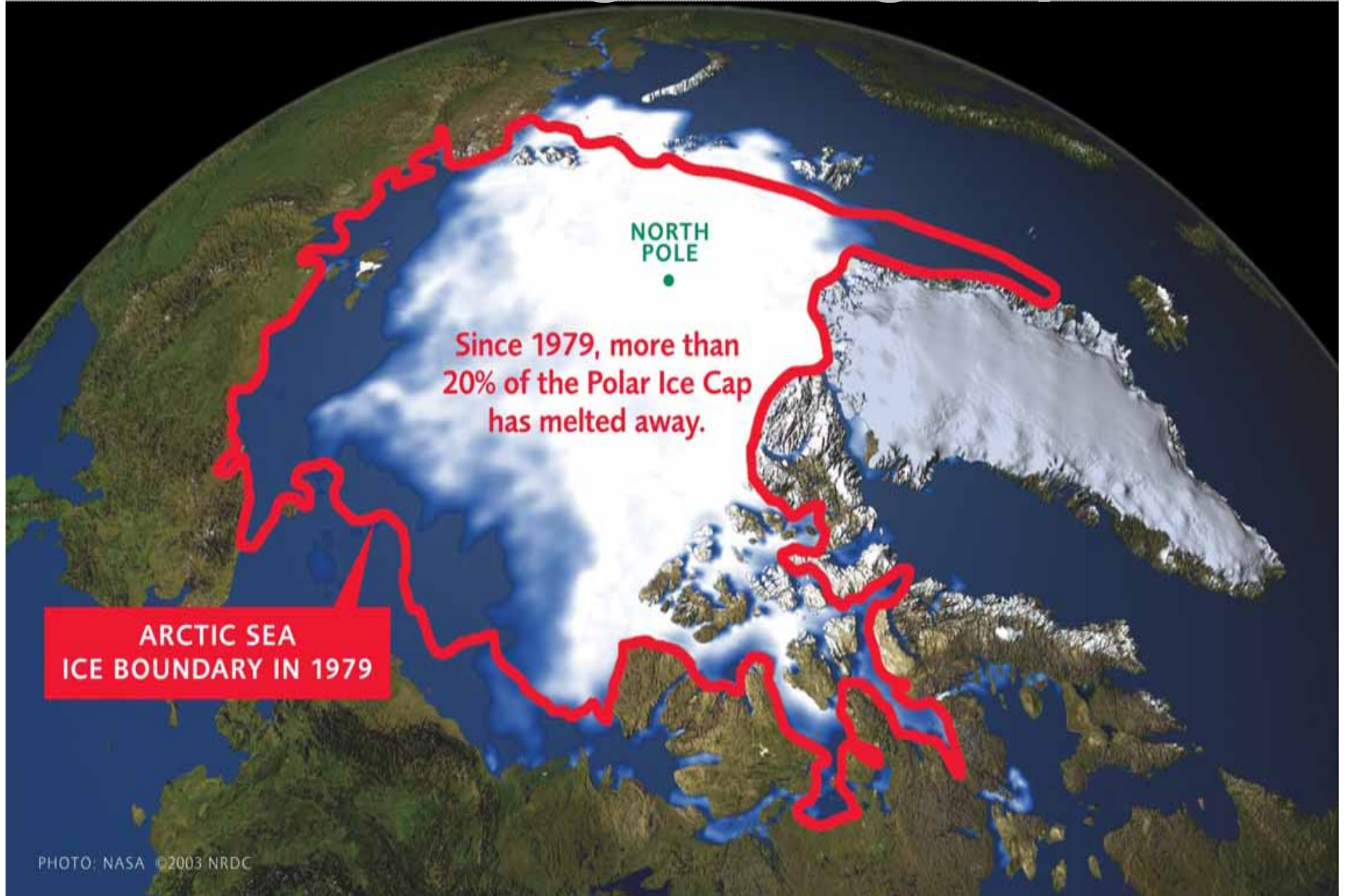
Global sea level rise

Climate Change Group: GBRMPA

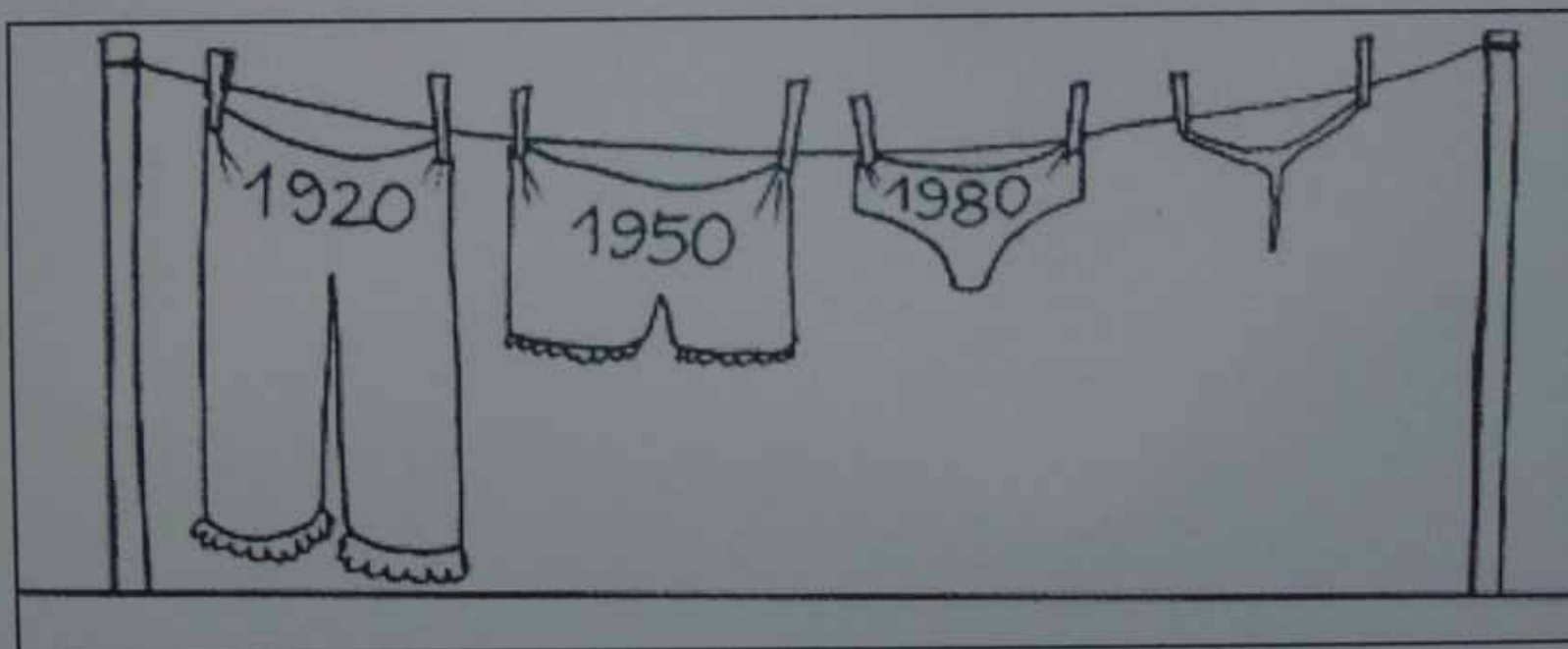


Small changes - big impact

Climate Change Group: ©BRMPA



Evidence of global warming



Climate change issues for coral reefs

Storm frequency & intensity

Precipitation, drought & runoff

Changing circulation

Sea level rise

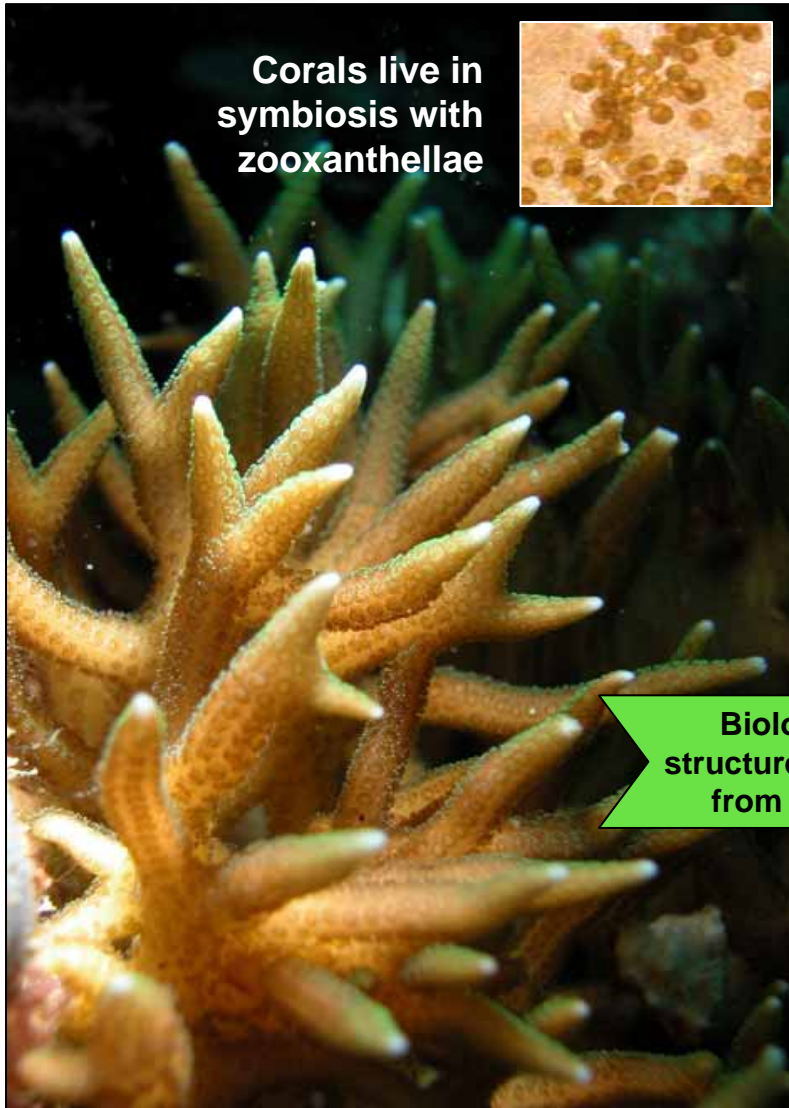
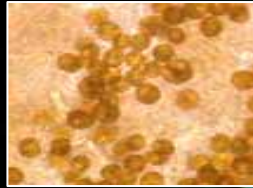
Sea temperature

Ocean chemistry



Critical temperature sensitivity

Corals live in symbiosis with zooxanthellae

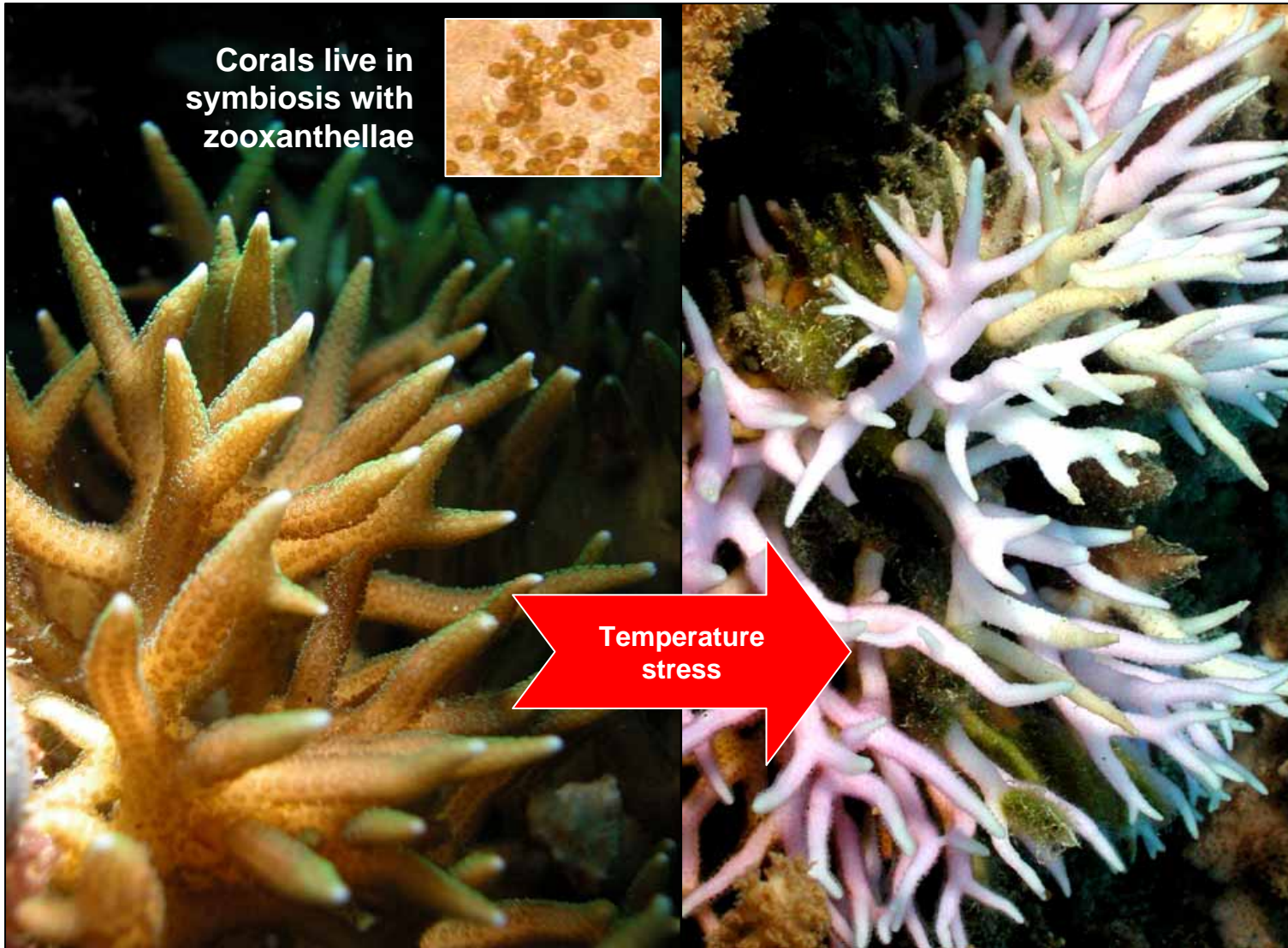
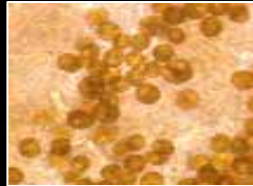


Biological structures visible from space



Critical temperature sensitivity

Corals live in symbiosis with zooxanthellae



Extreme vulnerability of corals



Extreme vulnerability of corals

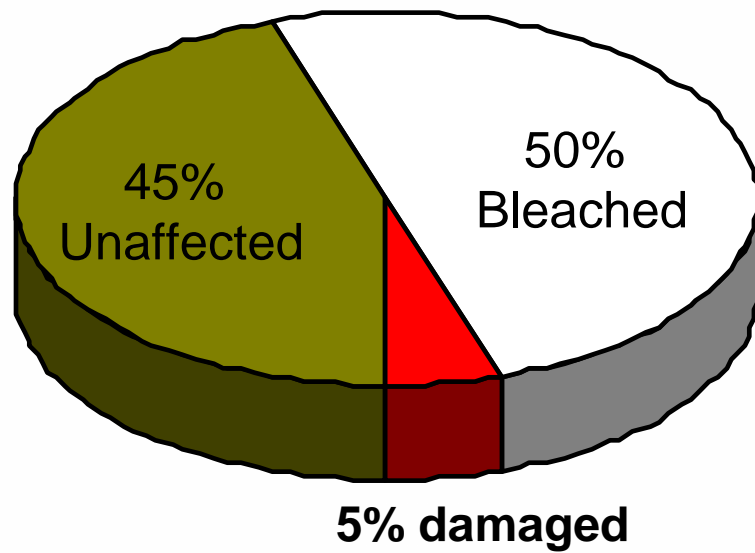


Extreme vulnerability of corals

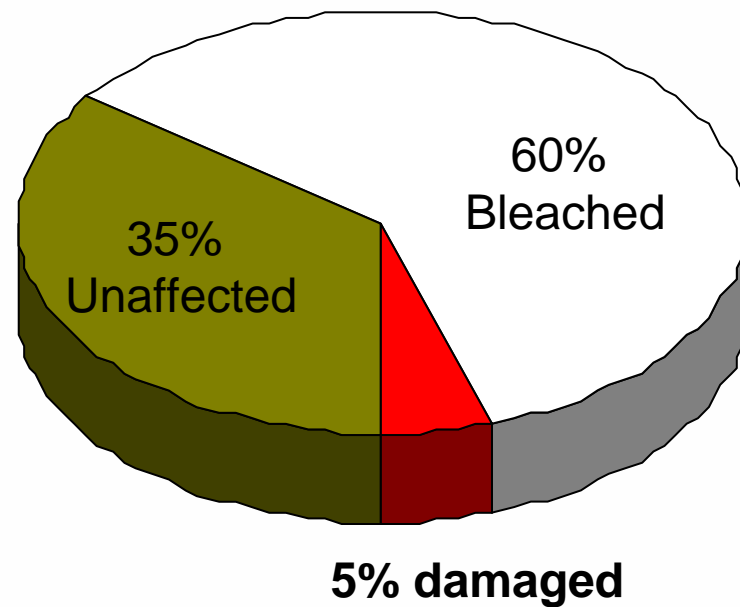


Observed impacts on the GBR

1998



2002



Observed impacts on the GBR

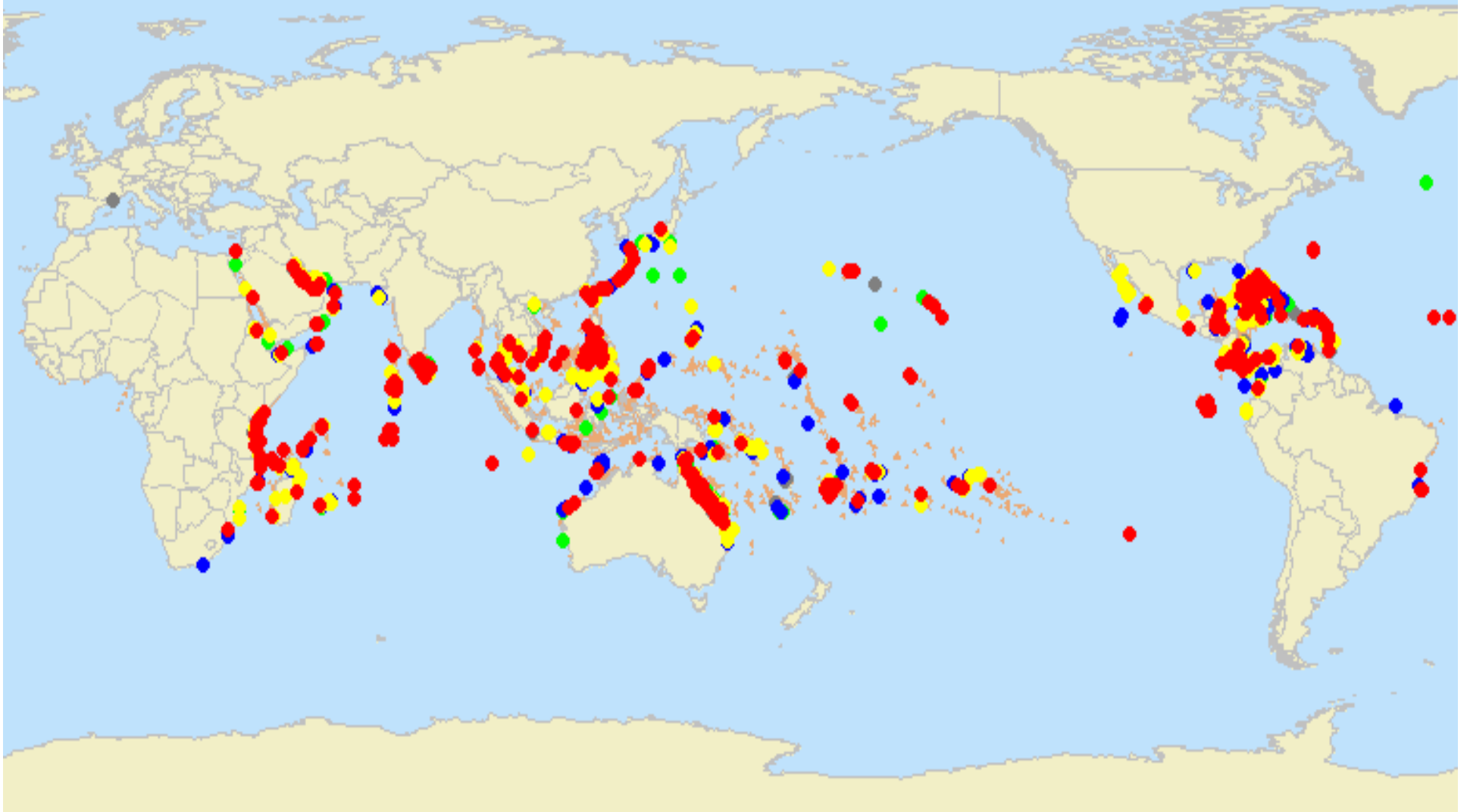
2006

Keppel Islands

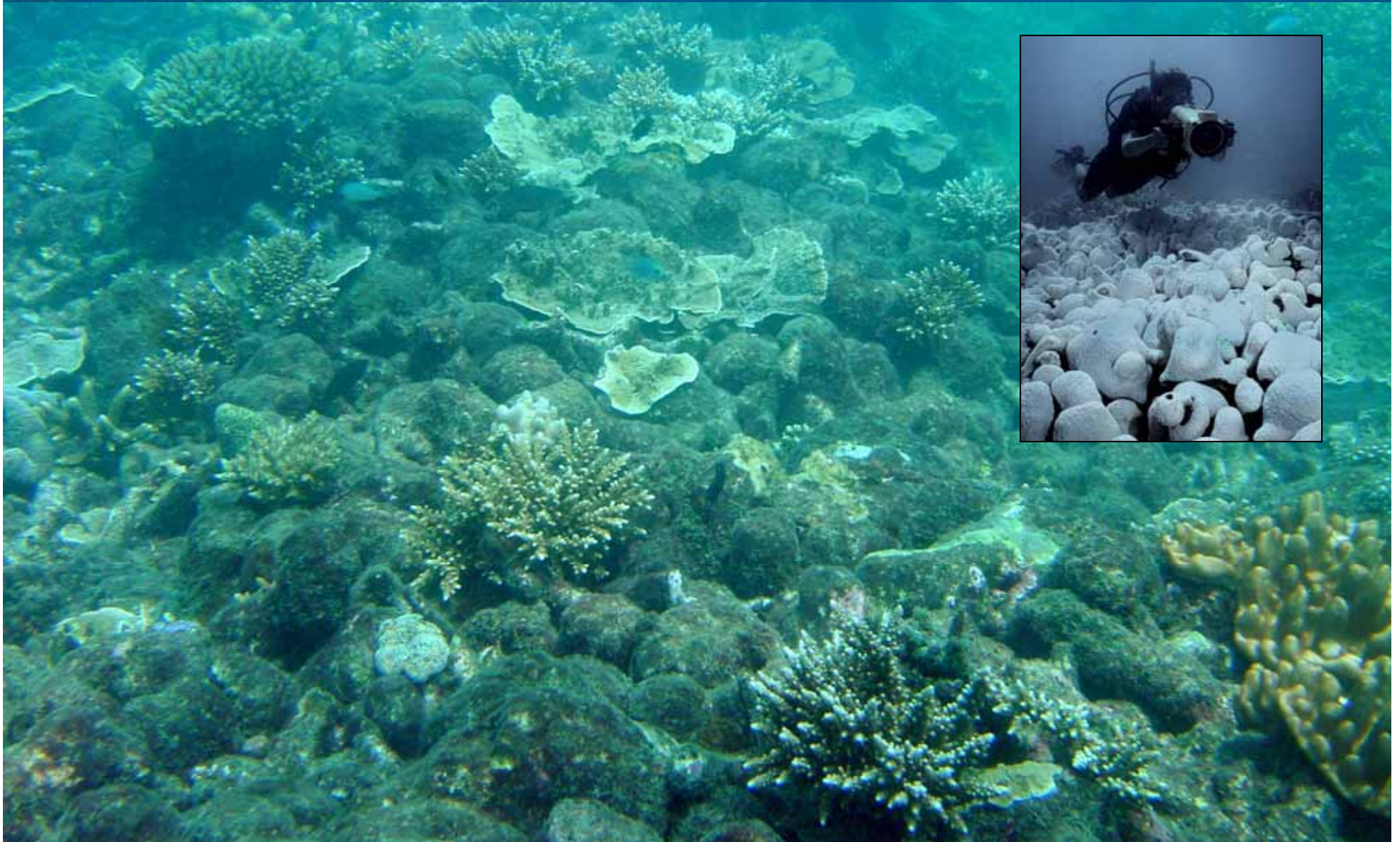
40% corals killed



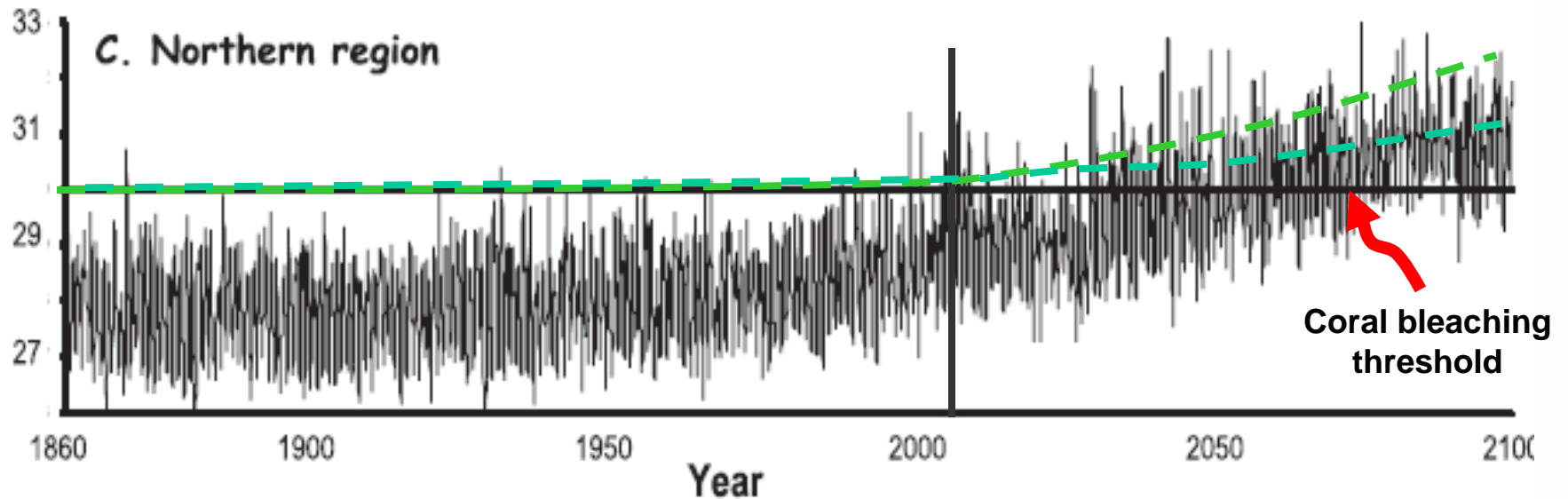
Global impact – 16% of reefs damaged



Recovery can take decades

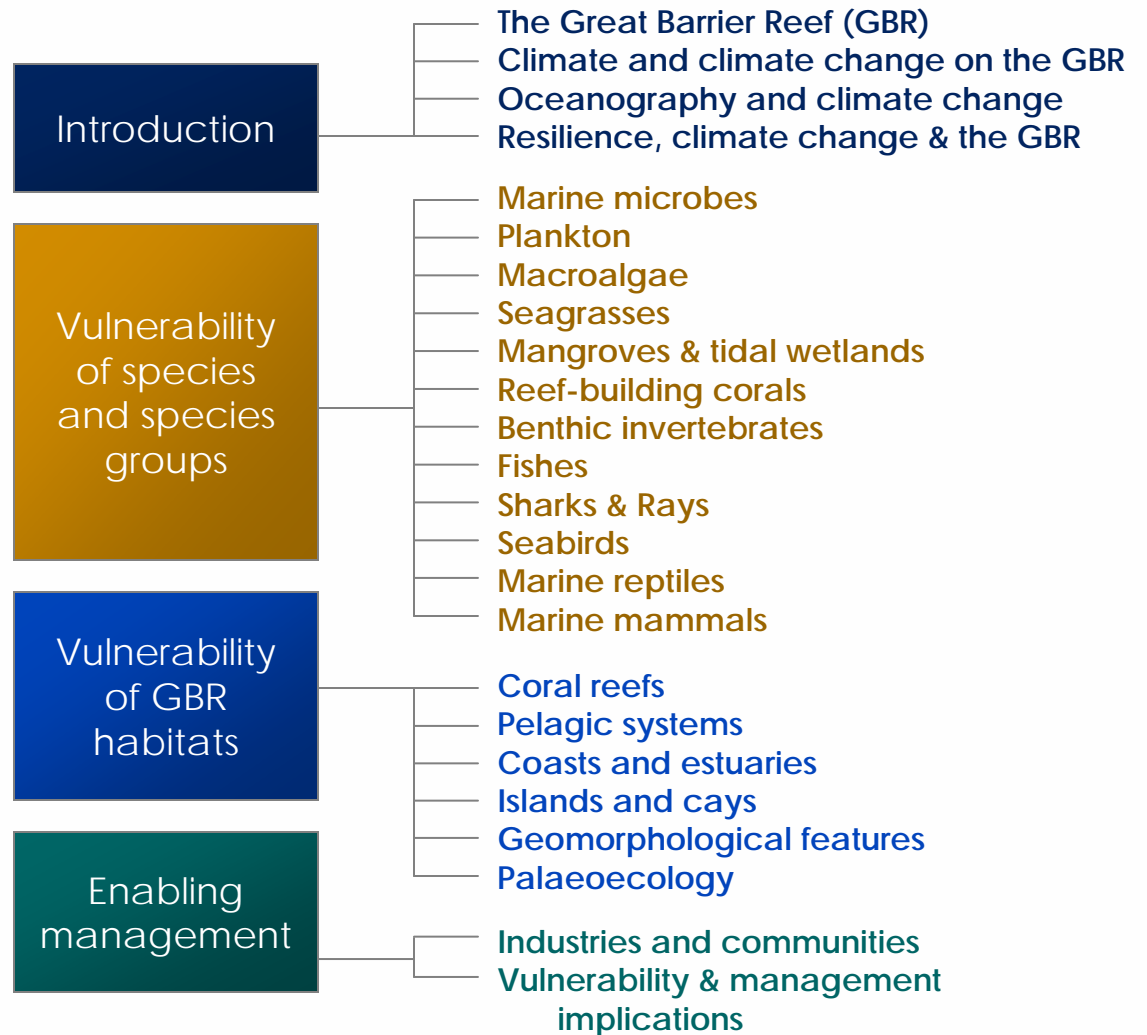
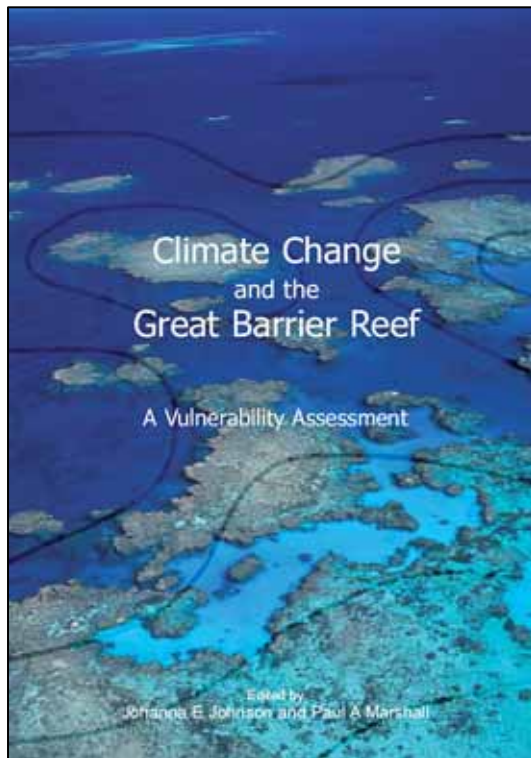


A bleached future for reefs

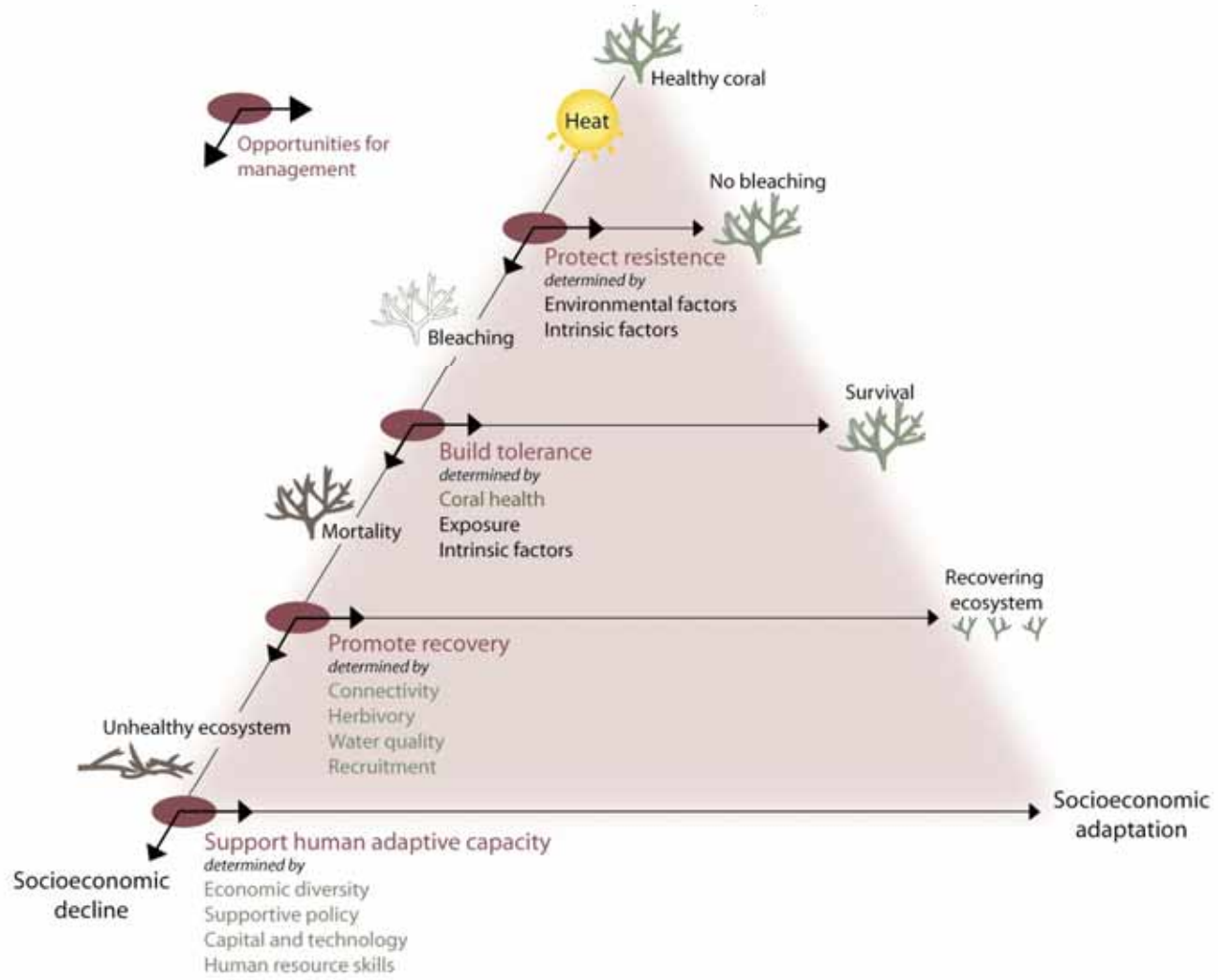


Doubling of CO₂ - Hoegh-Guldberg (1999)

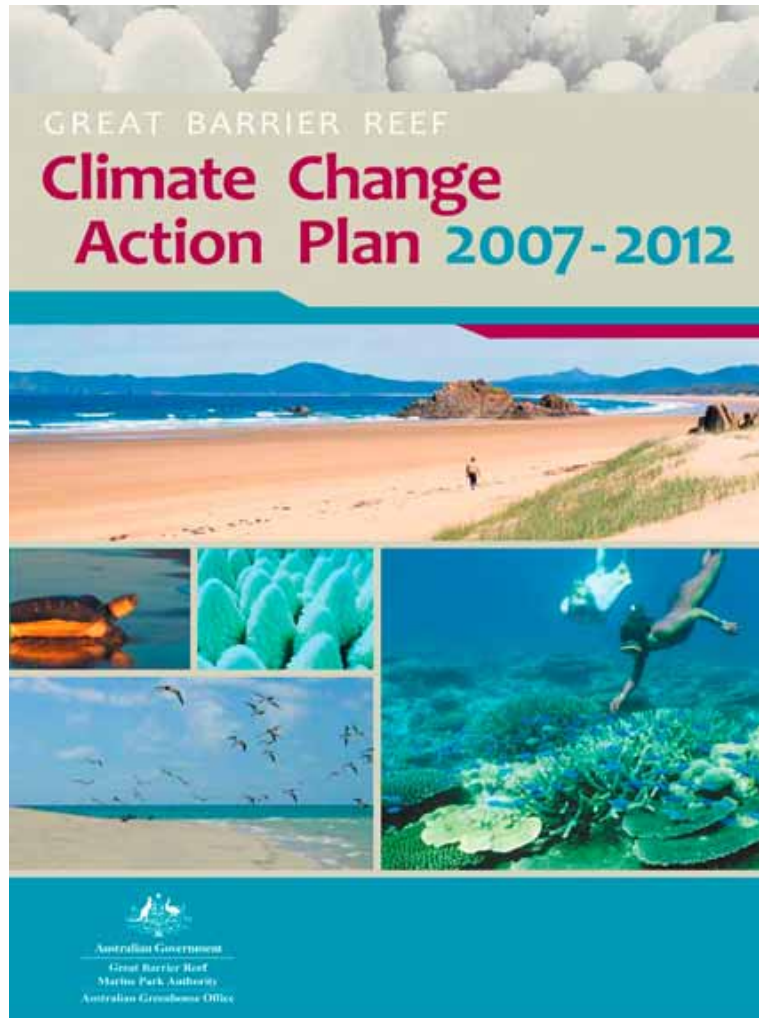
Assessing system vulnerability



Management response framework



Responding to climate change



Goal:

To increase chances of the Great Barrier Reef coping with climate change

How:

- Targeted science
- A resilient GBR ecosystem
- Adaptation of industries and communities
- Reduced climate footprints

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