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INTERNATIONAL RESEARCH SYMPOSIUM Climate Change Adaptation in the Coastal Built Environment

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Feasibility study for integrated coastal management of Sosúa Beach, Dominican Republic

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Coastal Management and Engineering Group



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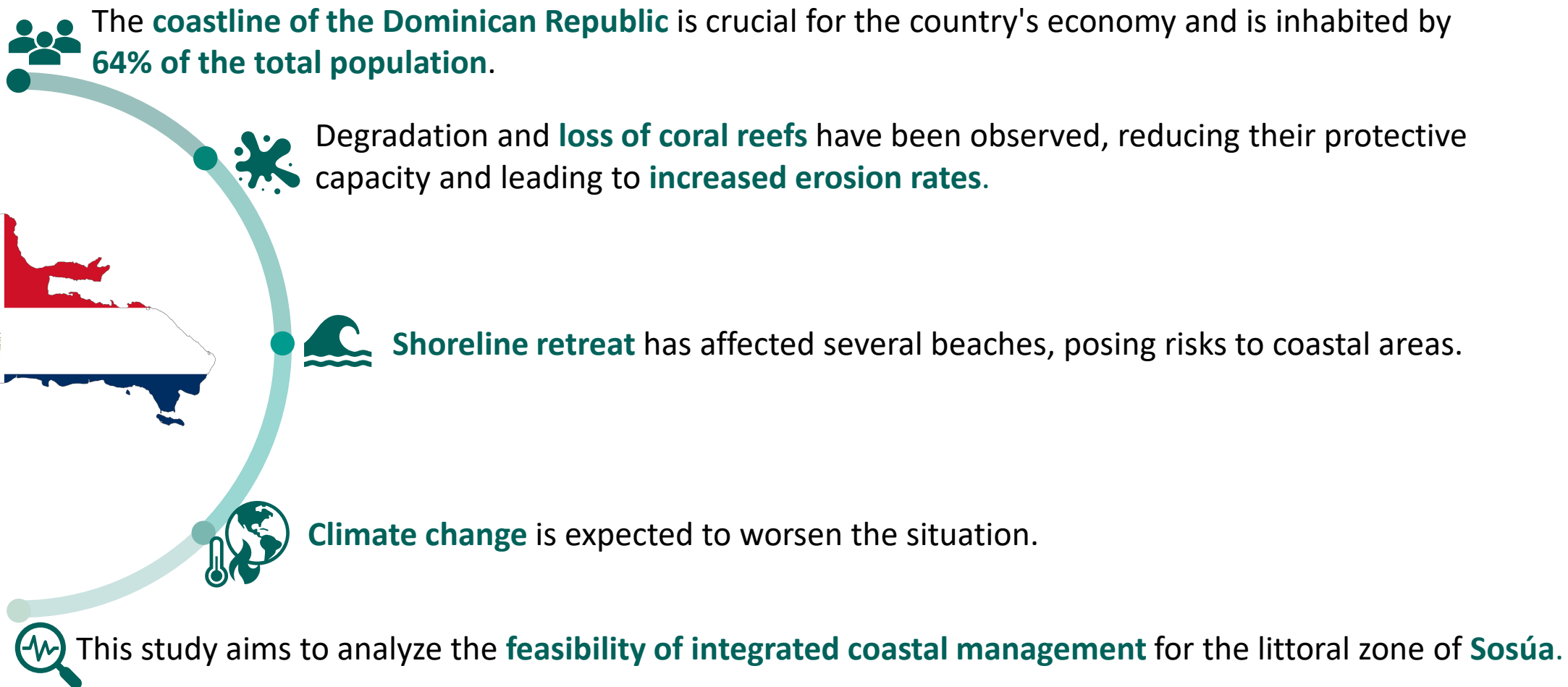
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Introduction



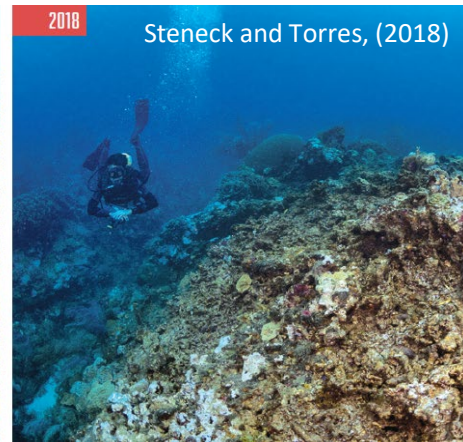
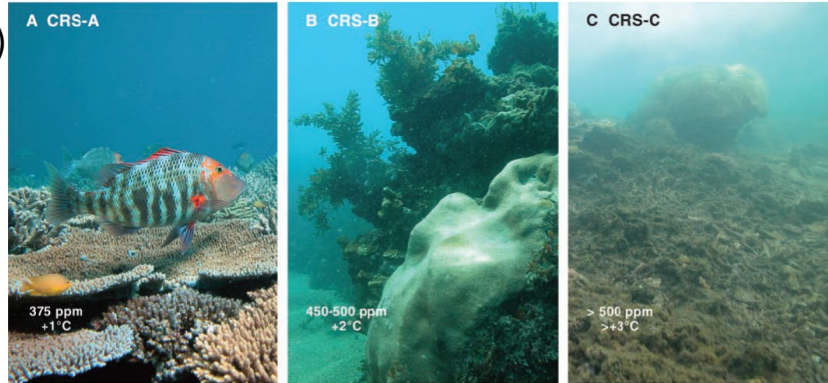
Introduction

Coral reefs loss

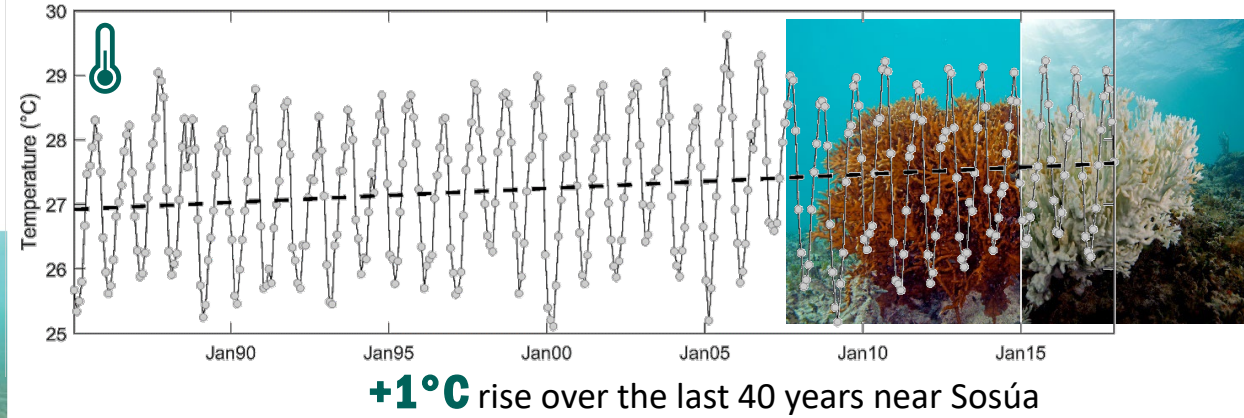
Hoegh-Guldberg et al. (2007)

→ corals severely affected

↑2°C

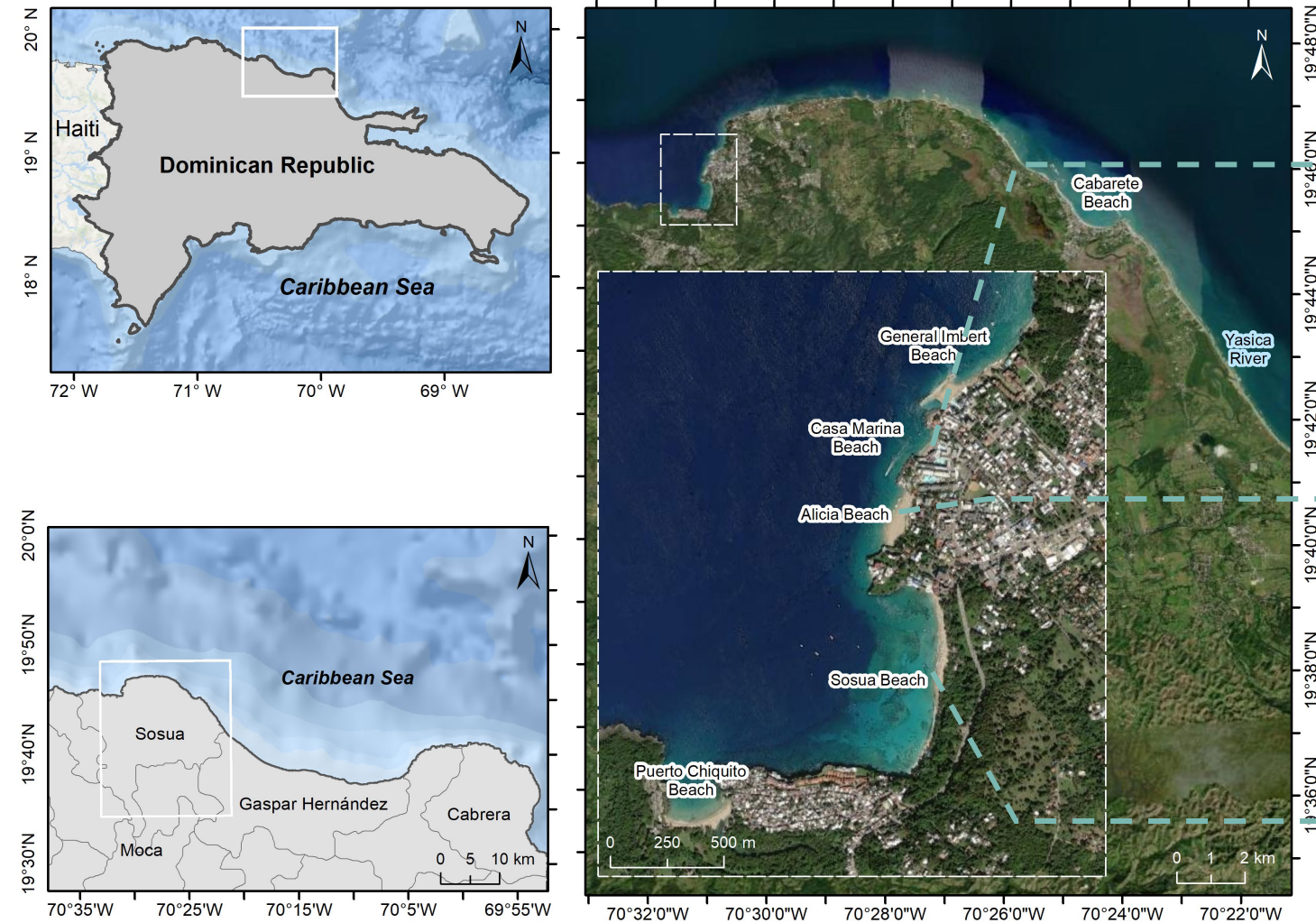


Effects of **hurricanes Irma and Maria (2017)**
on coral systems in the Dominican Republic



Coastal erosion

Study site



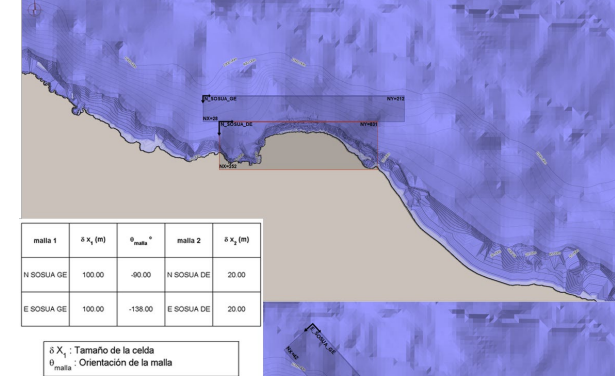
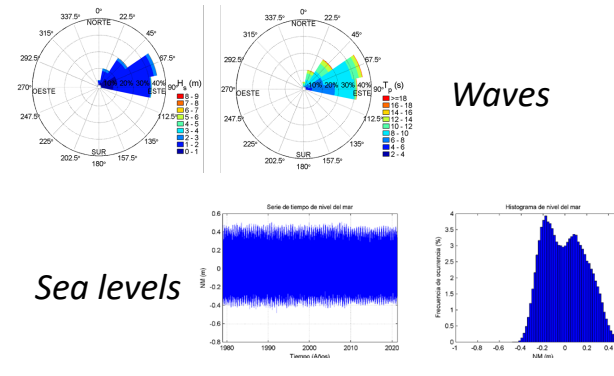
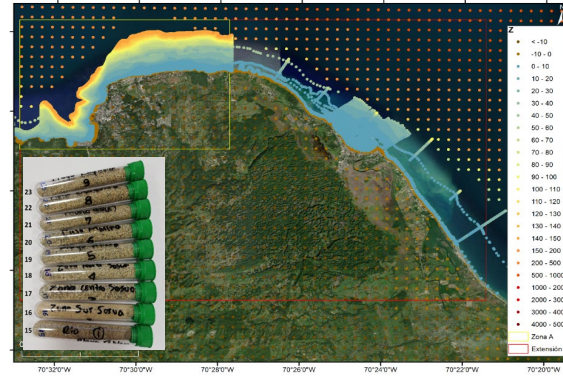
Methods

Workshop with stakeholders

Field campaigns

Marine climate

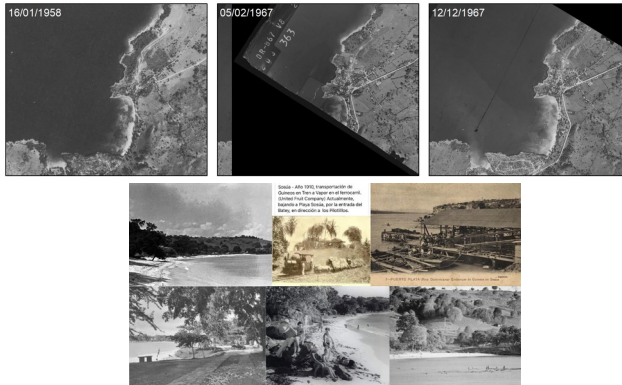
Numerical models



Historical data

Shorelines

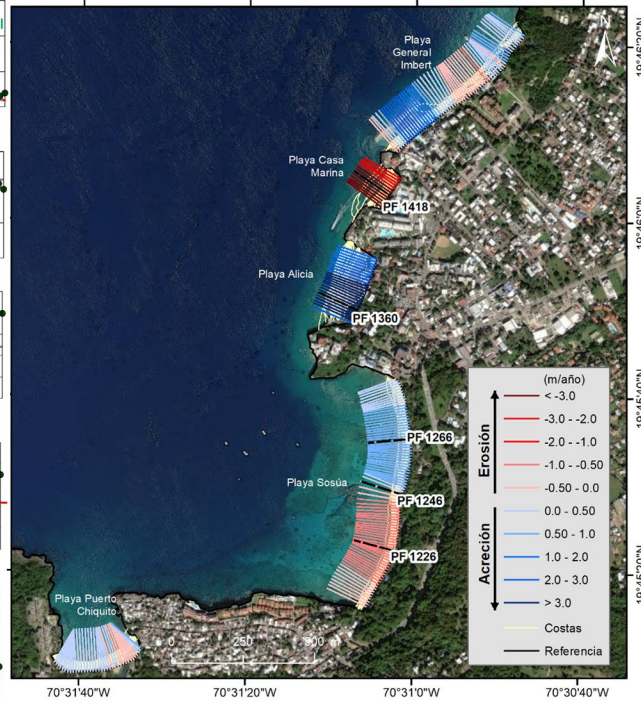
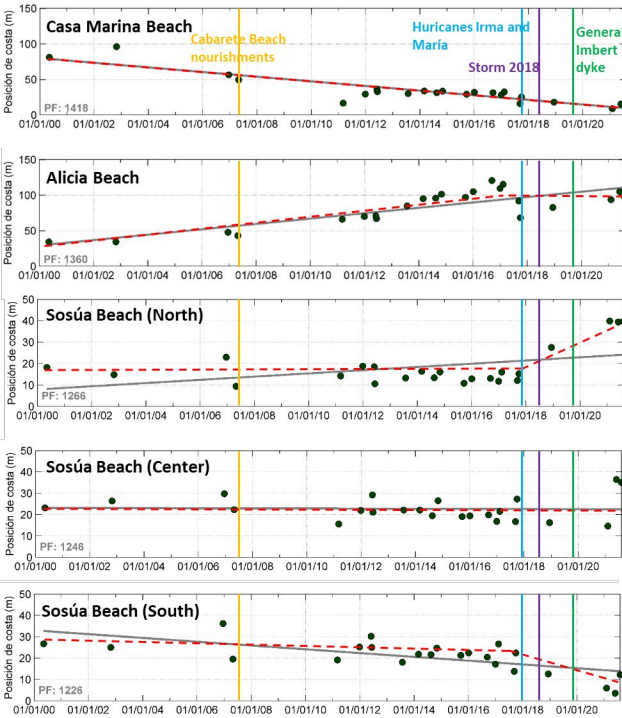
Hurricanes



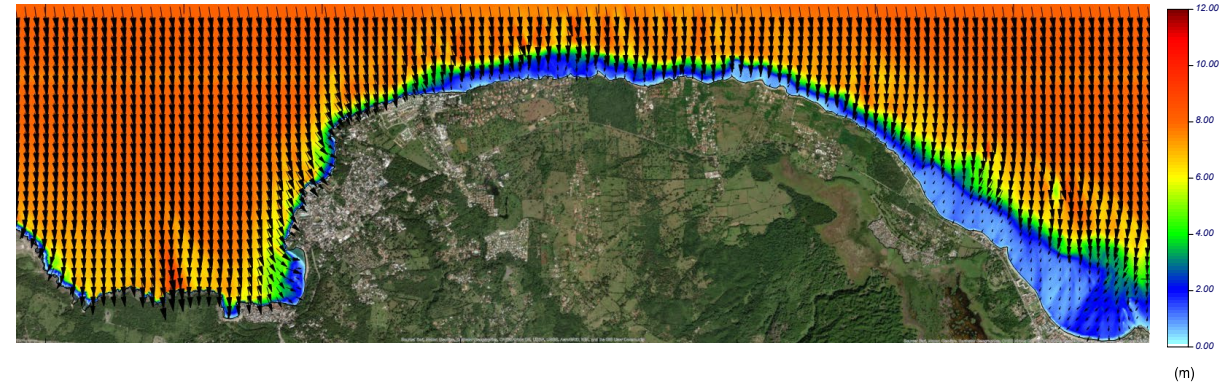
Results

MARINE DYNAMICS
e.g. Hurricane Maria (2017)
Hs=8.17 m, Tp=12.05 s, Dir=351.5°N

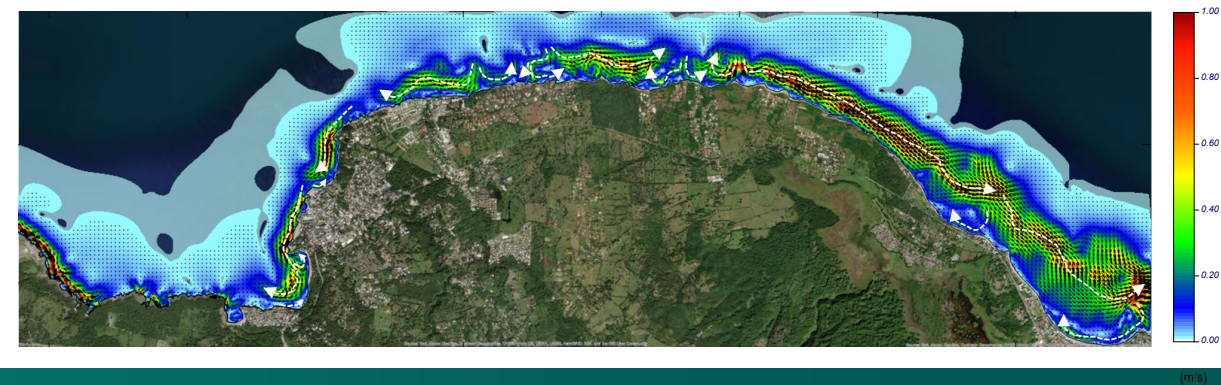
Shoreline evolution



Wave propagation



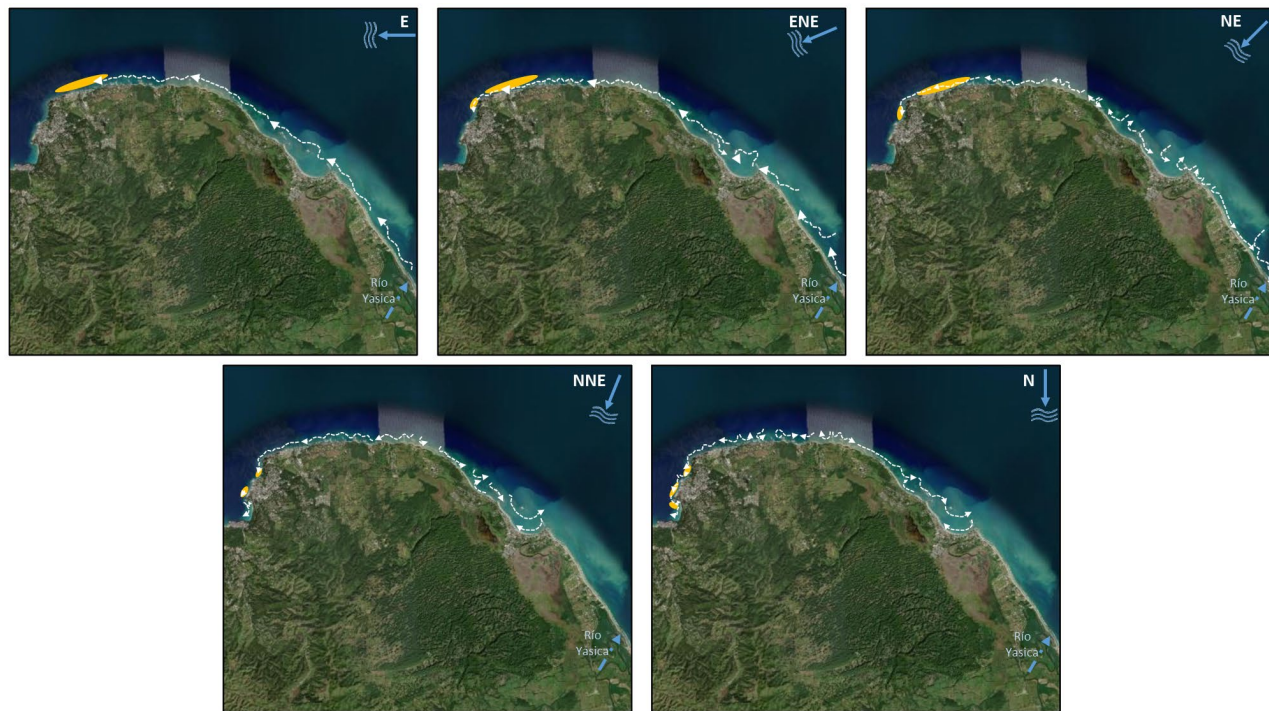
Currents systems



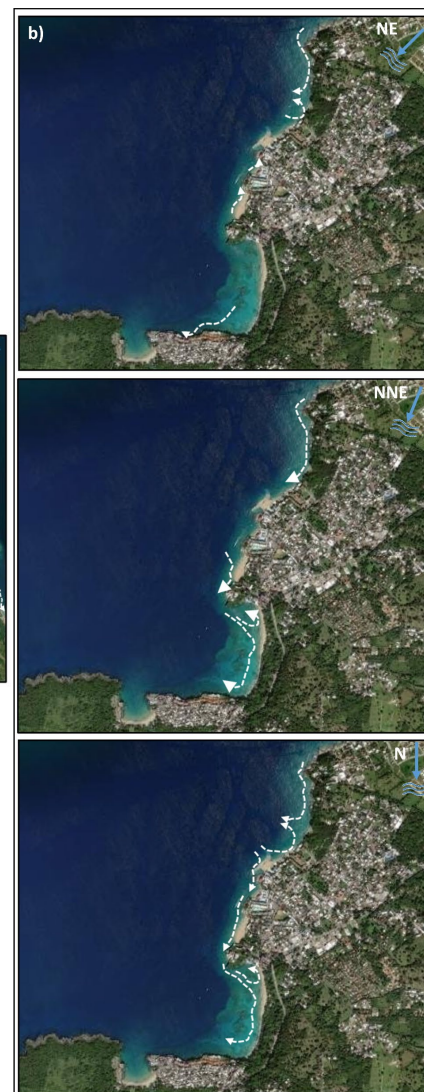
Results

Morphodynamic functioning model

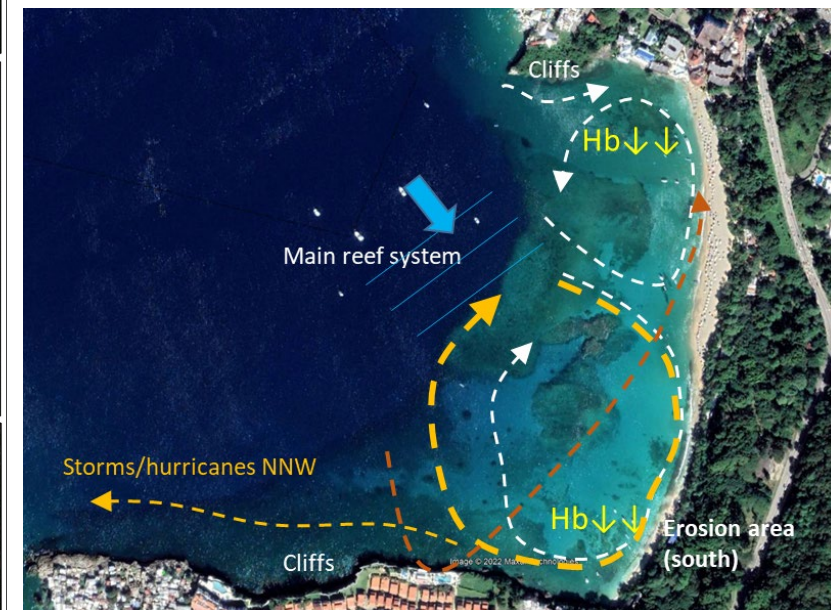
Large scale



Middle scale



Local scale



Conclusions

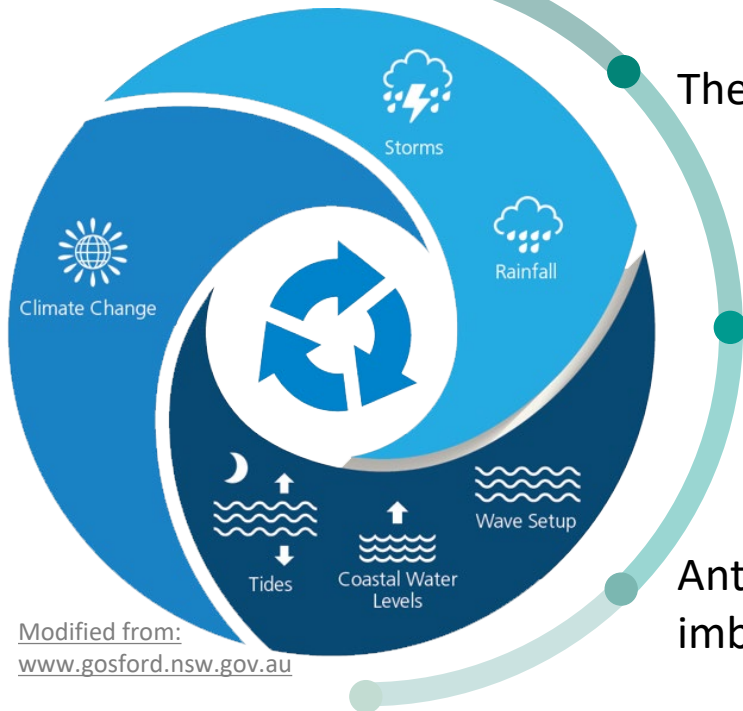
Wave and current dynamics in the study area are mainly influenced by the distribution and configuration of **nearby coral reefs**.

The **sediment transport is highly dynamic** and can change rapidly due to storm events.

At **Sosúa Beach**, different **morphodynamic processes** were observed in the northern and southern half.

Anthropogenic factors have degraded Sosúa Beach's coastal ecosystems, leading to sediment imbalances and **erosion in the southern zone**.

This holistic study allows **managers to propose actions** to stabilize and restore the beaches, as well as mitigating future **climate change risks**.



Modified from:
www.gosford.nsw.gov.au



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THANKS FOR YOUR ATTENTION

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