



ocean
ledger

unlocking ocean finance at scale

Insurers, developers & governments face an urgent need to better mitigate and adapt to coastal risk (erosion, biodiversity loss)



**2X losses (\$360B)
in the next 10 years**

**1.5T
investment into Middle East
coastal infrastructure**

Regulatory tailwinds
for nature-related
disclosure¹

Significant loss-ratios
due to natural
catastrophes

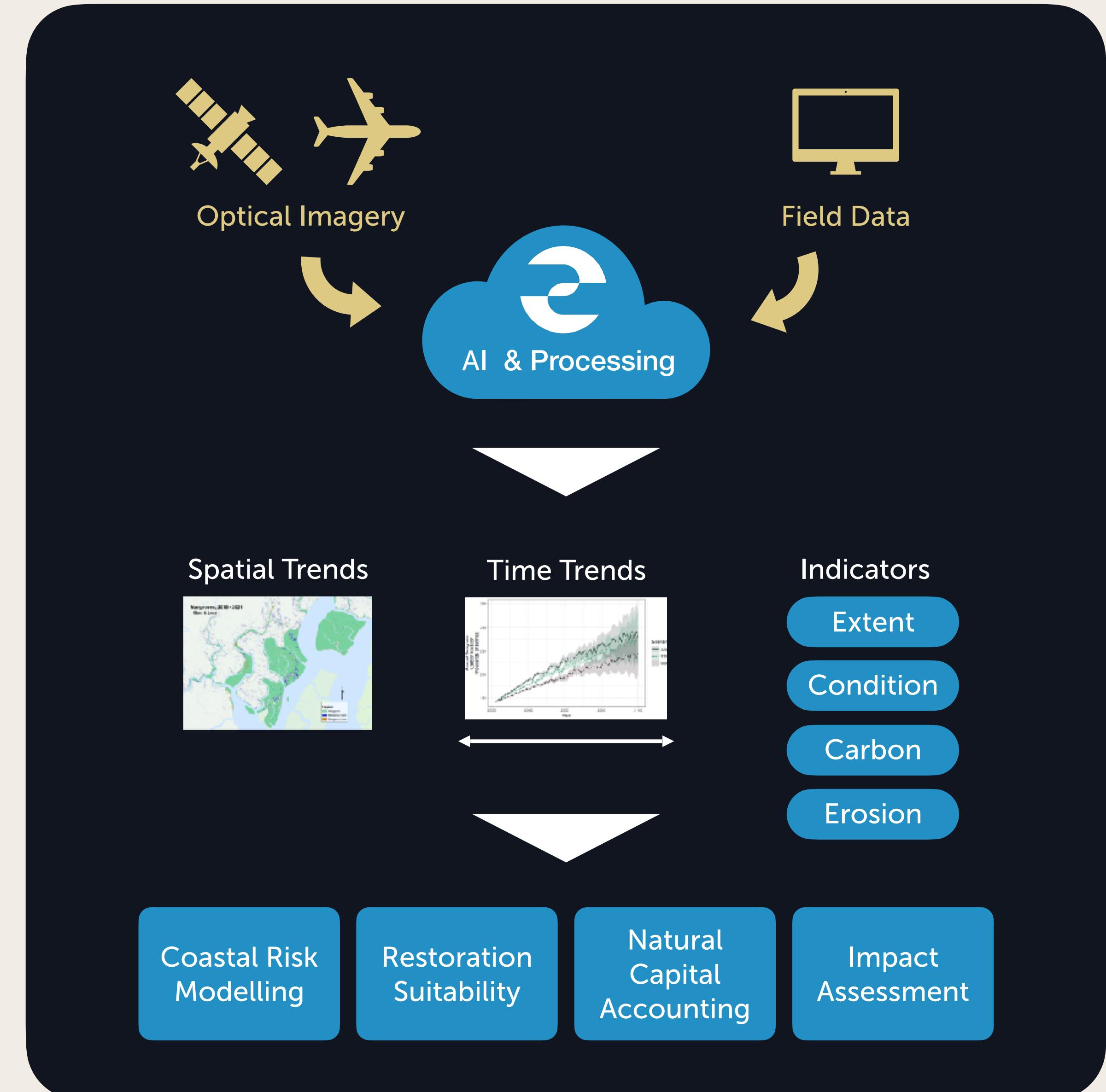
Growth in coastal
development & maritime
trade

Too many trade-offs with current tools to map and analyse large-scale coastal dynamics

	Global Datasets	Manual Field Data Collection
Accuracy	✗	✓
Geographic Coverage	✓	✗
Site-specific	✗	✓
Affordability	✓	✗
Standardised monitoring	✗	✗
Actionable insights	✗	✗

We figured out how to fuse satellite analytics with ground-truth data + see through the water column

- ✓ **Research-spinout:** 8 YRS & \$900K in R&D funding | 18 peer-reviewed publications
- ✓ **Robust:** 94% avg. accuracy, algorithms trained on 30M hectares
- ✓ **Reach:** underwater & above-water ecosystems
- ✓ **Data agnostic:** Any remote sensing or relevant reference data input



Solution

Delivering insights that let decision-makers incorporate nature risk & value

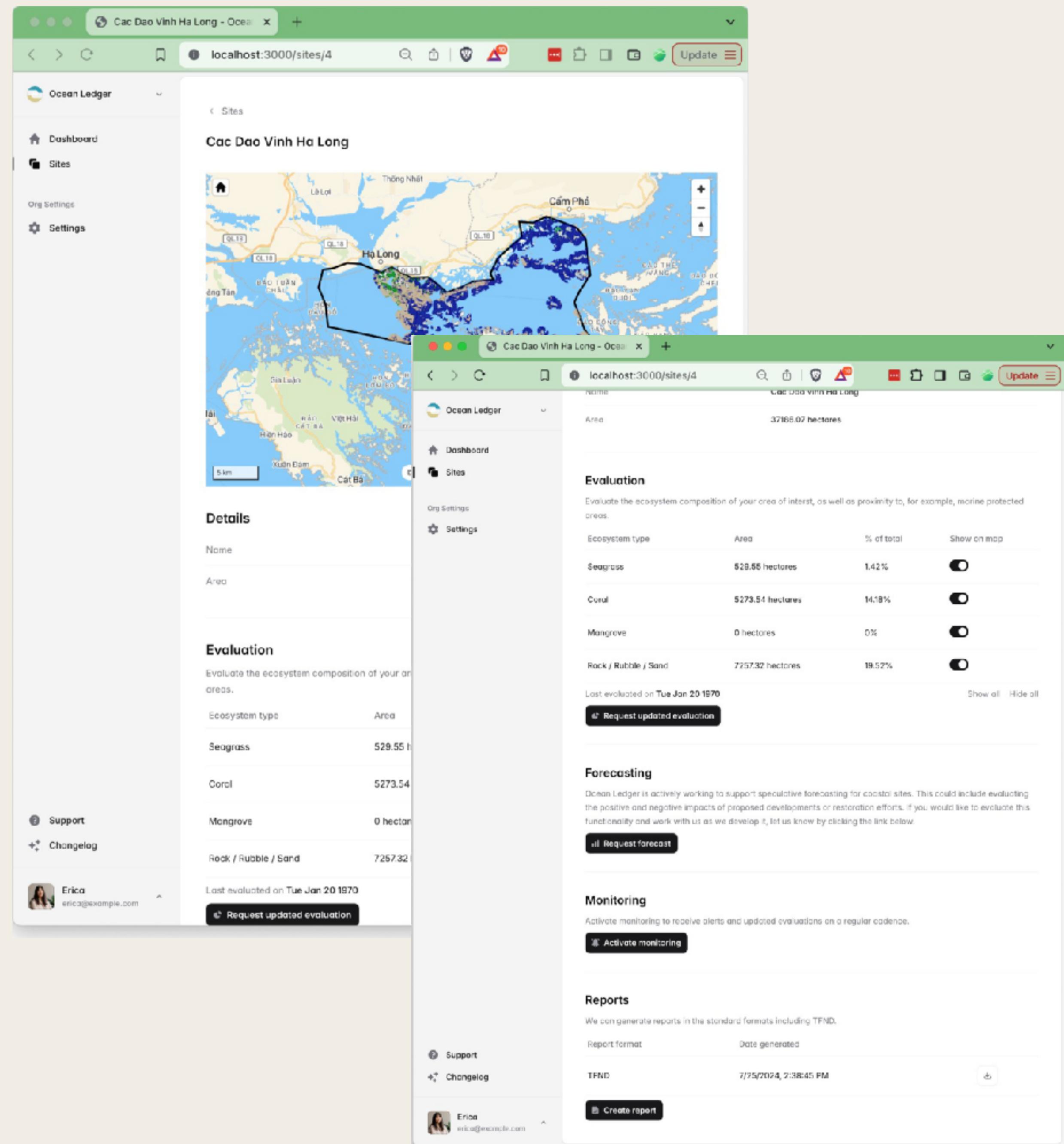
Baseline & scenario analysis for decision-making

- Coastal risk (flooding, erosion, ecosystem loss)
- Coastal impact from commercial activities
- Natural capital accounting (UN SEEA)
- Restoration ROI

 **5x faster & cheaper** (vs. manual methods), and 30% more accurate (vs. global datasets)

 **Site, portfolio, national-scale**

 **Metrics & visual, actionable information**



Analytics-as-a-Service built to fill knowledge gaps at the ground & investment level

Annual Subscription - upfront payment for tiered packages based on 1) area volume, 2) metrics 3) monitoring needs

Reinsurance Brokers

- Improve parametric insurance triggers (erosion, sea-level)
- Risk Management Property cat
- Nature-based insurance products



Coastal Developers

- Baseline for project design
- Scenario forecasting to impact/risk
- Target areas for conservation & restoration



ESG Data Partners

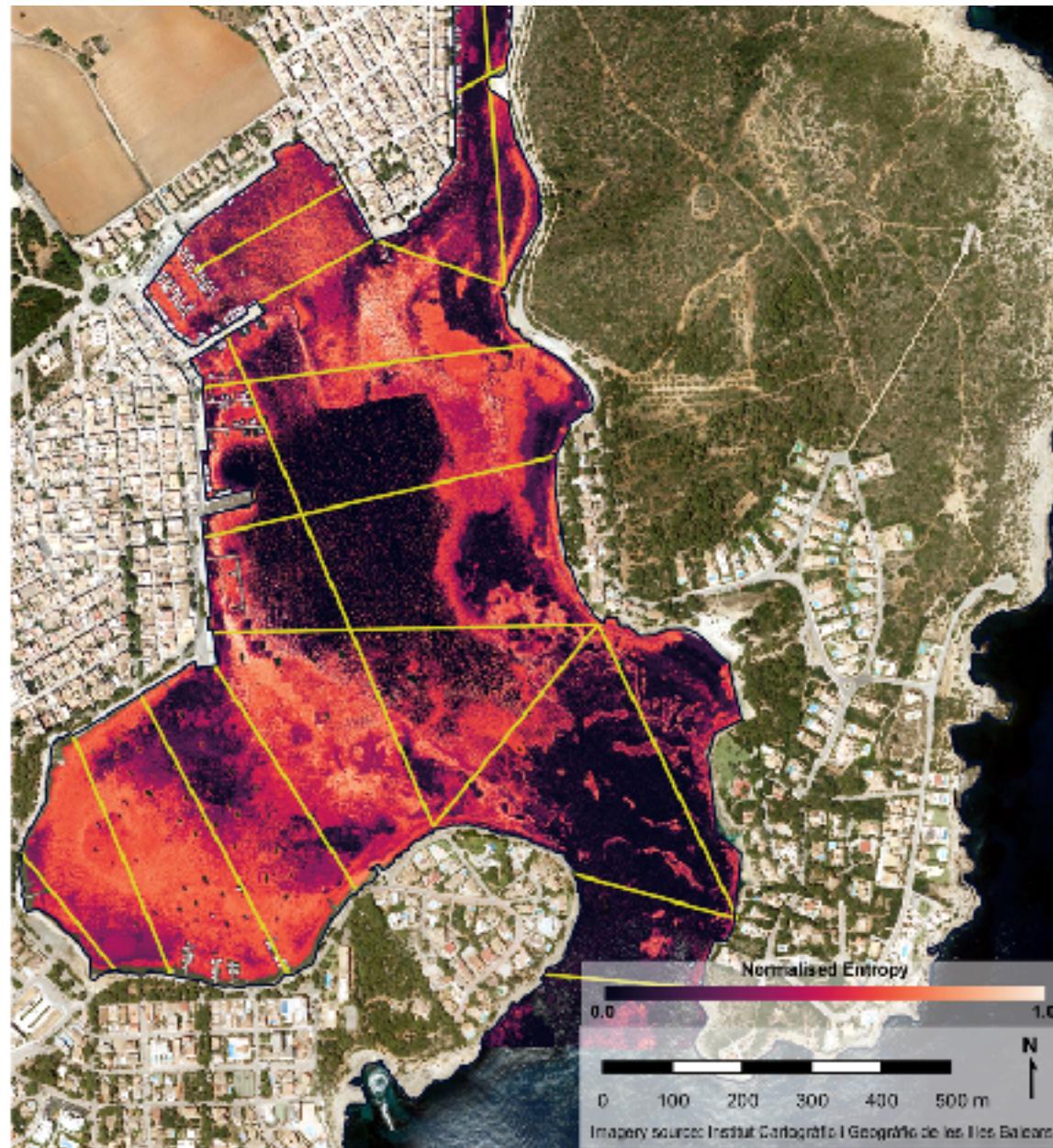
- Open-source datasets for global databases
- Sovereign-level data for credit ratings



Two paid contracts secured: helping project developers to map natural assets & engage in active restoration

Target

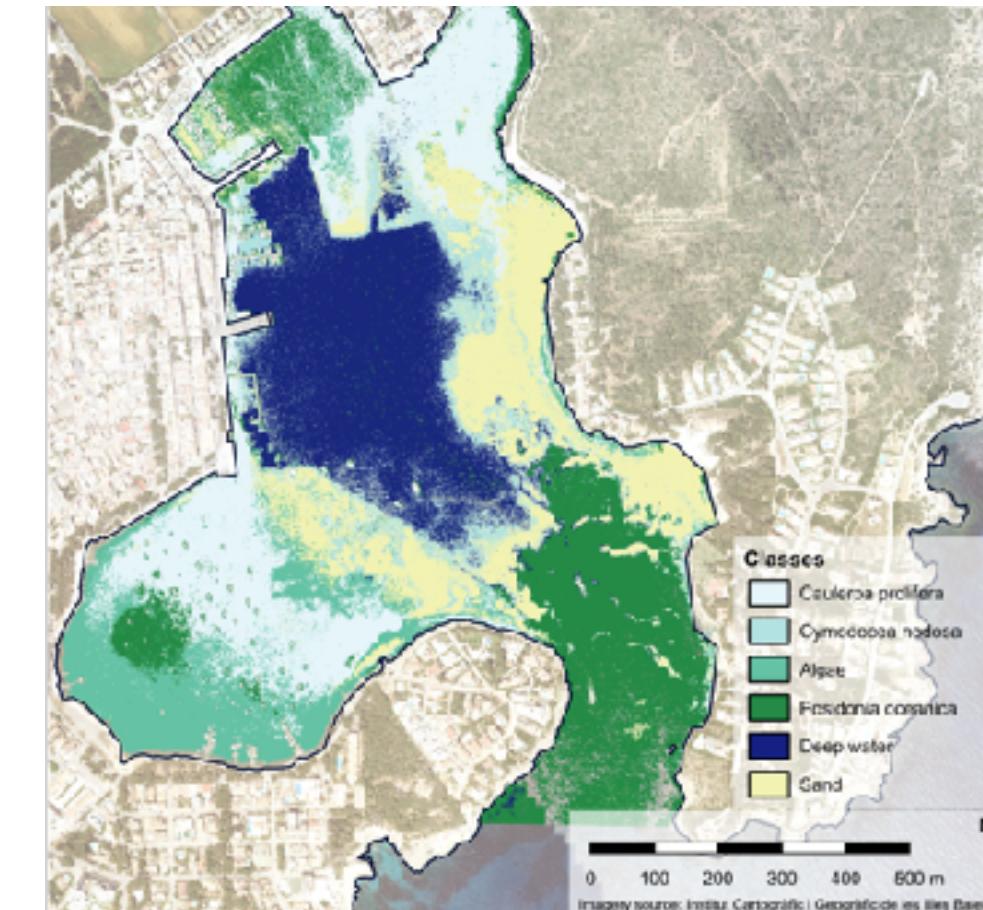
Reduce time & cost for field data acquisition (drones, field transects)



Measure



Coastal ecosystem accounting to quantify ecosystem value

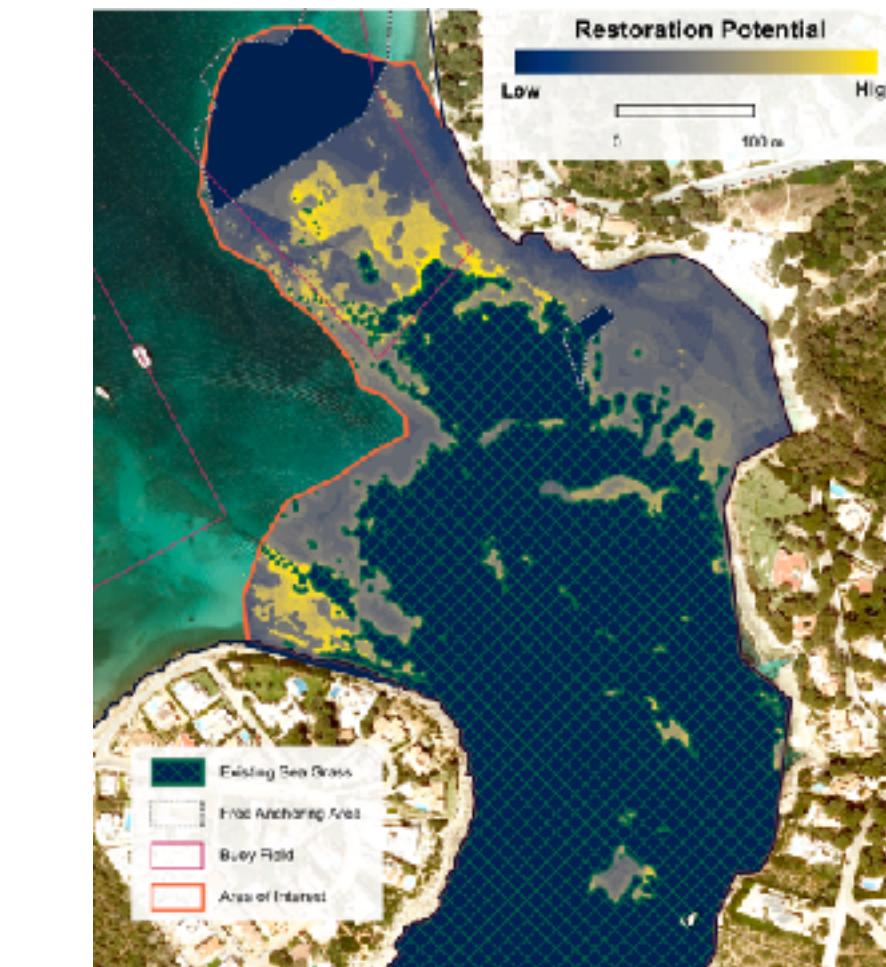


Class	Extent	Condition	Carbon
Species 1	32 ha	50/100	MgC02
Species 2	500 ha	30/100	MgC02
Species 3	20 ha	20/100	MgC02

Guide



Suitable areas for restoration to reduce risk of reversal

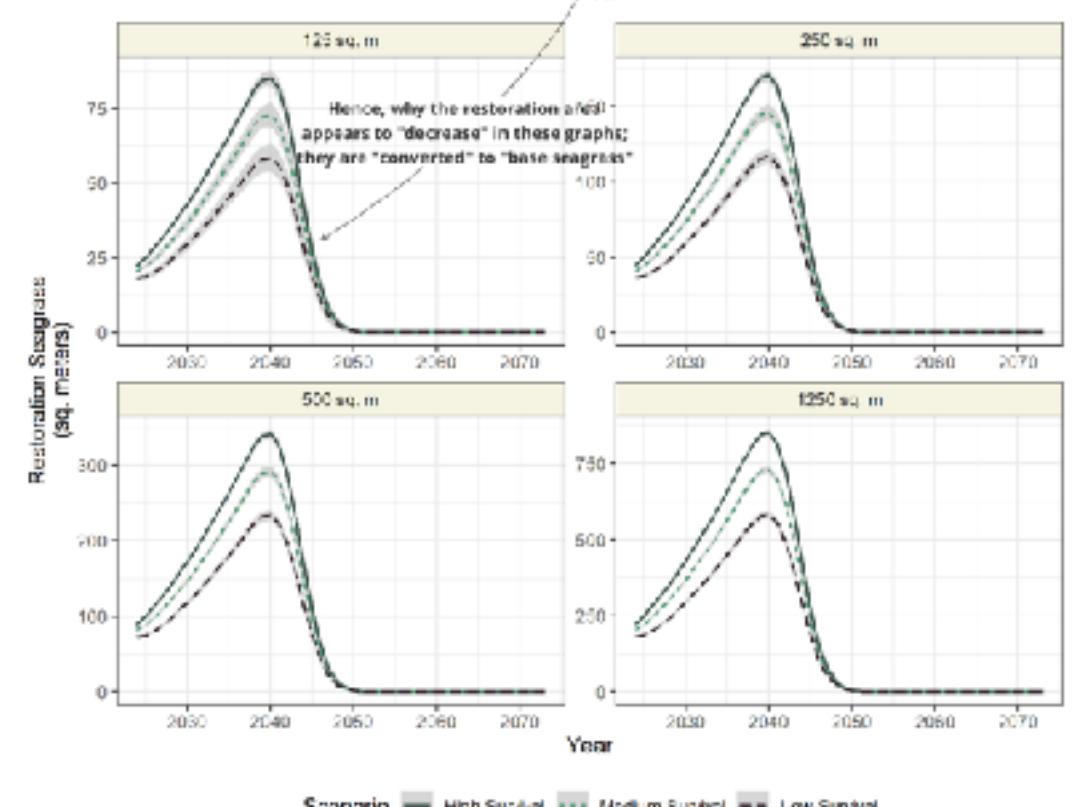


Class	10 YR	20 YR
Species 1	-6%	2.8%
Species 2	-28%	-26.6%
Species 3	-79.5%	-66%

Model & Report



Showcase impact, track progress and update for verification & reporting



Scenario	Project Uplift	ROI Breakeven
1	20%	20 YR
2	10%	30 YR
3	5%	60 YR

Depth & breadth in expertise across academia, financial services & earth observation



Paige Roepers
Chief Executive Officer

- Investment banking, minority equity placements for disruptive European start-ups
- Strategy Consulting
- BSc Biology from University of St. Andrews
- Divemaster certified & field research in Bahamas, Fiji, & Indonesia



Dimos Traganos
Chief Scientific Officer

- 10 yrs in blue carbon remote sensing
- 2nd most cited in Remote Sensing of Ecosystems (1110)
- 19 peer reviewed publications
- \$900K in R&D funding from German Aerospace Center, Pew Trusts & Google Earth



Jeremiah Nieves
Head of Data & Analytics

- 10yrs in GIS & modelling big data
- Founded own consultancy serving clients such as Meta and Bill & Melinda Gates
- PhD in Geography





John Issac-Smith
Strategic Advisor

- Head of Product at Maxar
- CEO of Arturo (Series B exit, insurance company)
- Techstars mentor

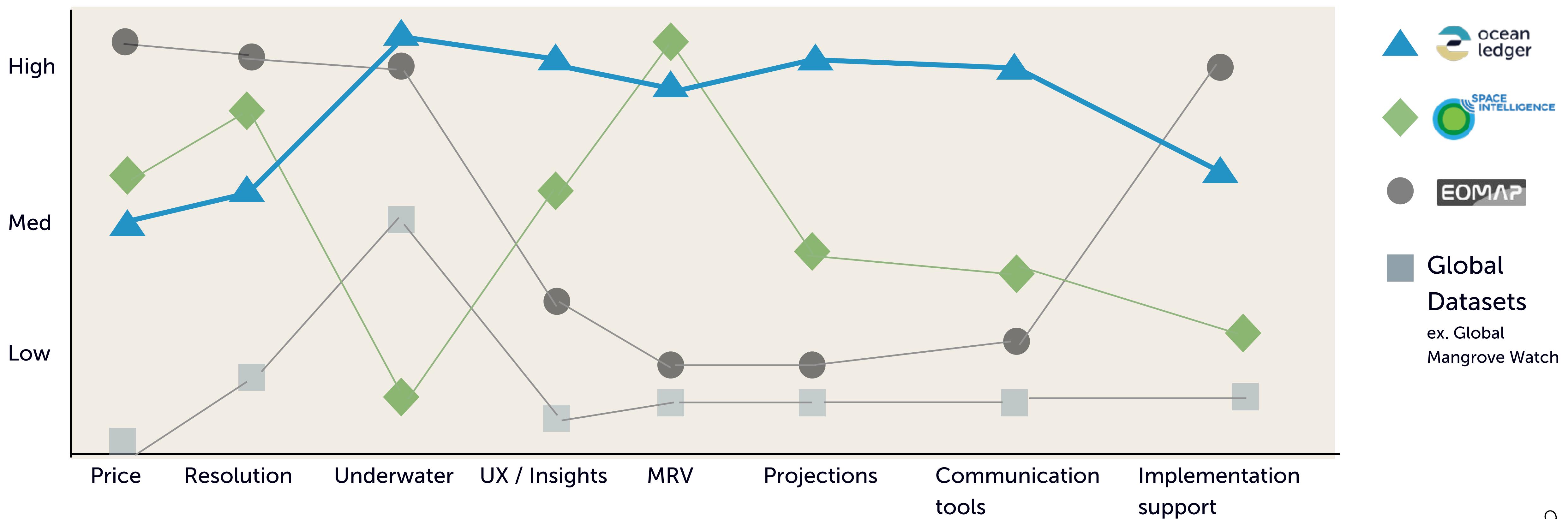


Nathan Thomas
Scientific Advisor

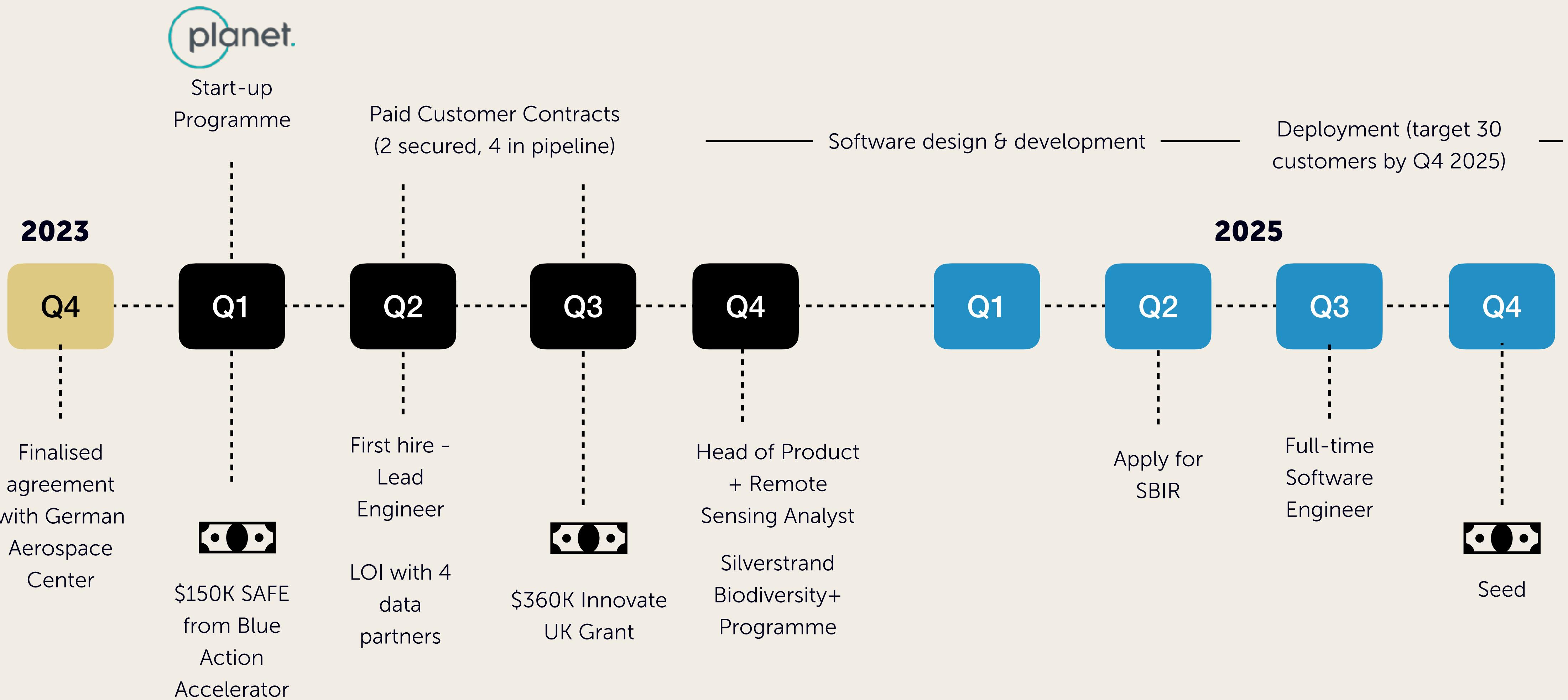
- Leading mangrove remote sensing expert
- Lead engineer for Global Mangrove Watch



We fill a widespread technical gap in the market for nearshore, coastal monitoring, without any Capex



Milestones & Timeline



Pre-seed combined with commercial non-dilutive grant (\$360K) with same UoP (more bang for your buck)

\$600K

SAFE Note

Category	Budget	Use of Funds
COGs	\$150K	Cloud hosting & web services
R&D	\$50K	Product development & third-party data licensing
Operational	\$400K	Team overhead incl. 2 key hires (software engineering)

18 months runway to design, develop & deploy SaaS product

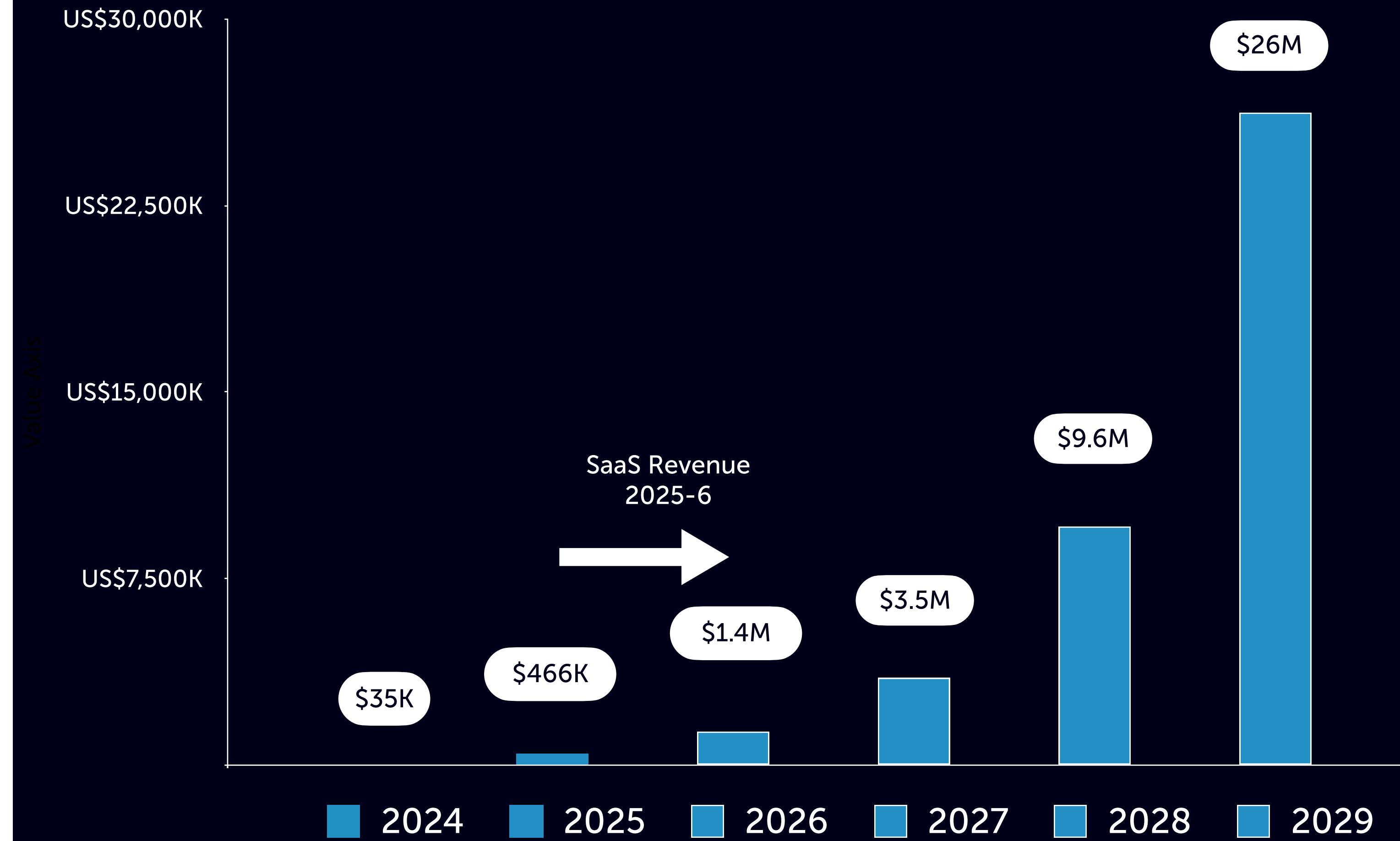
Vision

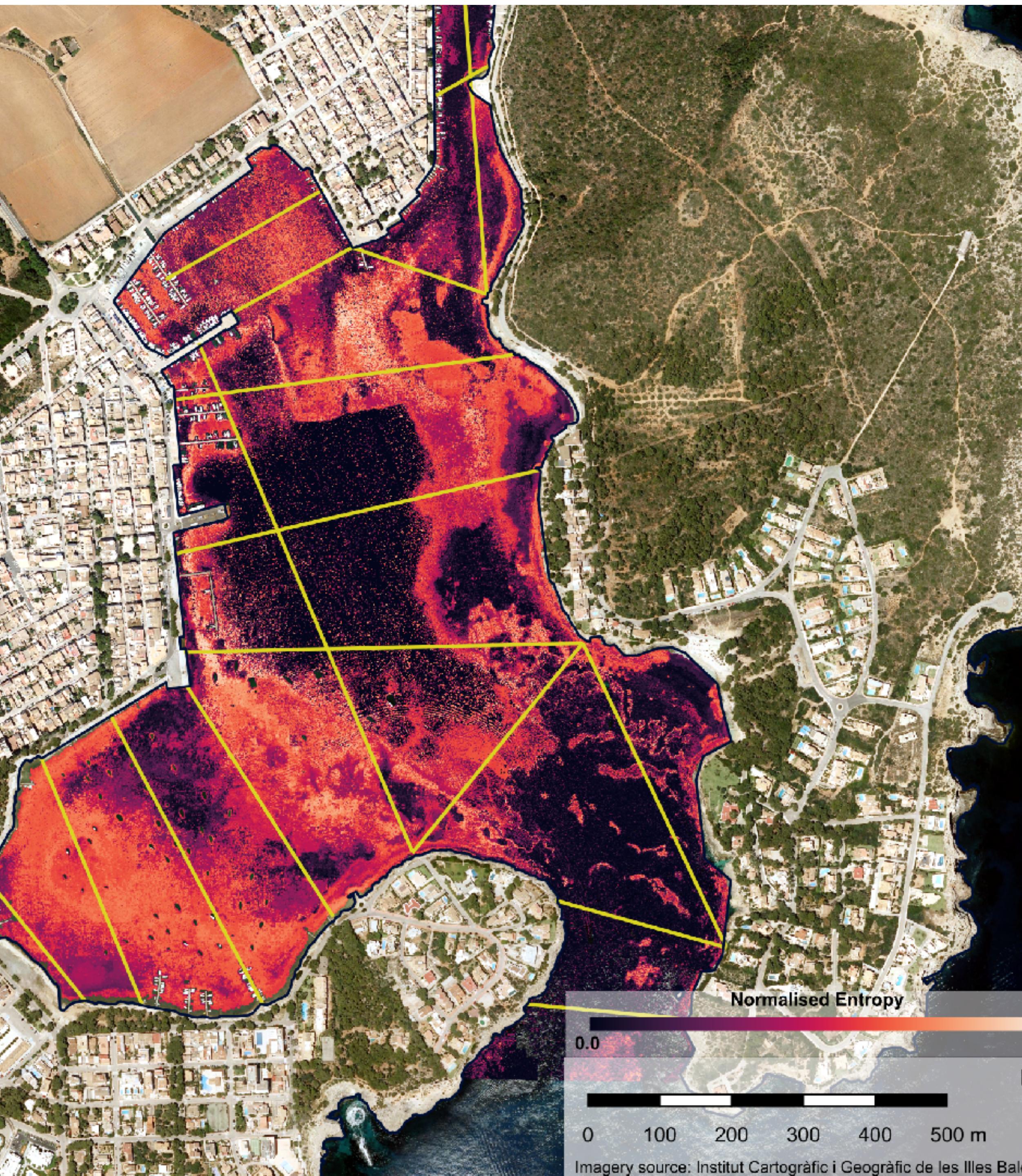
Enable a world where marine conservation is a net-positive investment for the private sector



Appendix

Tiered SaaS Pricing





Automatically identify areas to post-calibrate with ground truth data

How we did this

- 1 Fuse high-resolution aerial imagery, basis reference data (habitat presence labels)
- 2 Scaled this up using proprietary machine learning algorithms
- 3 Optimise and minimise point sample locations and transects to make for more efficient field work



Set your baseline for ecosystem extent and condition

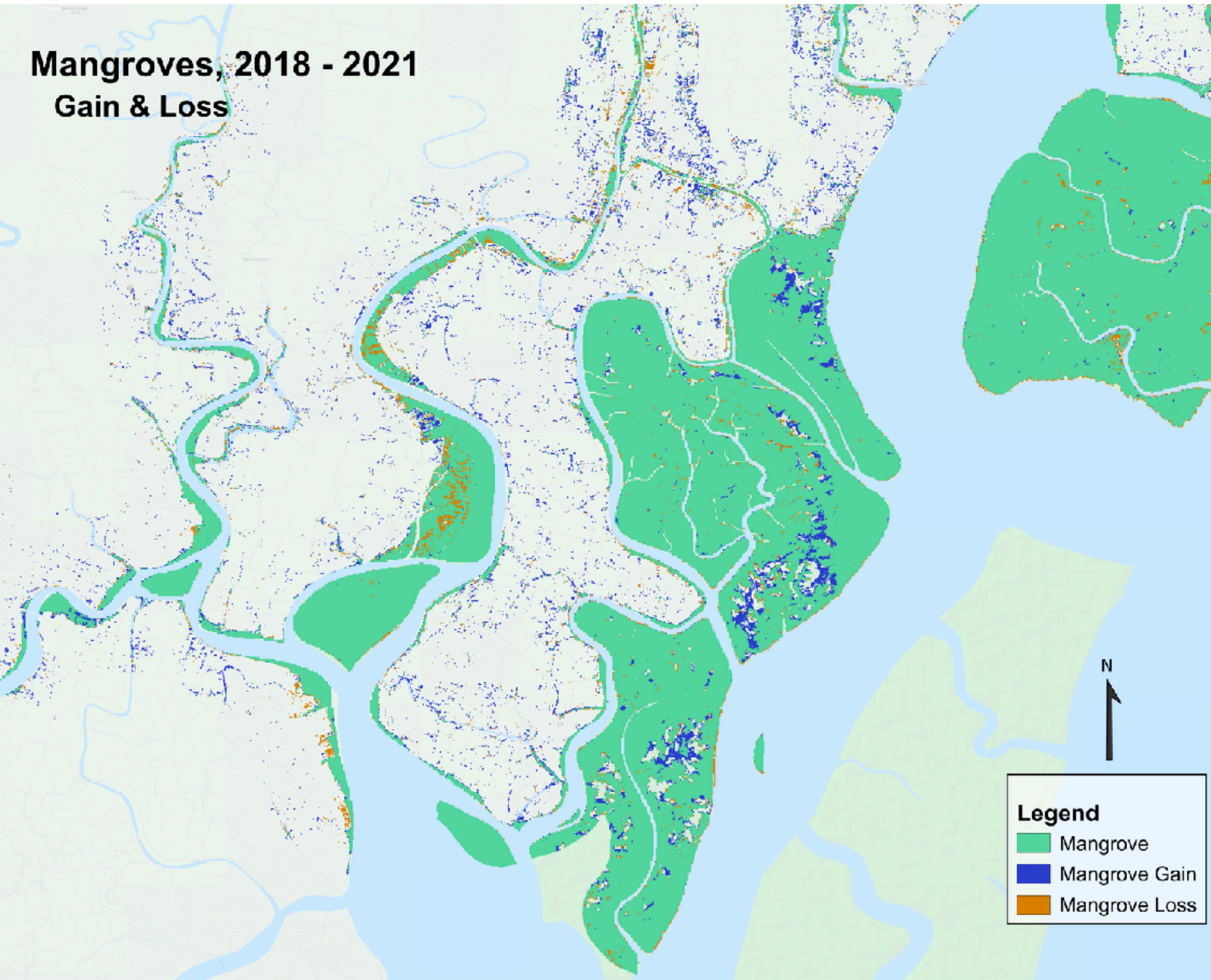
How we did this

- 1 Fused high-resolution aerial imagery, basis reference data (habitat presence labels)
- 2 Machine learning and quantifying expert knowledge to identify habitats and habitat major drivers
- 3 Integrate multi-tier condition indicators into method scoring to quantify health of coastal ecosystems across space and time

Seagrass			
Indicator	Weighting	Score	Total Score
Density	30%	10/30	5
Depth	40%	20/30	4
Water Quality	30%	5/30	3

Mangroves, 2018 - 2021

Gain & Loss

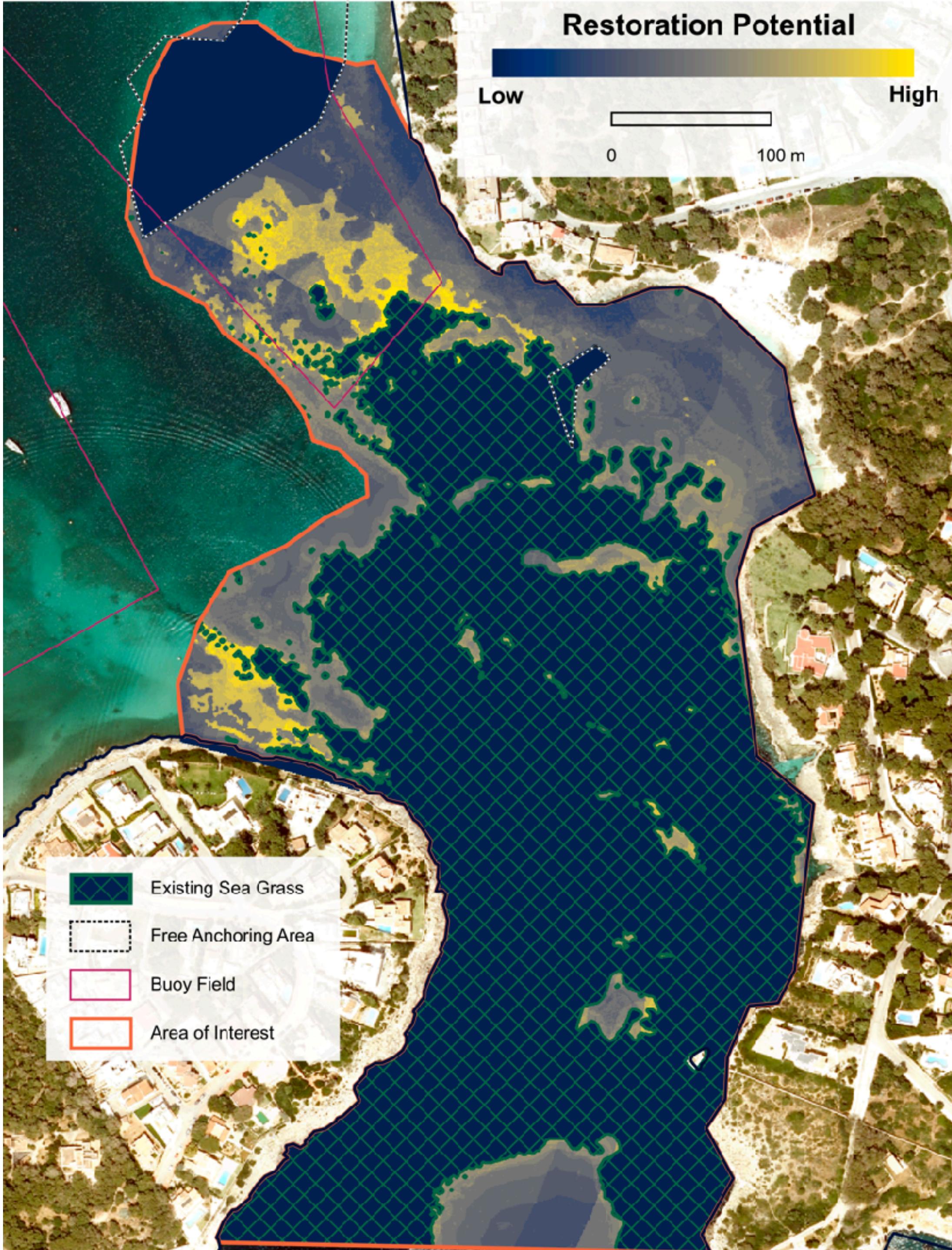


Analyse historical change to assess ecosystem stability & determine key drivers of extent change (positive or negative)

How we did this

- 1 Establish baseline and construct robust time series of extents
- 2 Apply machine learning and expert-informed heuristics to identify habitats and changes over time
- 3 Assess & monitor habitat condition over time via multiple environmental criteria

Data input: High-resolution airborne photogrammetry data, mix of existing & synthesized field data



De-risk restoration and conservation by identifying areas with highest chance of restoration success

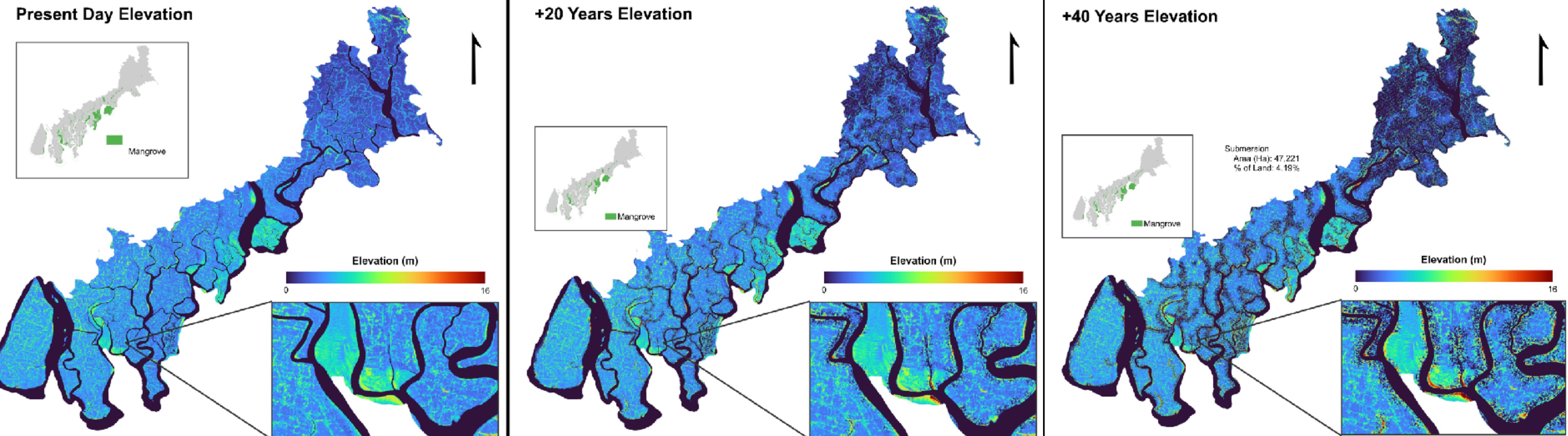
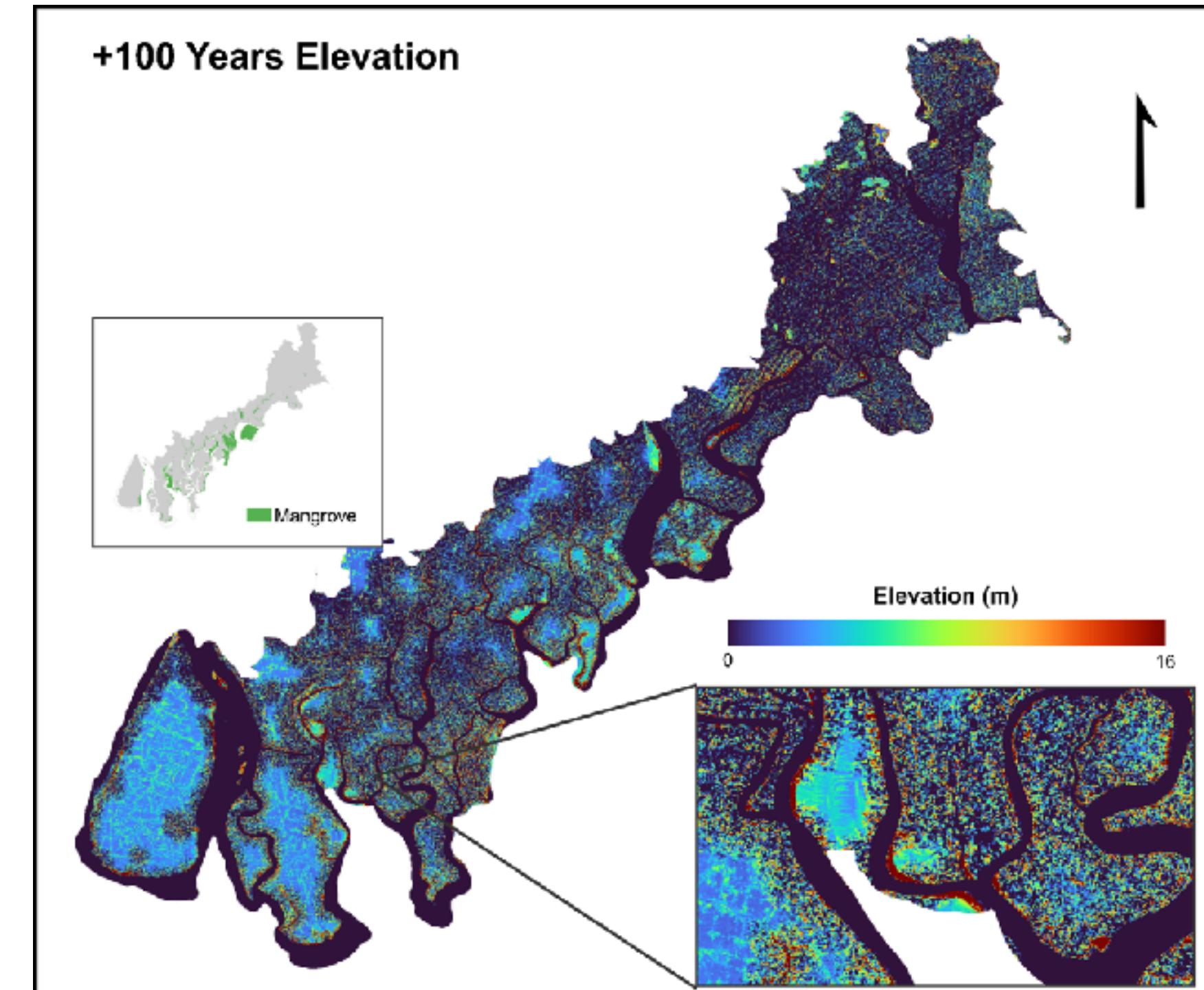
How we did this

- 1 Establish baseline and changes over time of habitats and species of interest
- 2 Integrate observed local environment, species' specific dynamics/lifecycles, and local threats and resources
- 3 Construct relative estimates of restoration potential

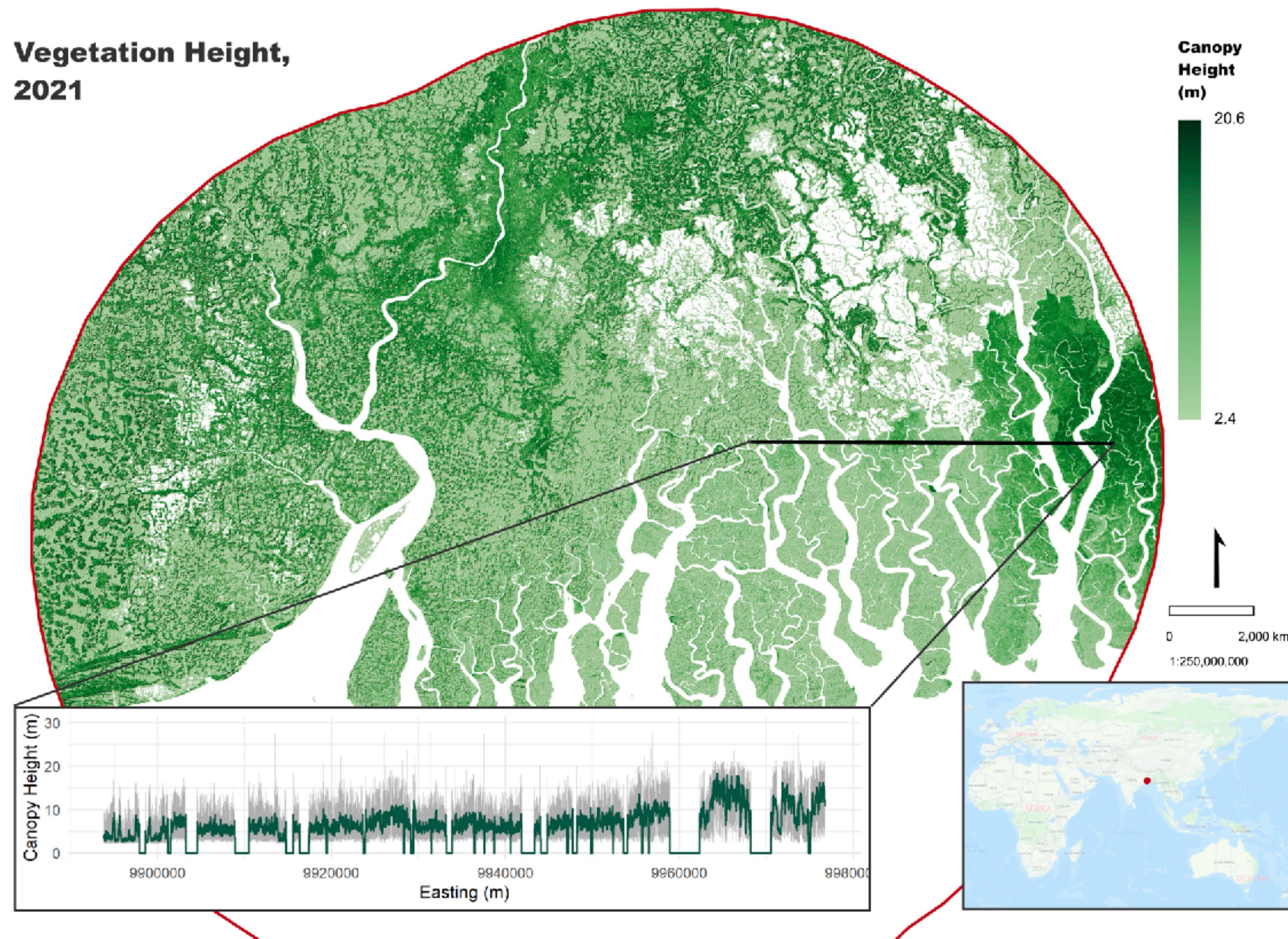
Data input: High-resolution submeter airborne remote sensing data, change detection maps, pixel-level uncertainty

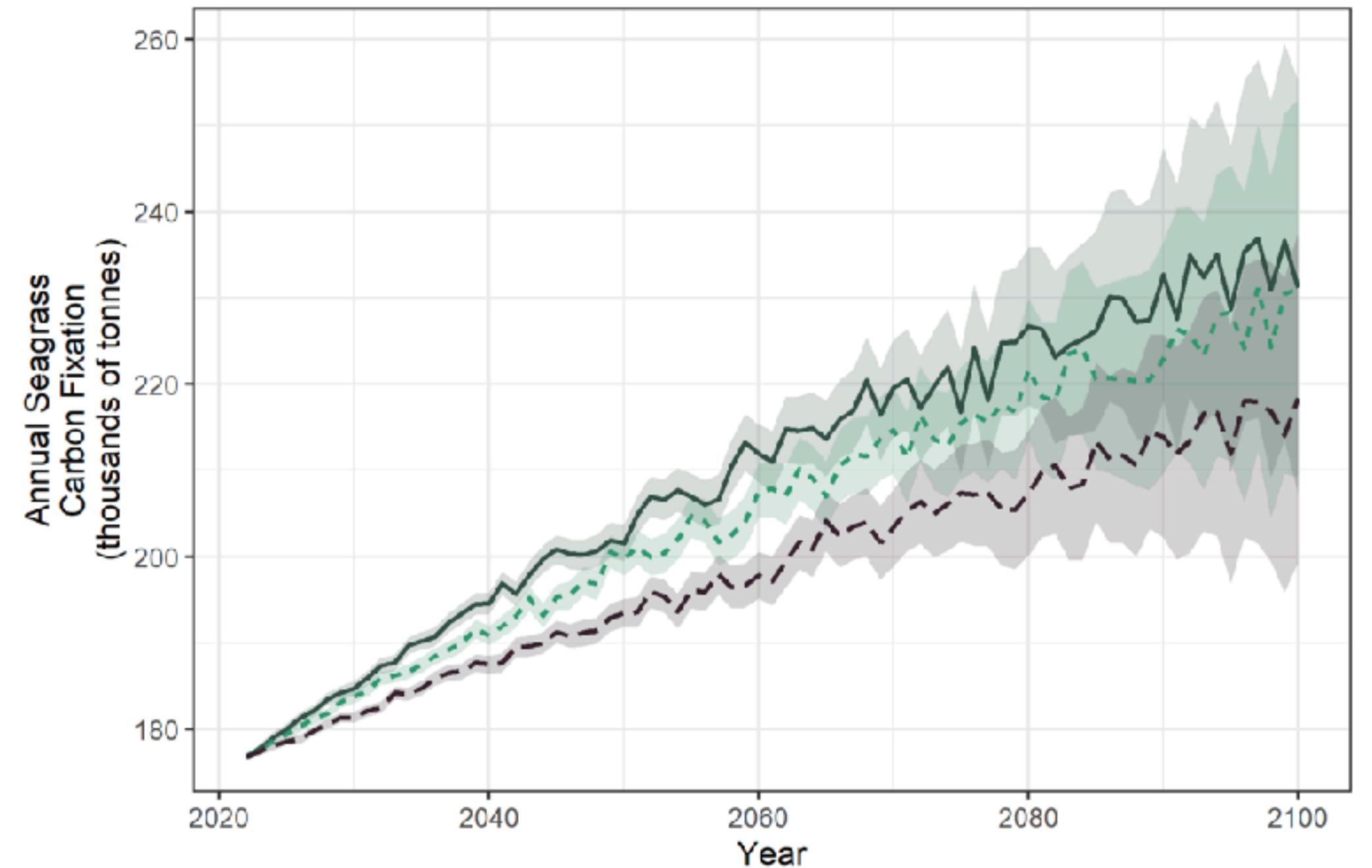
Forecast coastal erosion for flood risk & carbon leakage

- 1 Establish baseline elevation and observed elevation dynamics at pixel level and quantify protective characteristics of mangroves
- 2 Forecast pixel level dynamics in conjunction with larger erosional and sea level dynamics defined by IPCC scenarios
- 3 Carry out Monte Carlo simulations to obtain estimate windows into the future



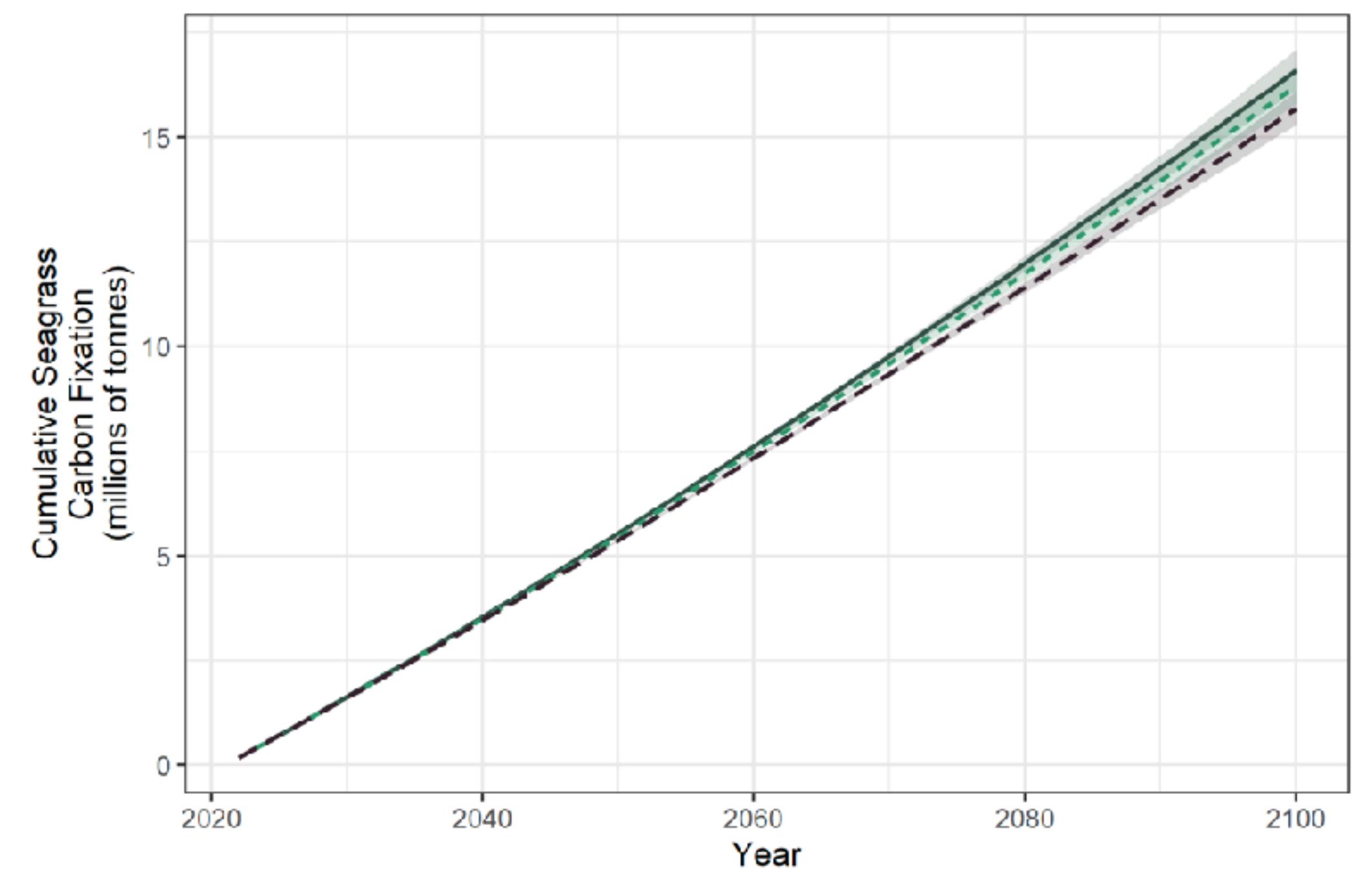
Calculate primary indicators for ecosystem services (value)





Scenario Analysis to forecast ecosystem positive or negative impact due to restoration, harmful activity (i.e dredging) or inaction

How we did this



- 1 Collect and quantify observed spatial relationships, growth and death data, and environmental factors
- 2 Integrate with known species-specific lifecycle behaviour, age-specific growth rates, and larger population dynamics
- 3 Monte Carlo simulations across space and time for various growth and environmental scenarios to converge on estimate windows of potential outcomes; compare to "null scenarios"

Seychelles (2021): During Research Phase at DLR

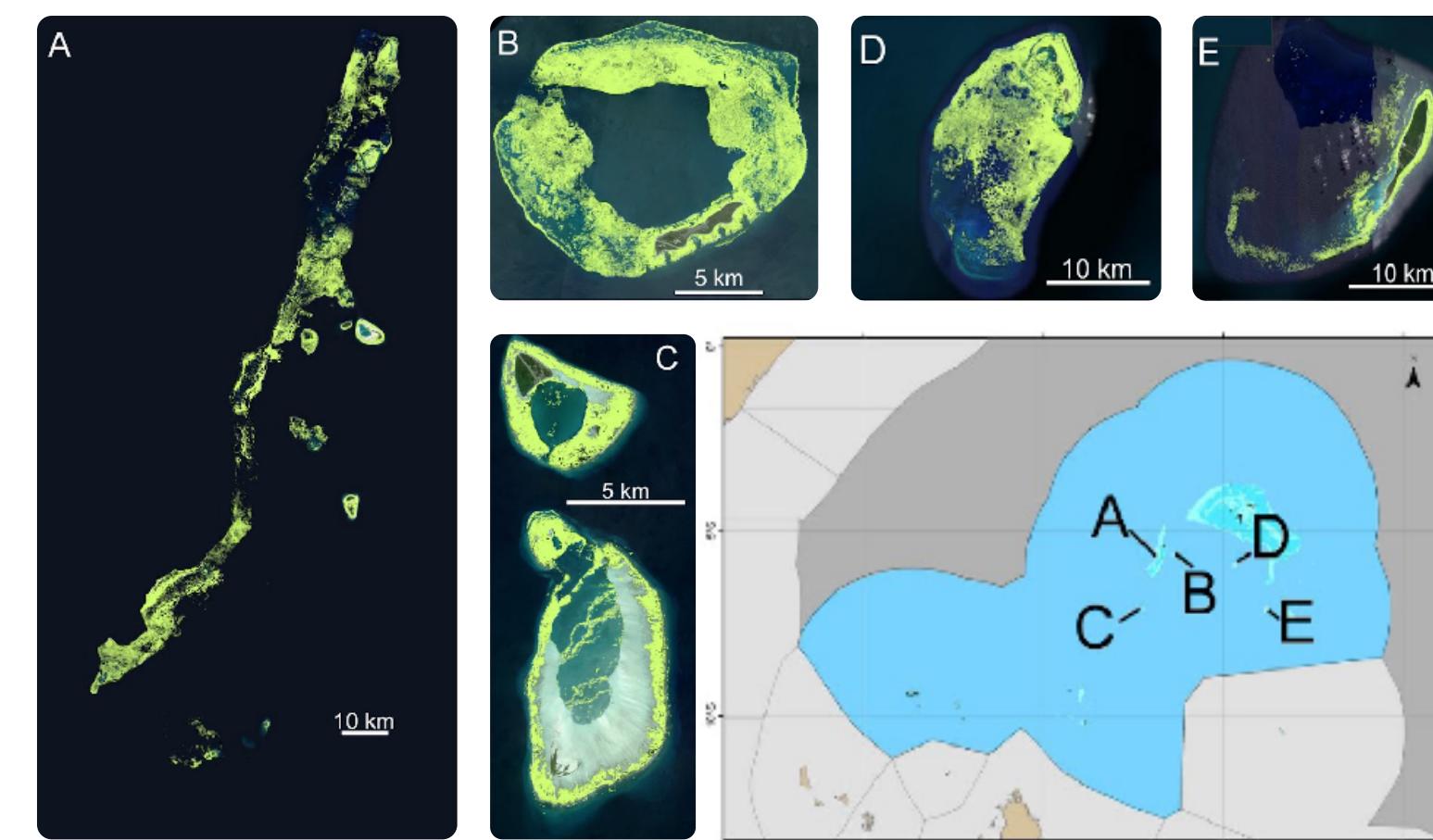
First example of remote sensing used to establish blue carbon nationally-determined contribution

BEFORE

- ✗ Lack of data to establish baseline
- ✗ No defined blue carbon roadmap
- ✗ Current databases underestimate or overestimate seagrass habitat extent

AFTER

- ✓ High resolution (>25m depth) map of seagrass blue carbon accounting
- ✓ Integrated into national policy and implementation of blue carbon projects



SELECT PARTNERS:

