



Impacts of Climate Change on Coral Reefs

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CPSG101 Science & Global Change First Year Colloquium II

April 17, 2018



Introduction

- Coral reefs are heavily affected by climate change, causing reefs to die out, changing the biodiversity and impacting humans as well.



Impact on Humans

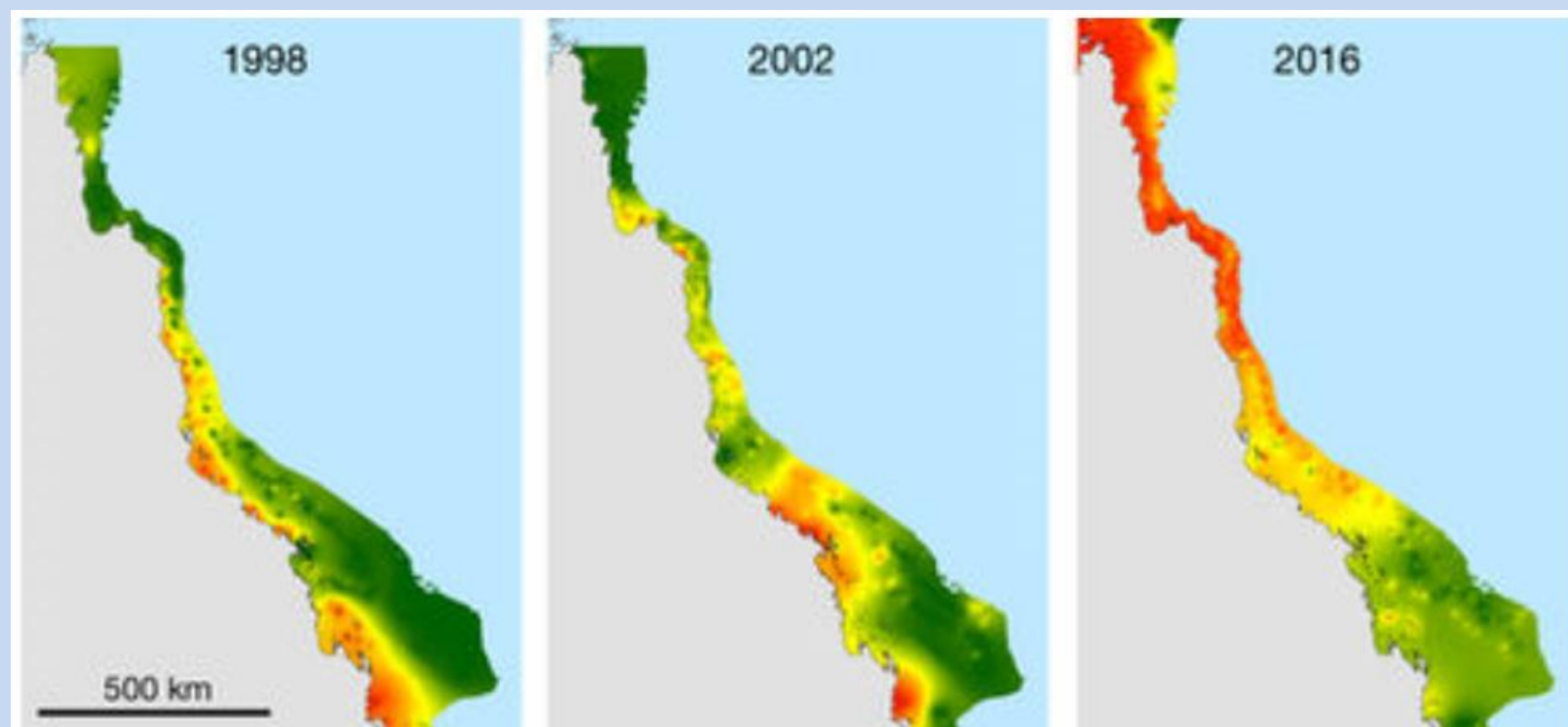
- Tourism and recreation associated with coral reefs generate around \$29.3 billion annually. (4)
- In 2015, the Caribbean lost approx. \$870 million from losses in fisheries, dive tourism, and additional shoreline protection services. (4)
- It was found that there is a correlation between tourism and the coral reefs condition. Damage in coral reefs negatively affect tourism. (4)
- Projected total annual loss worldwide around \$3.72 - \$23.78 billion. (4)

Impact on Biodiversity

- Climate change causes large predatory fish, in coral reefs, to shrink in order to adapt to the increasing temperatures of the water, due to smaller fish being less resistant to the changes. (3)
- The species most at risk are one at lower latitudes that are already reaching the thermal limit. (2)

Coral Bleaching

- Caused by disruption of relationship of coral and algal symbionts due to thermal stress (1)
- Death of algae leads to loss of color and physical damage to reefs, results in increased coral mortality (1)
- Significant increase in number of reefs bleached, witnessed in Great Barrier Reef (Dark green represents <1% coral reefs bleached, Light Green represents 1-10%, Yellow represents 10-30%, Orange 30-60%, Red >60%)



- *Plectropomus leopardus* is an important predator in the Great Barrier Reef, and if it were to shrink even a fraction, the whole ecosystem would drastically change because it may no longer be able to eat the same prey it used to. (3)
- If the *P. Leopardus* shrinks, the population of these fishes would decrease because the females would have a hard time reproducing (3)

Conclusion

- In conclusion, within 100 years, a lot of biodiversity and the coral reef ecosystem will die out due to climate change. (2) This will eventually affect humans even more than it does now.

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