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The Allen Coral Atlas:
Coral reefs and identifying coastal zone threats from space

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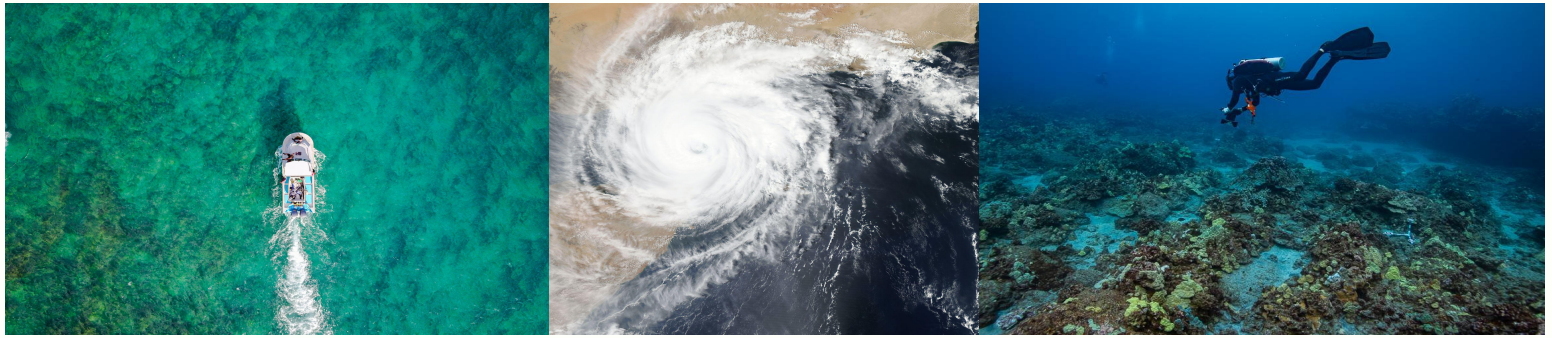
Global Connection

Why are coral reefs important?

More than **500 million people depend on reefs** for food, storm protection, and tourism income, worth $30+ billion annually

Without healthy coral reefs, the world faces an even **greater risk of significant marine species decline** and major disruption of coastal communities



Threats to coral reefs

- Rising ocean temperatures
- Sea level rise
- Acidification
- Pollution and sedimentation

Half of the world's coral reefs have died over the past 50 years, and 70-90% of the remainder could bleach and die by 2050...

...unless we do something.

State of the science and technology

No globally comparable, high-resolution, detailed reef maps

No real-time global information on reef change

Current reef monitoring methods are unscalable

Local efforts are under-supported by global programs

Beginnings of an Atlas

In late 2017, Paul G. Allen challenged his team at Vulcan to fill this data gap.

They convened an international group of experts who developed a novel idea: to map the world's tropical coral reefs from space.

The first globally consistent, high resolution map to set the baseline of coral reef habitat worldwide.

The first of its kind dynamic monitoring system to track coral bleaching as it occurs.

ALLEN CORAL ATLAS

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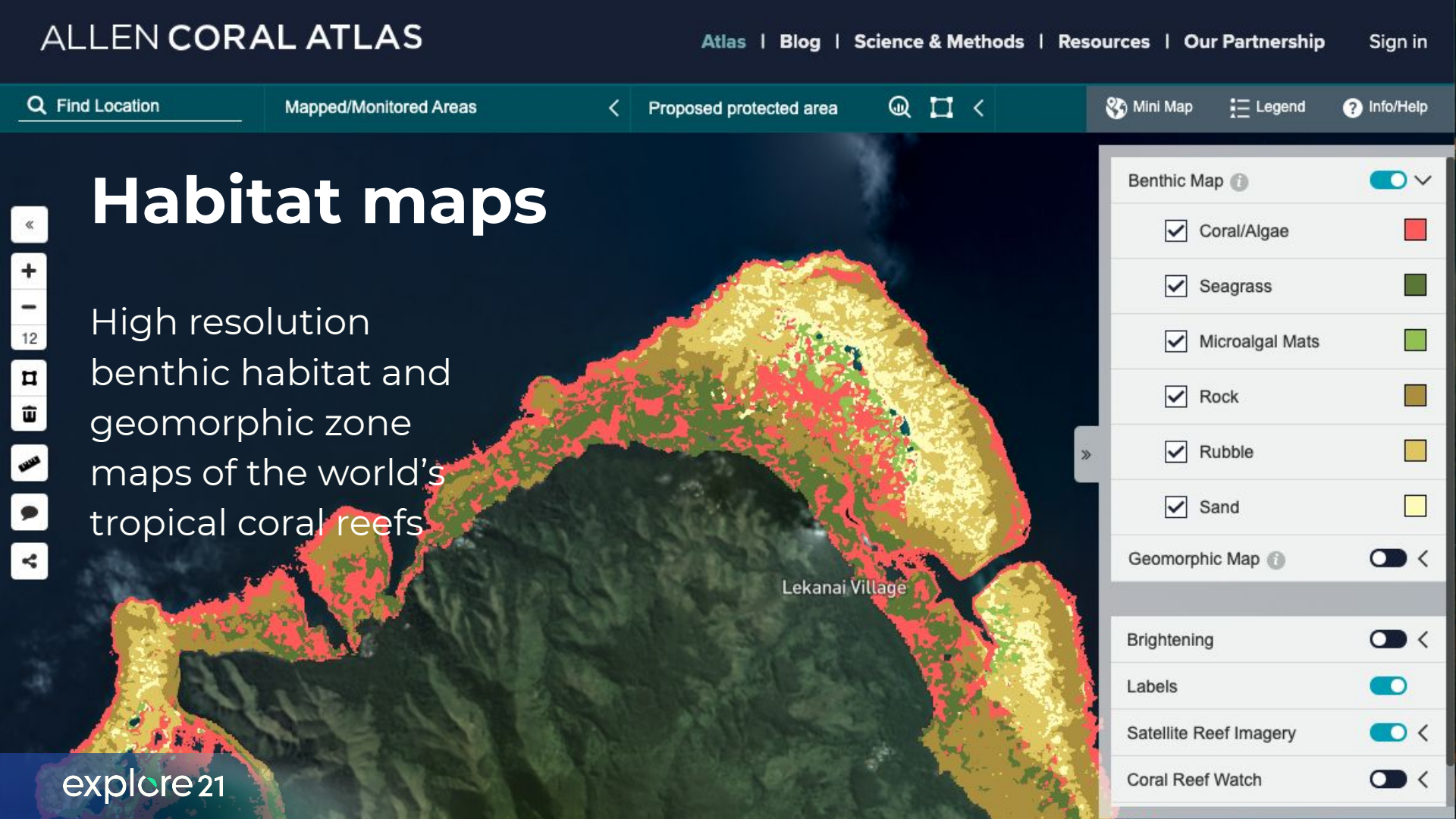
ALLEN CORAL ATLAS
Atlas | Blog | Science & Methods | Resources | Our Partnership
Sign in
Find Location
Mapped/Monitored Areas
Proposed protected area
Mini Map
Legend
Info/Help
Habitat maps
High resolution benthic habitat and geomorphic zone maps of the world's tropical coral reefs
Lekanai Village
Benthic Map
Coral/Algae
Seagrass
Microalgal Mats
Rock
Rubble
Sand
Geomorphic Map
Brightening
Labels
Satellite Reef Imagery
Coral Reef Watch
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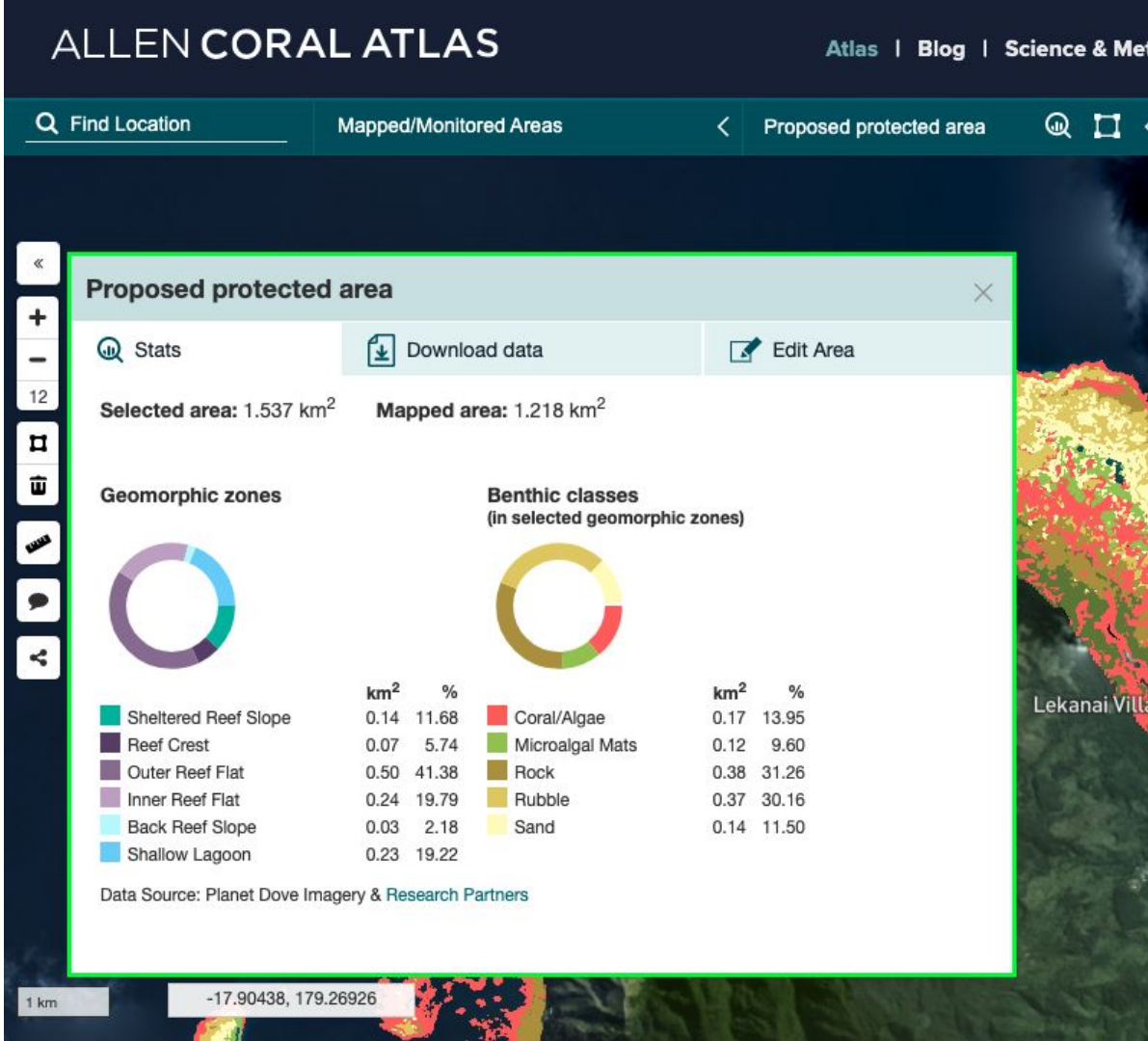
Habitat maps

Mapping reefs for:

- marine spatial planning
- coral restoration
- survey planning



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Atlas habitat maps are already moving the needle

Sri Lanka

Creation of a National Park at Kayankerni Reef

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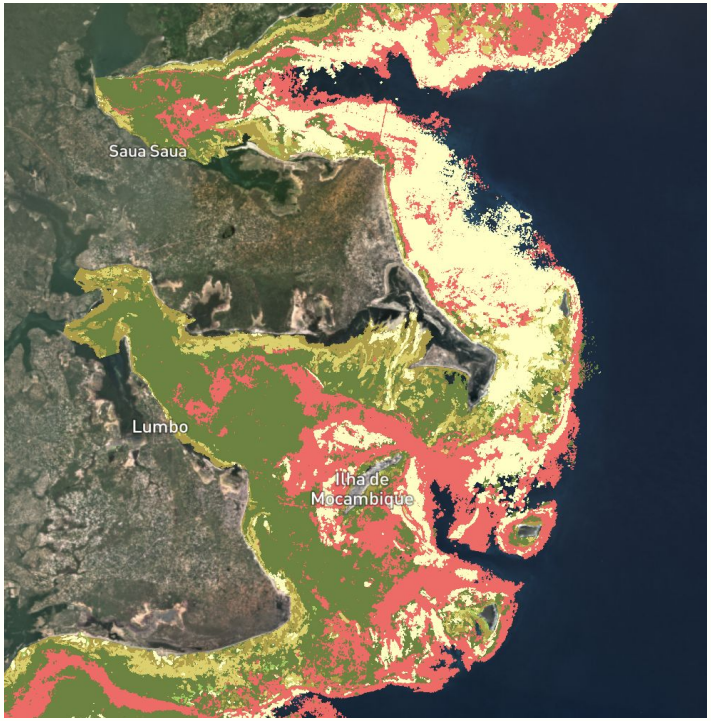
Atlas habitat maps are already moving the needle

Mozambique
Country-wide spatial planning



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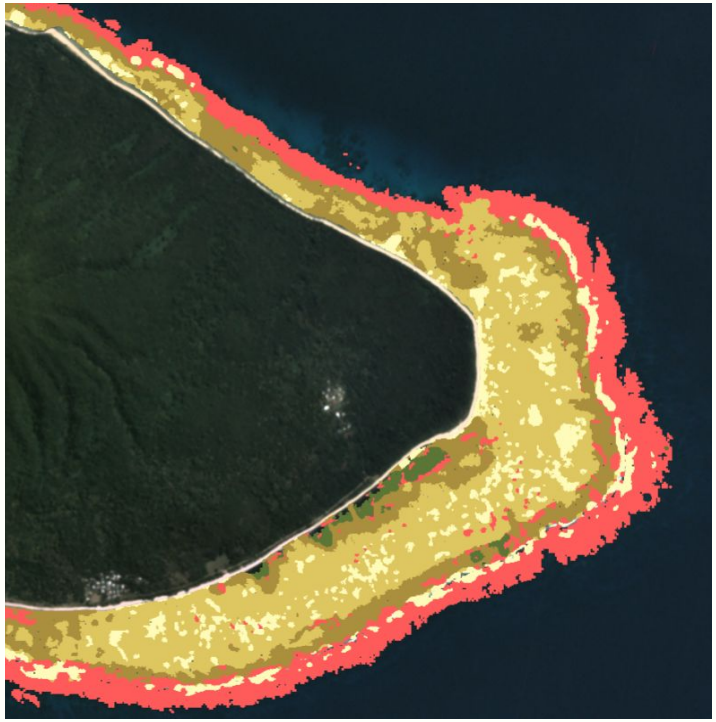
Atlas habitat maps are already moving the needle

Vanuatu

Resilience assessments and country-wide spatial planning



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Bleaching Detection

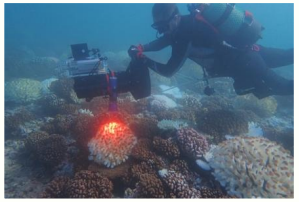
Foundational for restoration planning, protected area management, identifying climate refugia, and rapid response to bleaching events

Hawai‘i to the World

Social Outreach Campaign

Citizen Science Reporting of Bleaching Observations

Professional Field Measurements of Reef Change



Airborne Mapping of Live Coral Cover Before Bleaching Event

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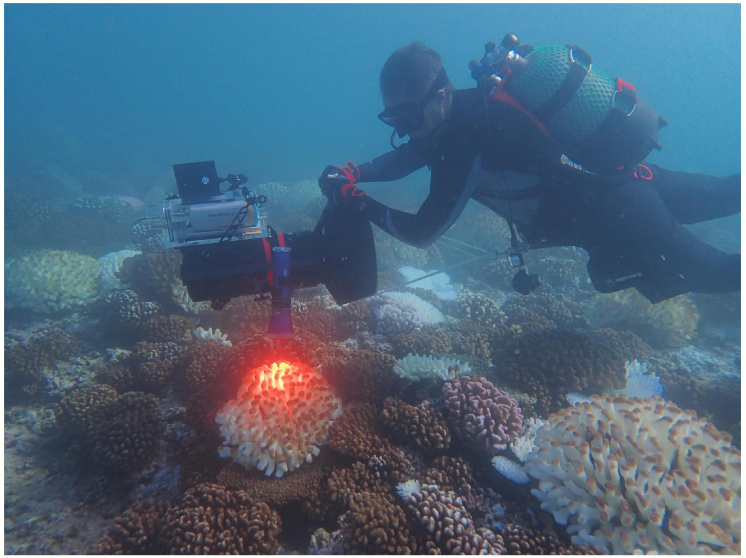
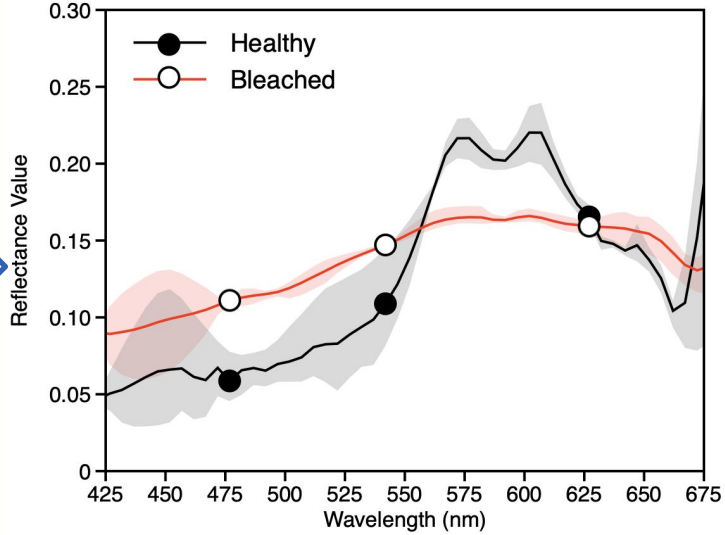
Global Connection

Coral spectral transects





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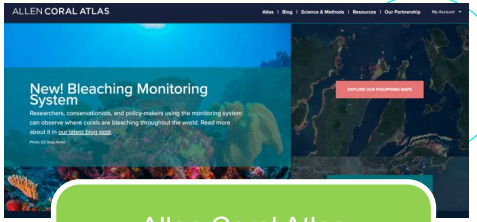
Professional Field Measurements of Reef Change

Hawai‘i to the World



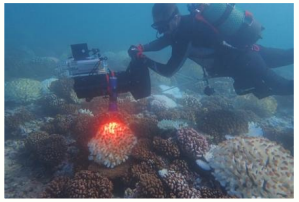
Allen Coral Atlas Bleaching Monitoring System

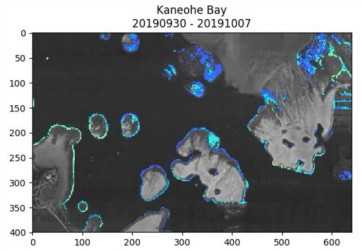
Social Outreach Campaign

Citizen Science Reporting of Bleaching Observations

Professional Field Measurements of Reef Change

Calibration of Weekly Satellite Data on Coral Bleaching





Airborne Mapping of Live Coral Cover Before Bleaching Event

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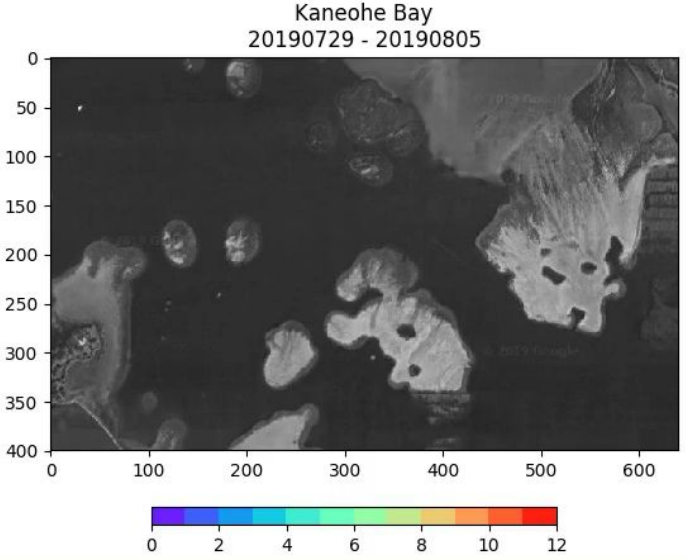
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20190729 - 20190805
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100
150
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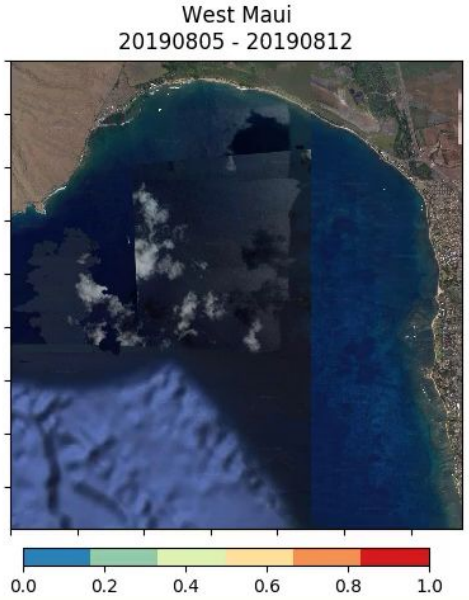
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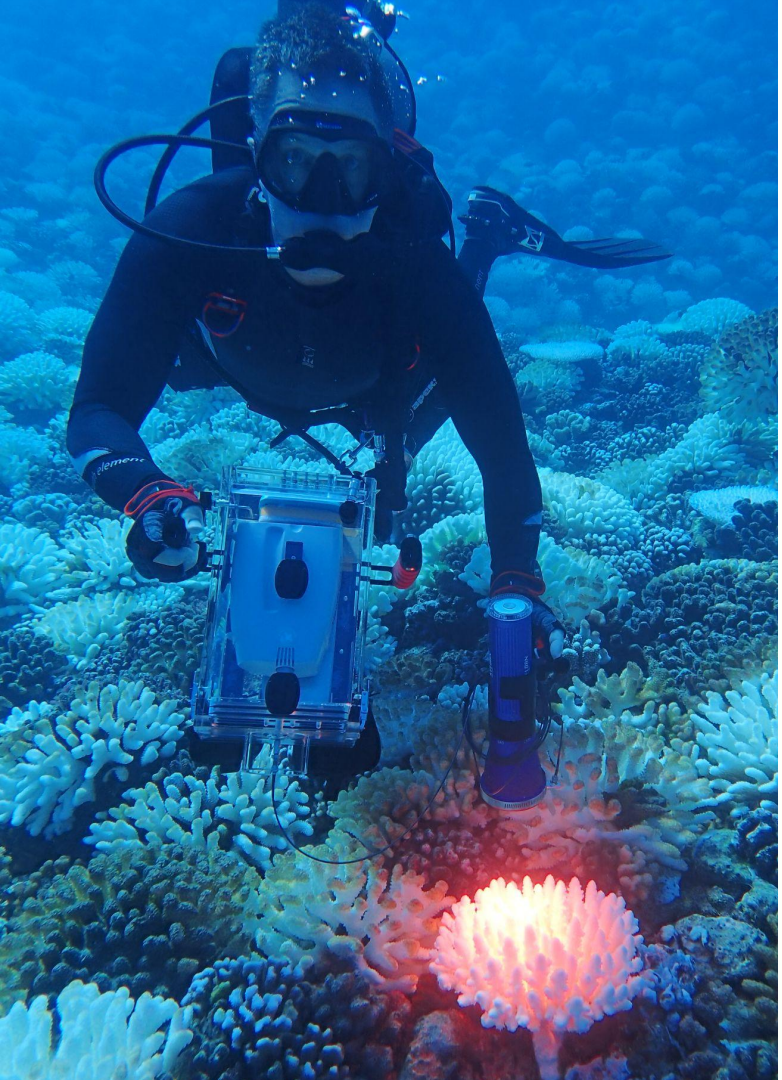
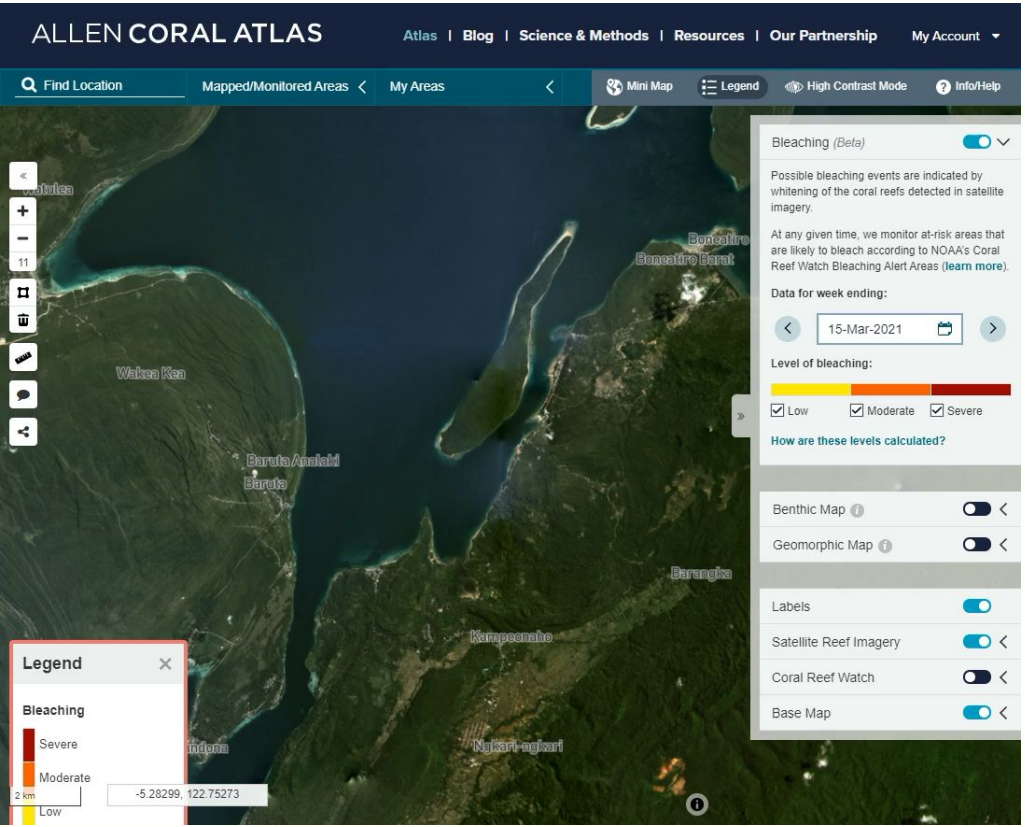


Bleaching detection

Detecting and analyzing live coral bleaching data globally with machine learning

System depicts bleaching **as it occurs in real time,** as seen from high resolution satellite imagery

Global Connection



Bleaching detection is already in use

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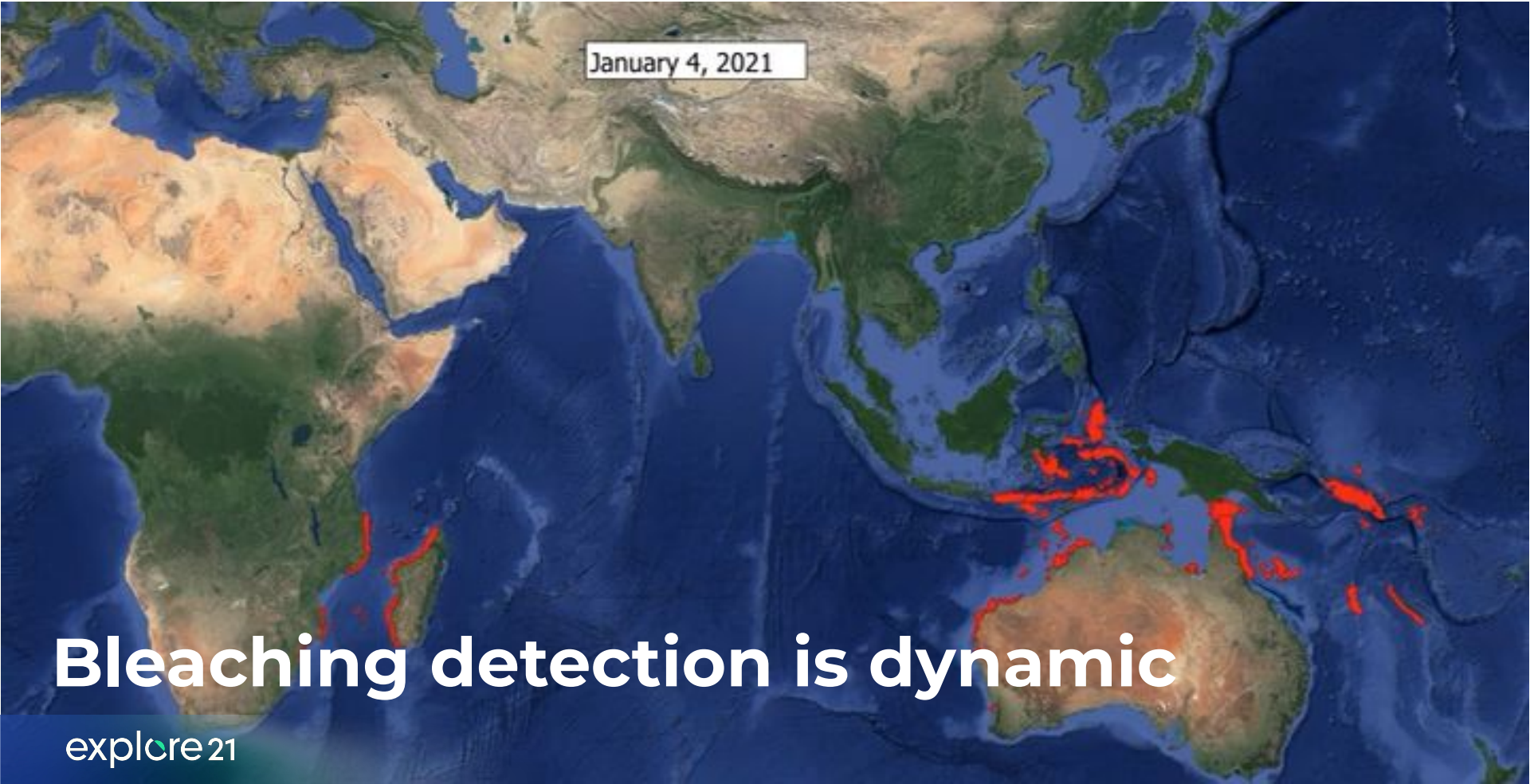


Bleaching detection is dynamic

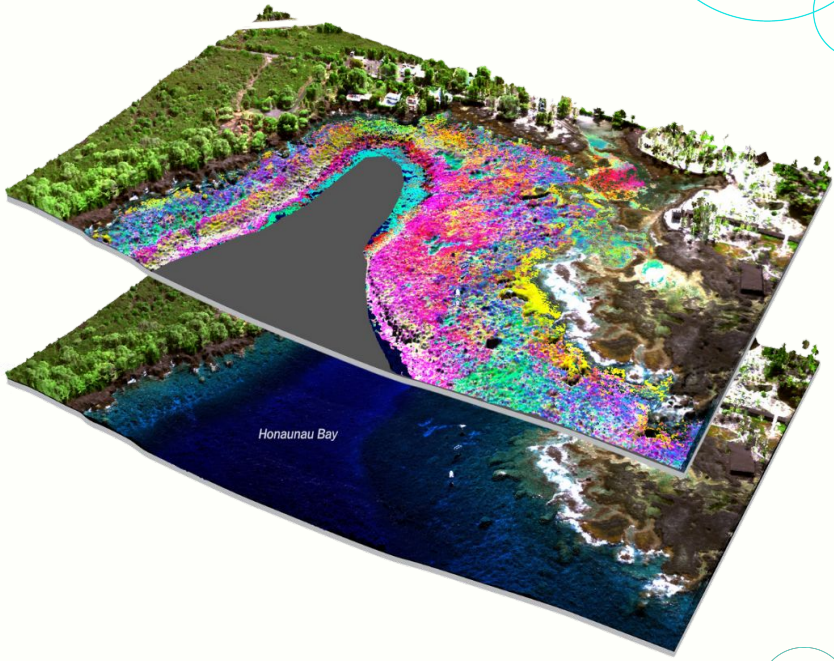
The Atlas of the future

60% of the world's reefs experience damage from local activities like overfishing, coastal development and watershed pollution.

Innovating alongside new satellite capabilities

The next generation of observations from Earth orbit will incorporate hyperspectral imaging.

As new satellites emerge, the Atlas' capabilities will radically advance.



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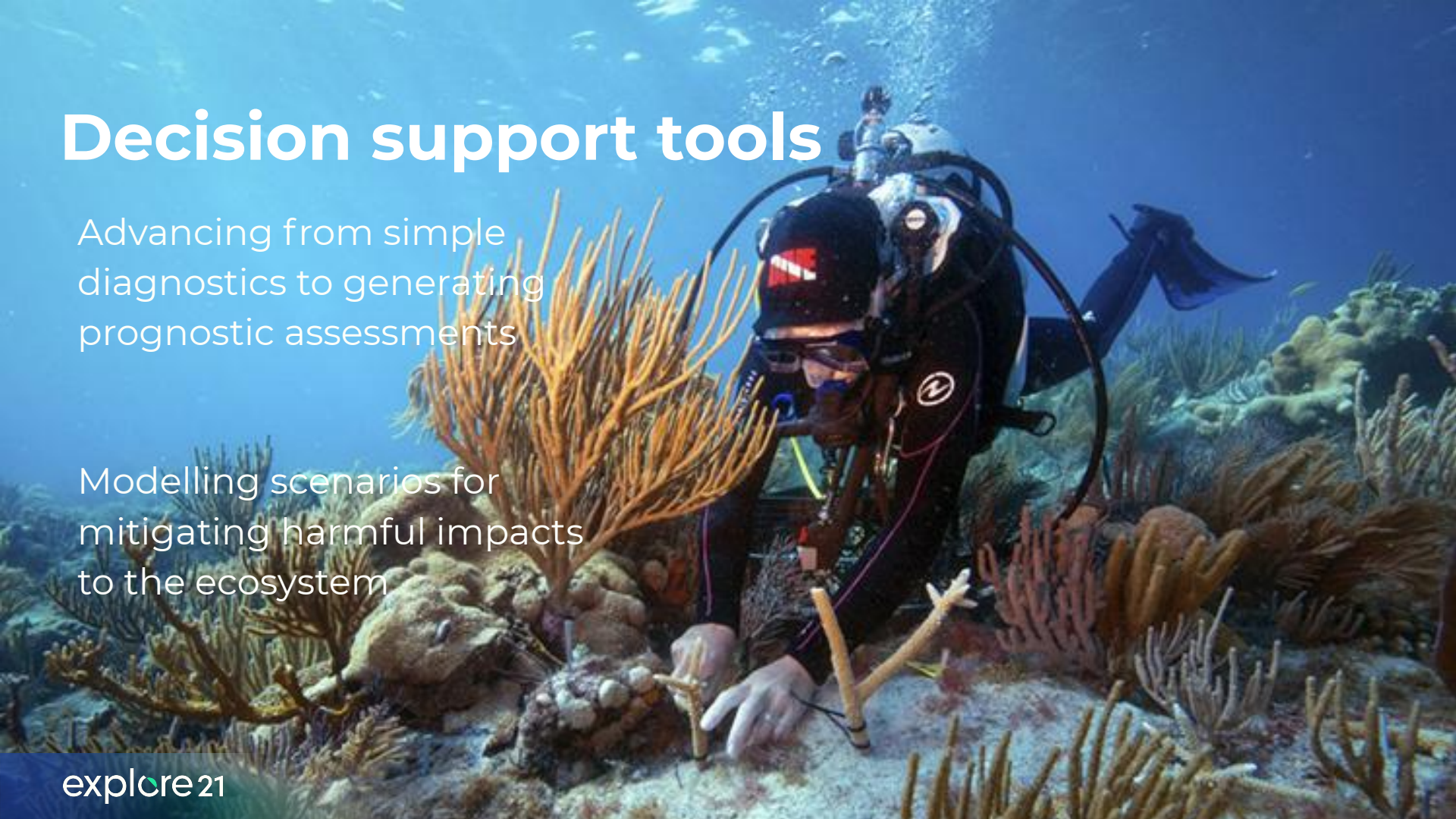
Decision support tools

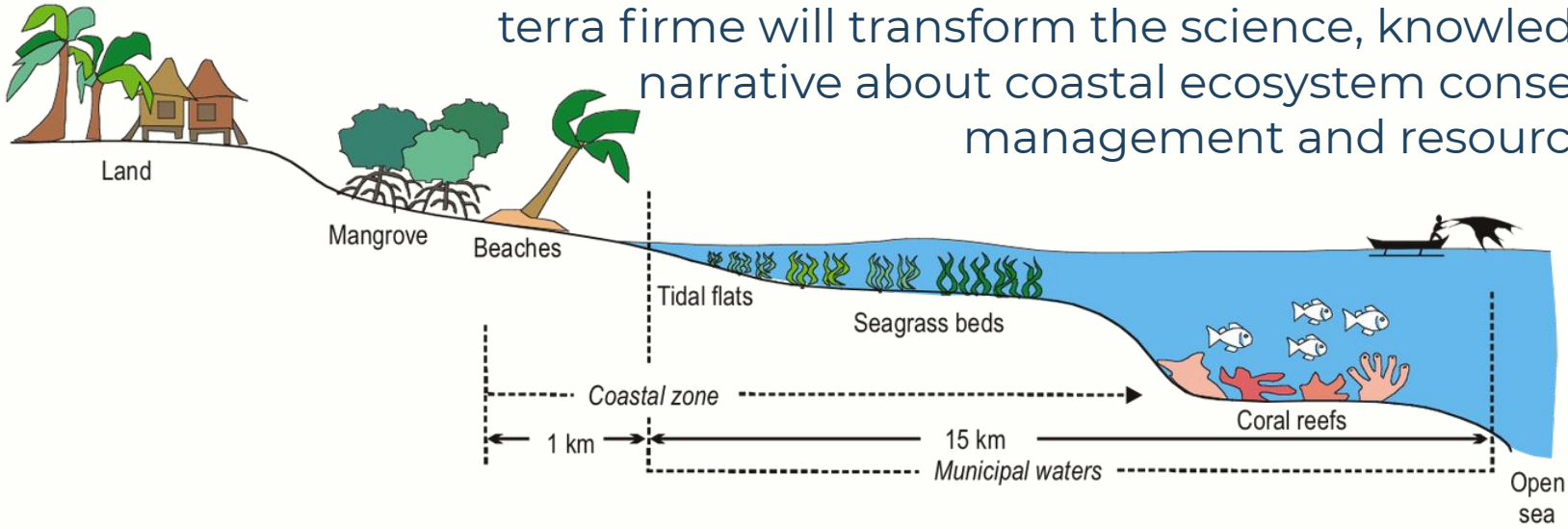
Advancing from simple diagnostics to generating prognostic assessments

Modelling scenarios for mitigating harmful impacts to the ecosystem



Land-sea integration

Moving inland, from seagrass and mangroves, all the way to terra firme will transform the science, knowledge, and narrative about coastal ecosystem conservation, management and resource policy



Turbid waters are dynamic

Global Connection

Global turbid water monitoring

Monitoring quarterly global coastal waters to inform coastal management

Red color represents high turbidity waters

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