Pacific Island Blue Carbon Knowledge Exchange Network: PIBLUEX

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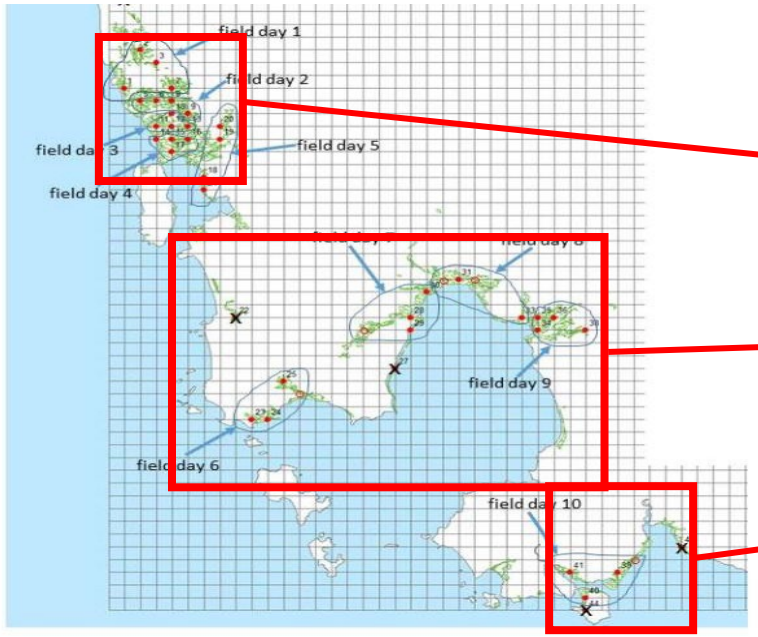
BLUE CARBON KNOWLEDGE EXCHANGE NETWORK

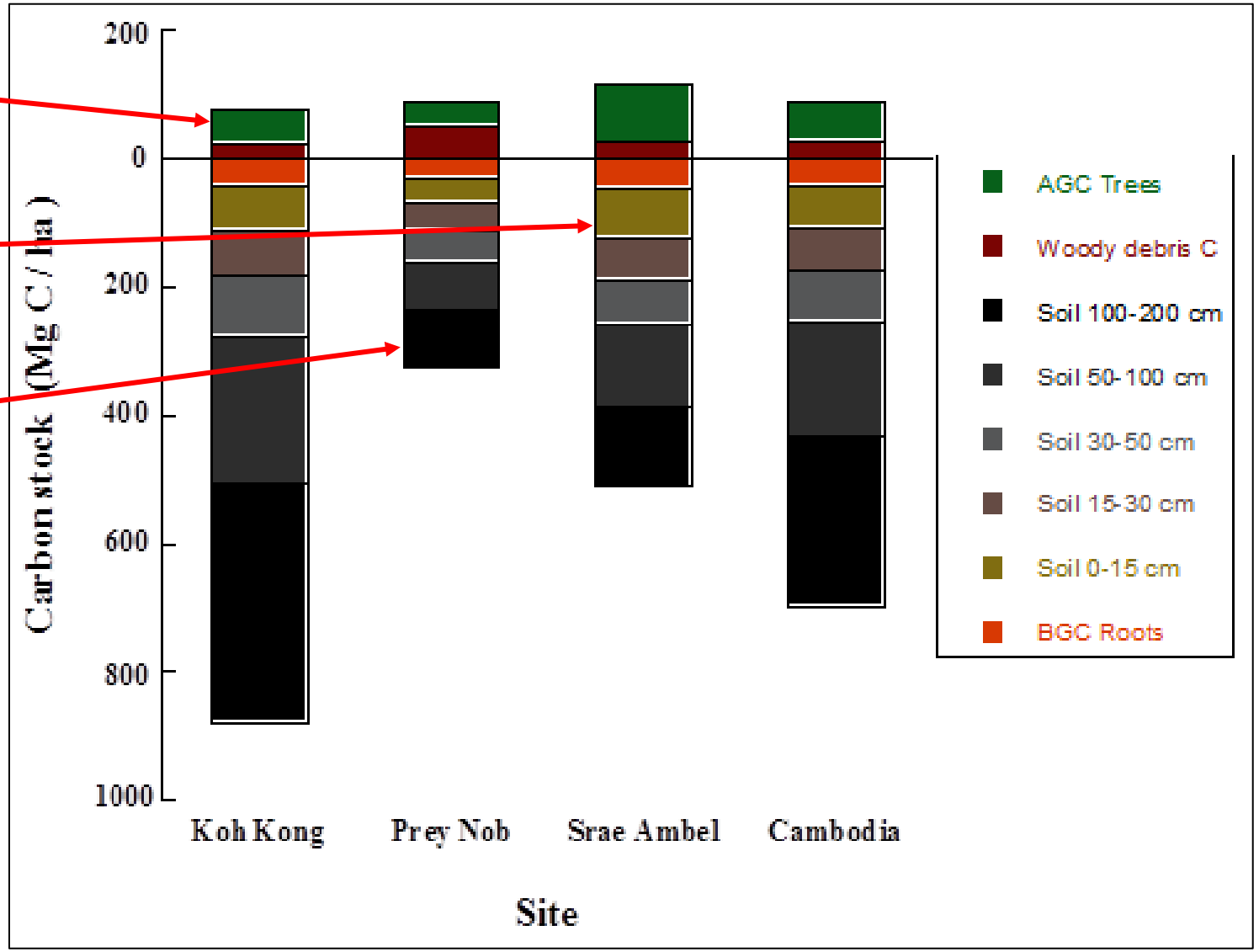
Why? Coordinate efforts and allow groups and individuals to pool resources and information for a more strategic and synergistic approach to assessing blue carbon ecosystems at the **national level**.

What is it? A consortium of NGOs, government organizations and individuals interested in conducting blue carbon assessments in the Pacific region.

BLUE CARBON
KNOWLEDGE EXCHANGE
NETWORK

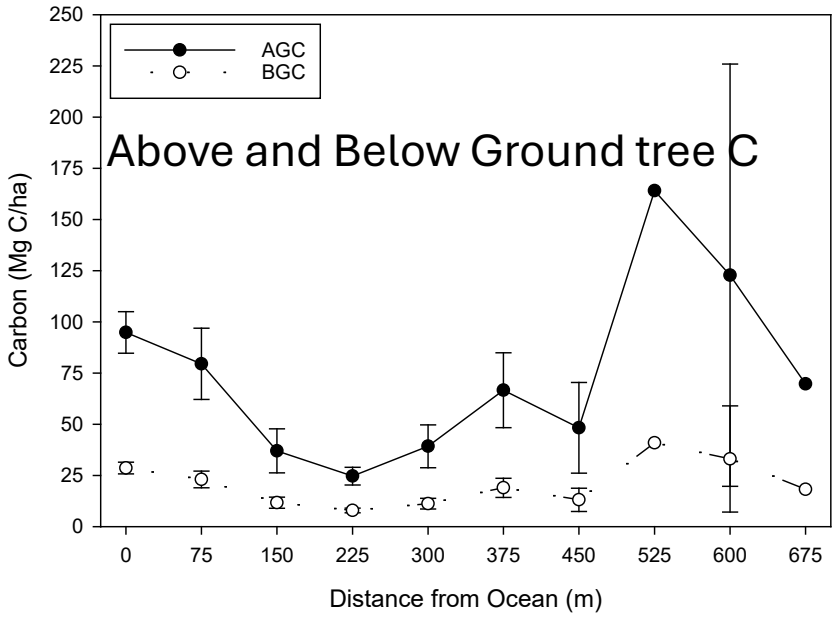
Importance of BC assessments at national level: Cambodia

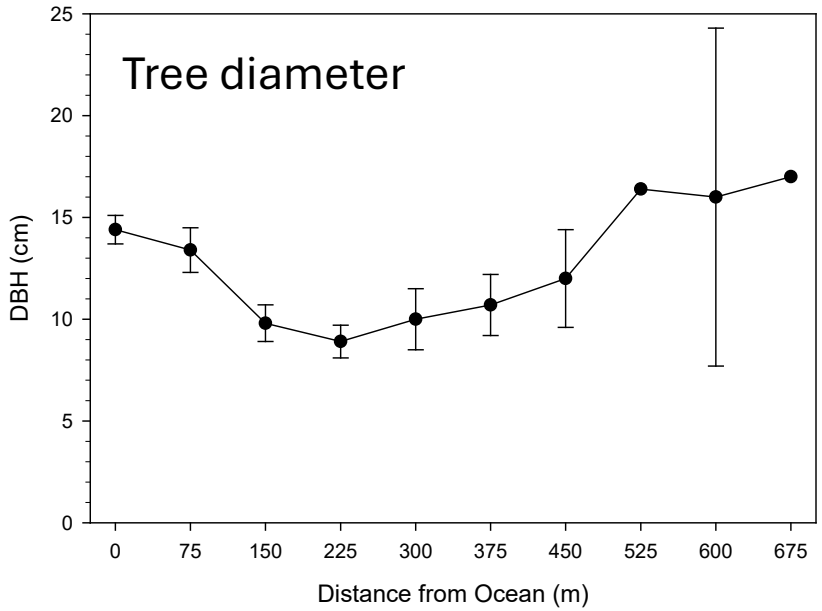


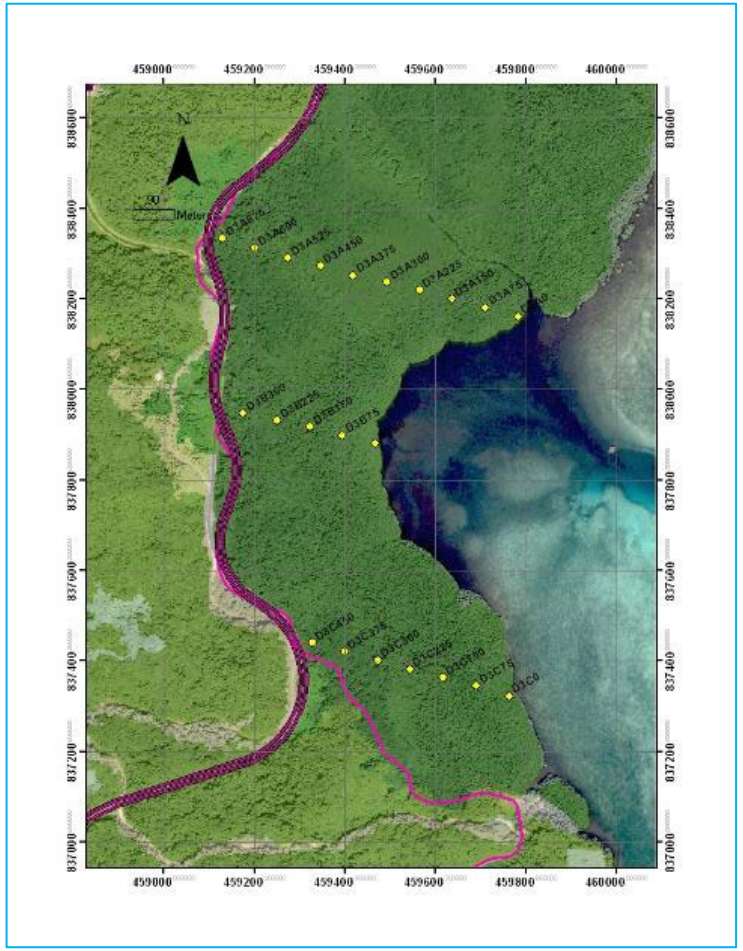


Sharma et al. 2020

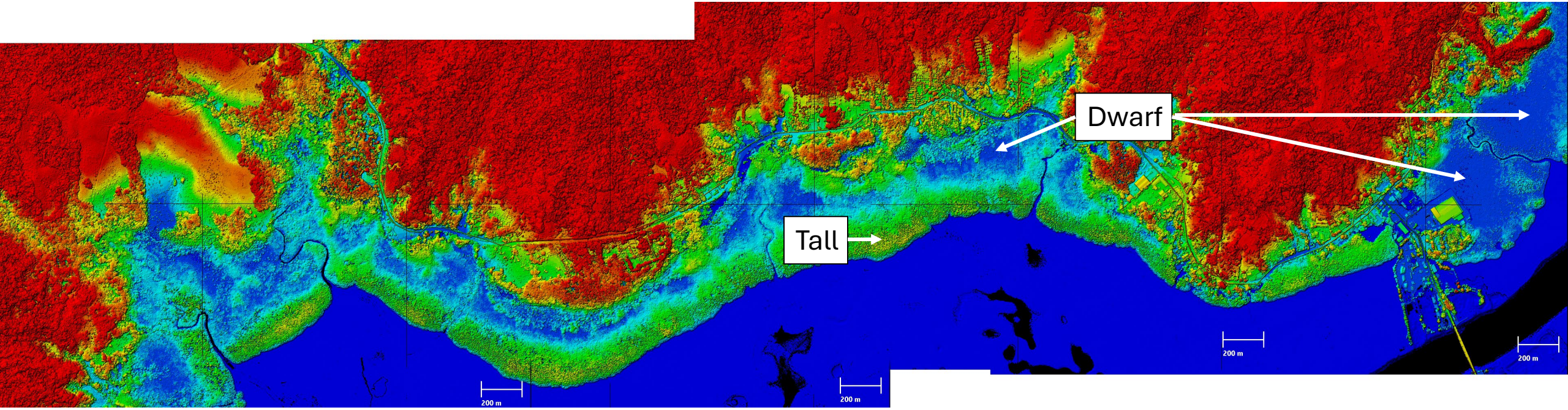
Importance of BC assessments at national level: Palau







MacKenzie et al., in review

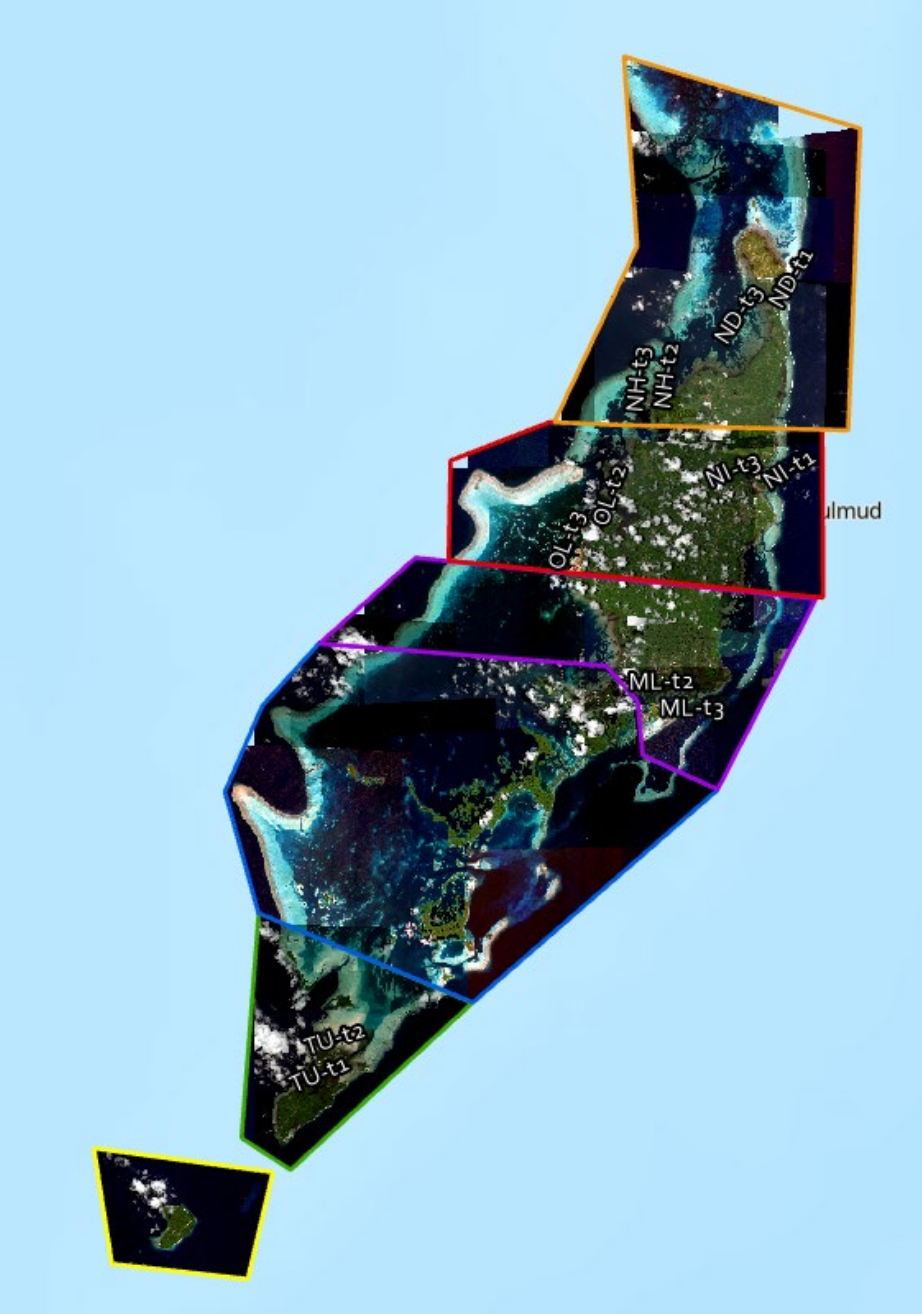

Dwarf
Tall
200 m
200 m
200 m
200 m

Pacific Island Blue Carbon Knowledge Exchange Network

- Created a **Blue Carbon** Dream Team comprised of Fijians, Samoans, and Palauans

- Trained on remote sensing and field protocols to conduct a national assessment of Palau's mangroves and seagrass

Remote sensing



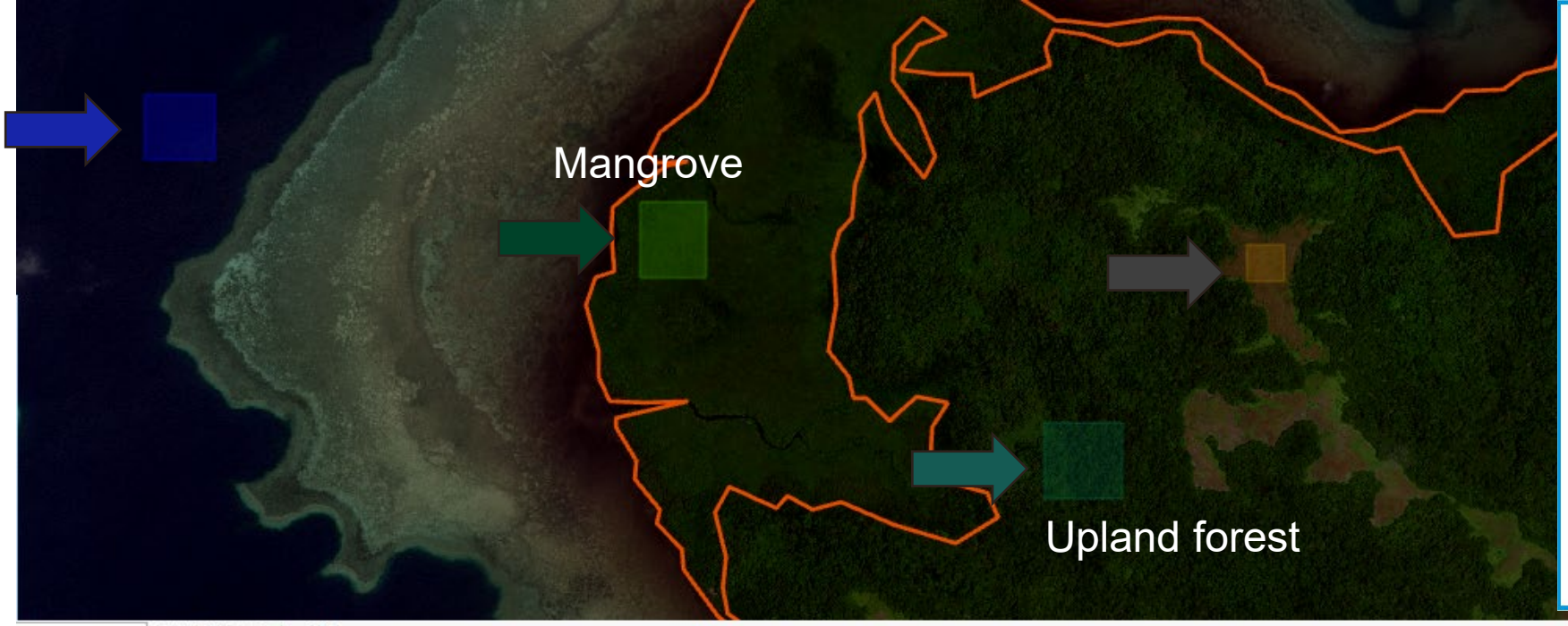
1. Babeldaob North: Mereoni, Tavita, Rodney

2. Babeldaob Middle: Kalesi, Faainu, Jacquie

3. Babeldaob South: Zoyha, Mohammed, Darlynne

4. Koror: Xiao, Vitolina, Victor

5 & 6. Pelellu & Angaur: Isaac, Mike, Dave, Henry



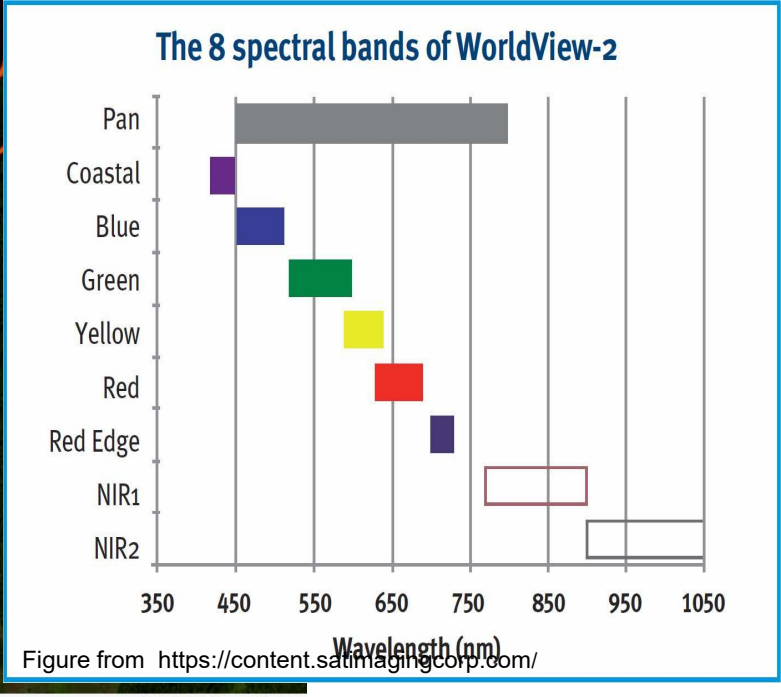
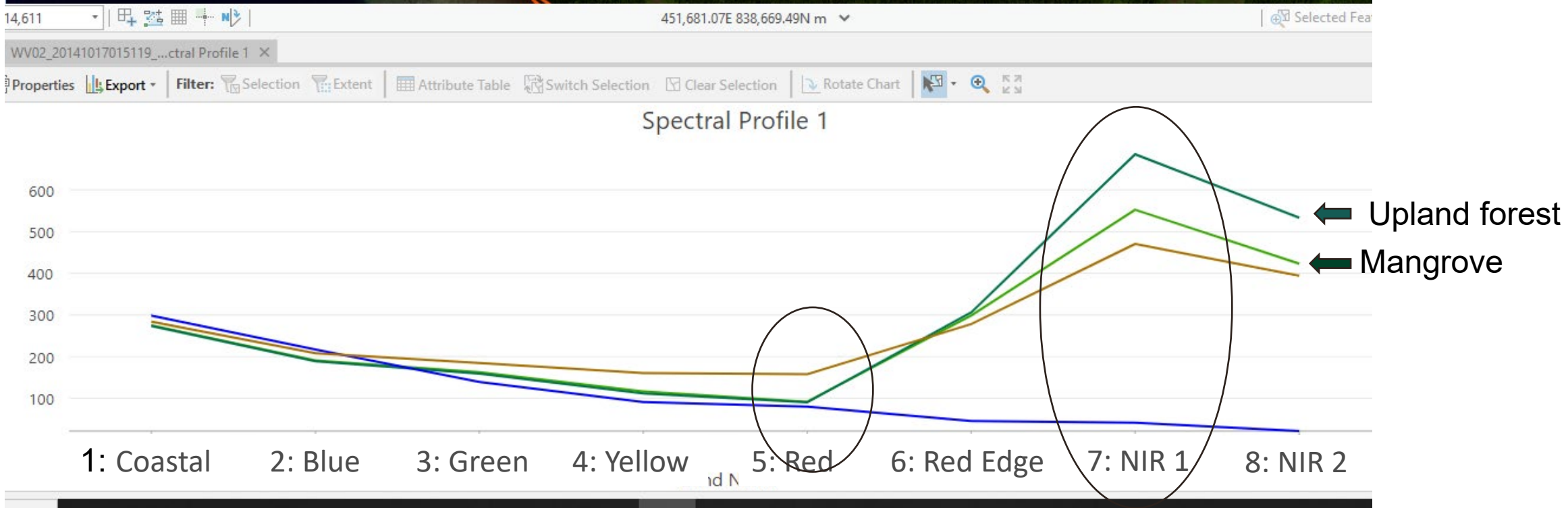
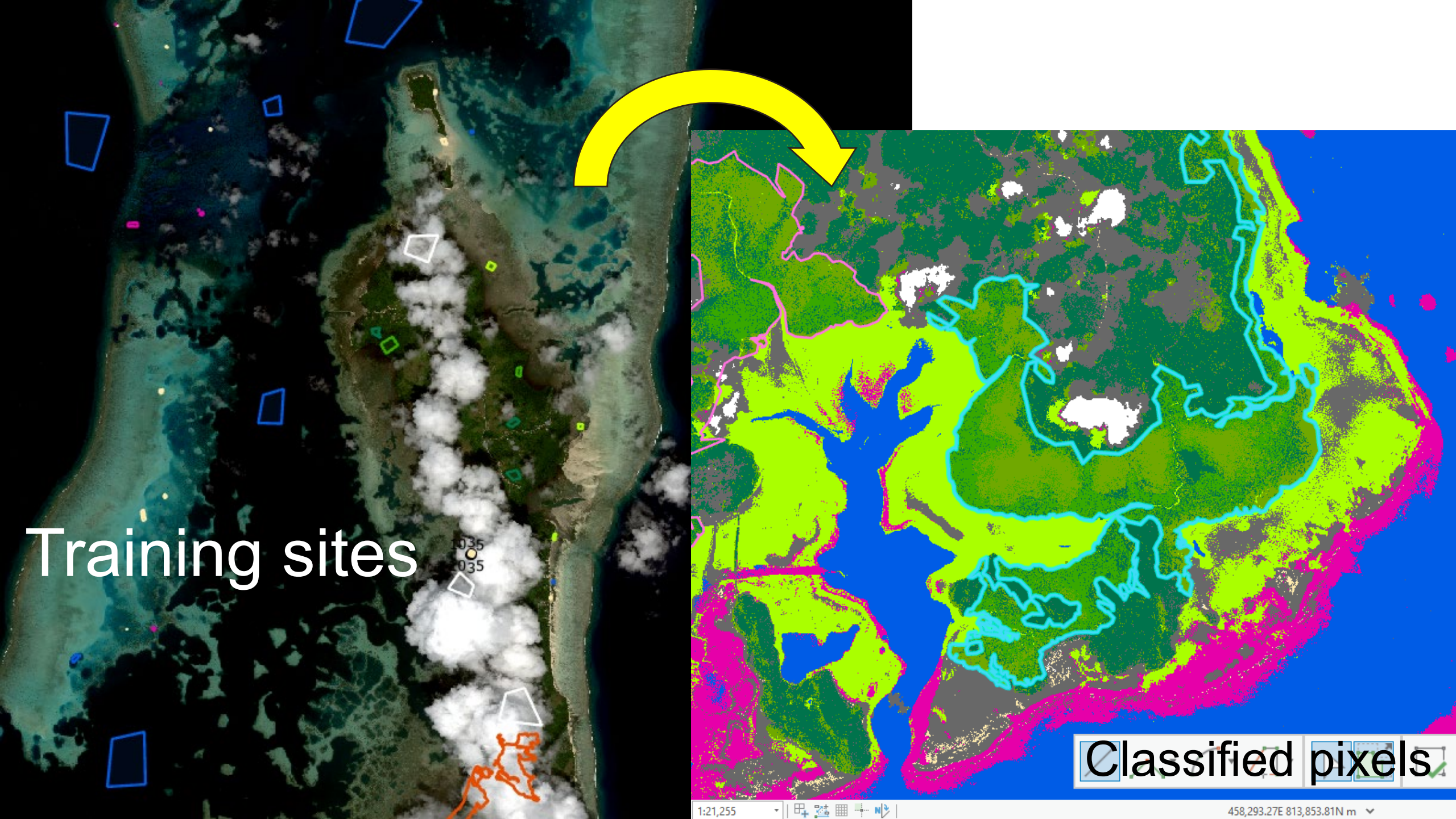


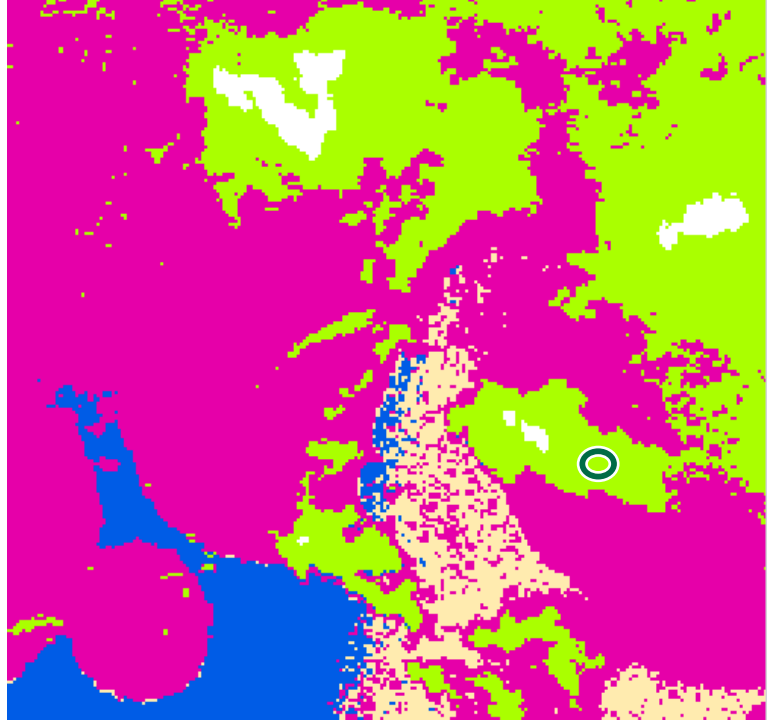
Figure from https://content.satimagingcorp.com/

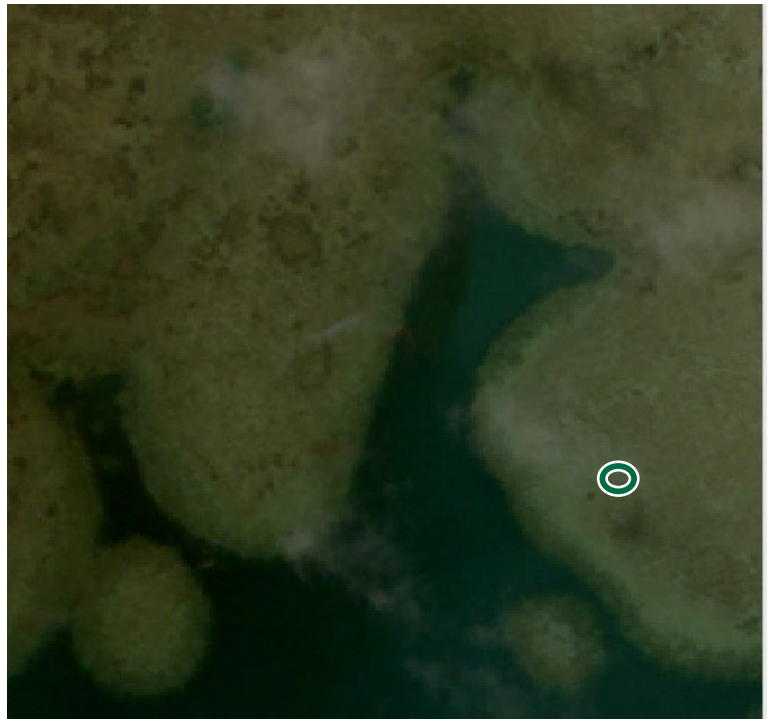


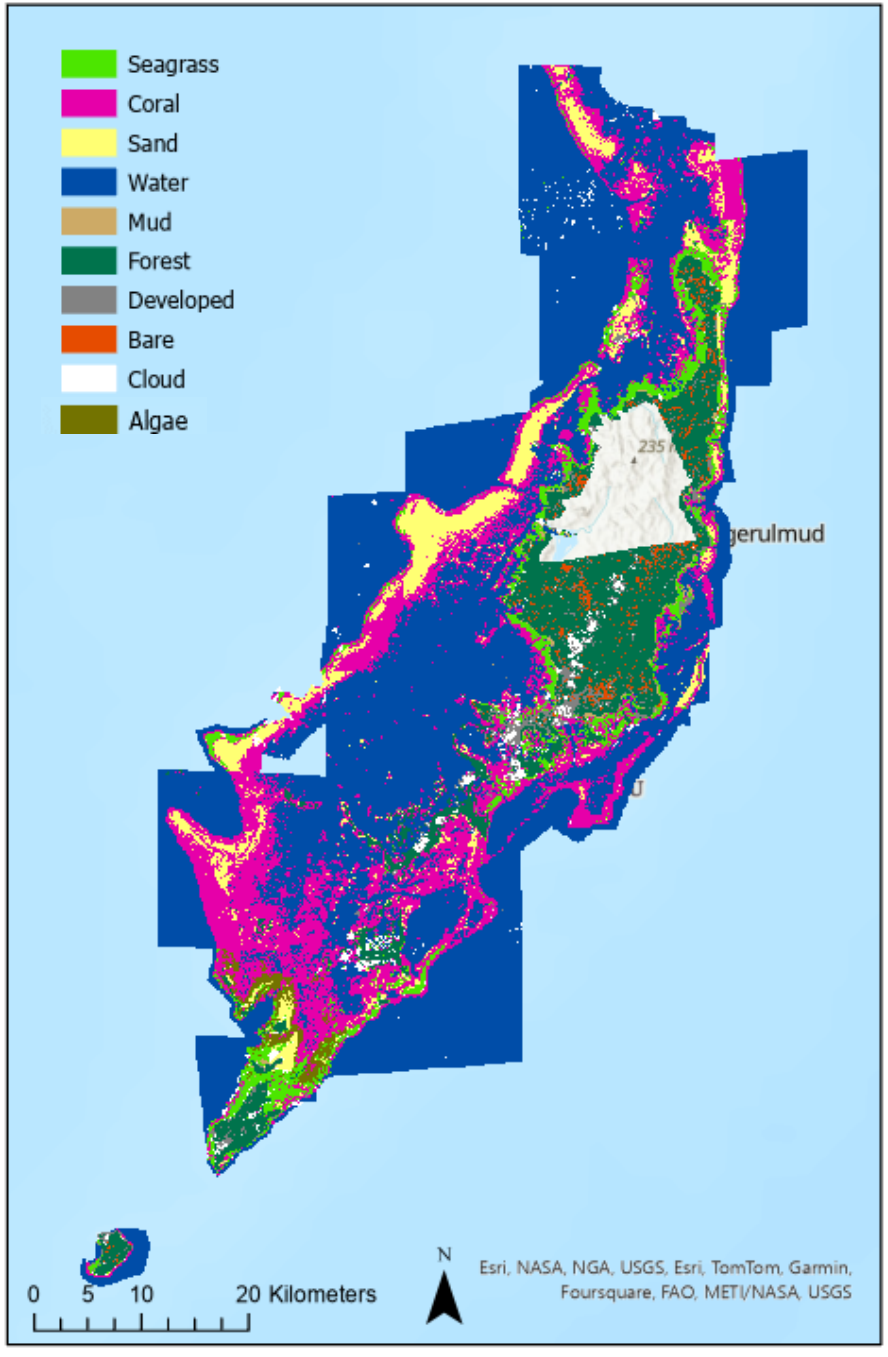

Training sites
Classified pixels
1:21,255
458,293.27E 813,853.81N m

Validation or error assessment

	A	B	C	D	E	F	G	H	I	J
1		[Actual] Water	[Actual] Seagrass (patchy)	[Actual] Seagrass (dense)	[Actual] Land	[Actual] Cloud	[Actual] Reef	[Actual] Bare	Total	Prod.'s Accuracy
2	[mapped] Water	101	11	4	2	8	13	8	147	68.71%
3	[mapped] Seagrass (patchy)	8	176	30	8	2	9	12	245	71.84%
4	[mapped] Seagrass (dense)	13	25	164	13	8	7	7	237	69.20%
5	[mapped] Land	7	9	11	109	5	6	11	158	68.99%
6	[mapped] Cloud	10	6	7	5	85	3	5	121	70.25%
7	[mapped] Reef	4	8	11	9	3	96	9	140	68.57%
8	[mapped] Bare	9	4	5	2	4	7	89	120	74.17%
9	Total	152	239	232	148	115	141	141		
10	User's Accuracy	66.45%	73.64%	70.69%	73.65%	73.91%	68.09%	63.12%		70.21%

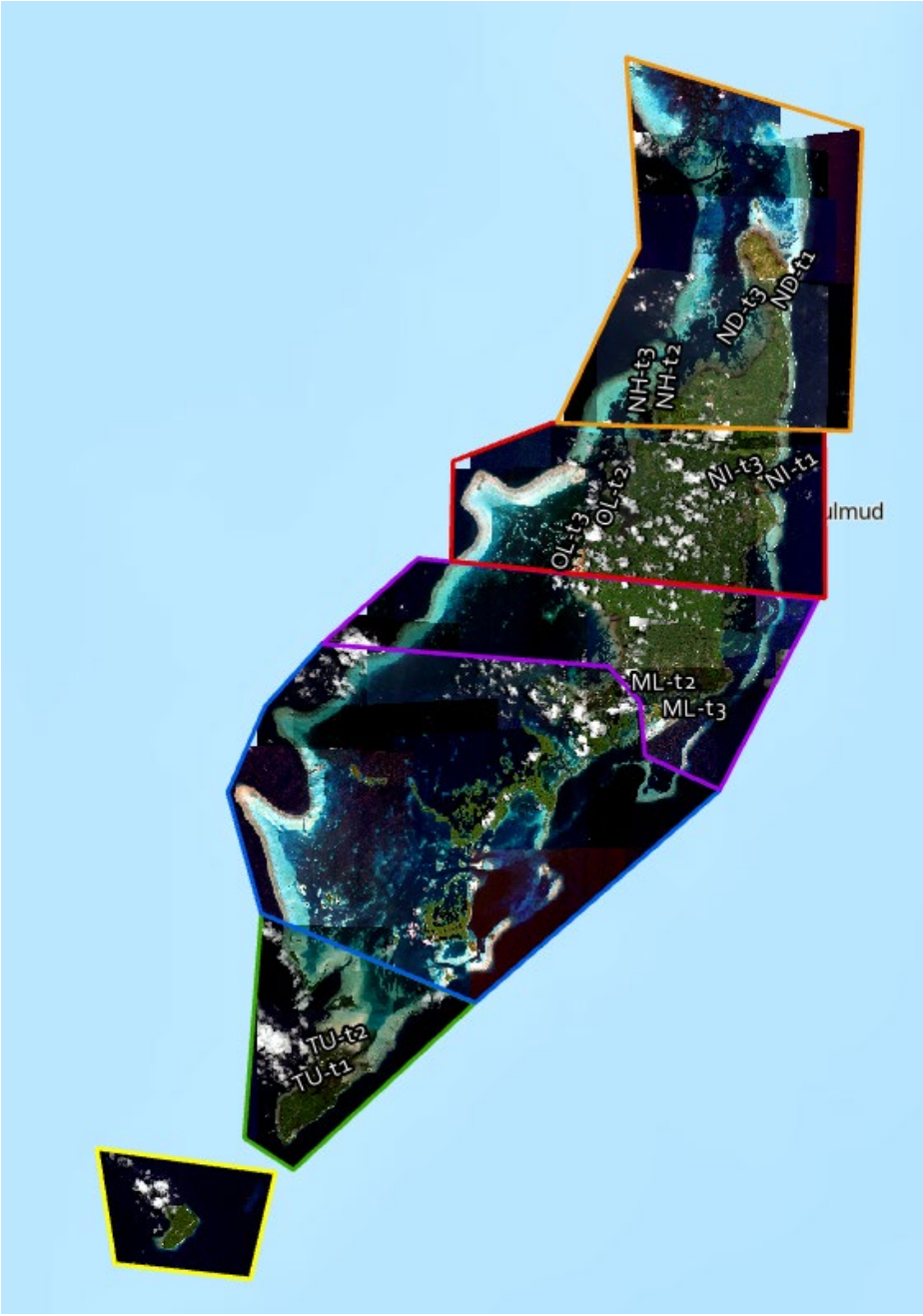


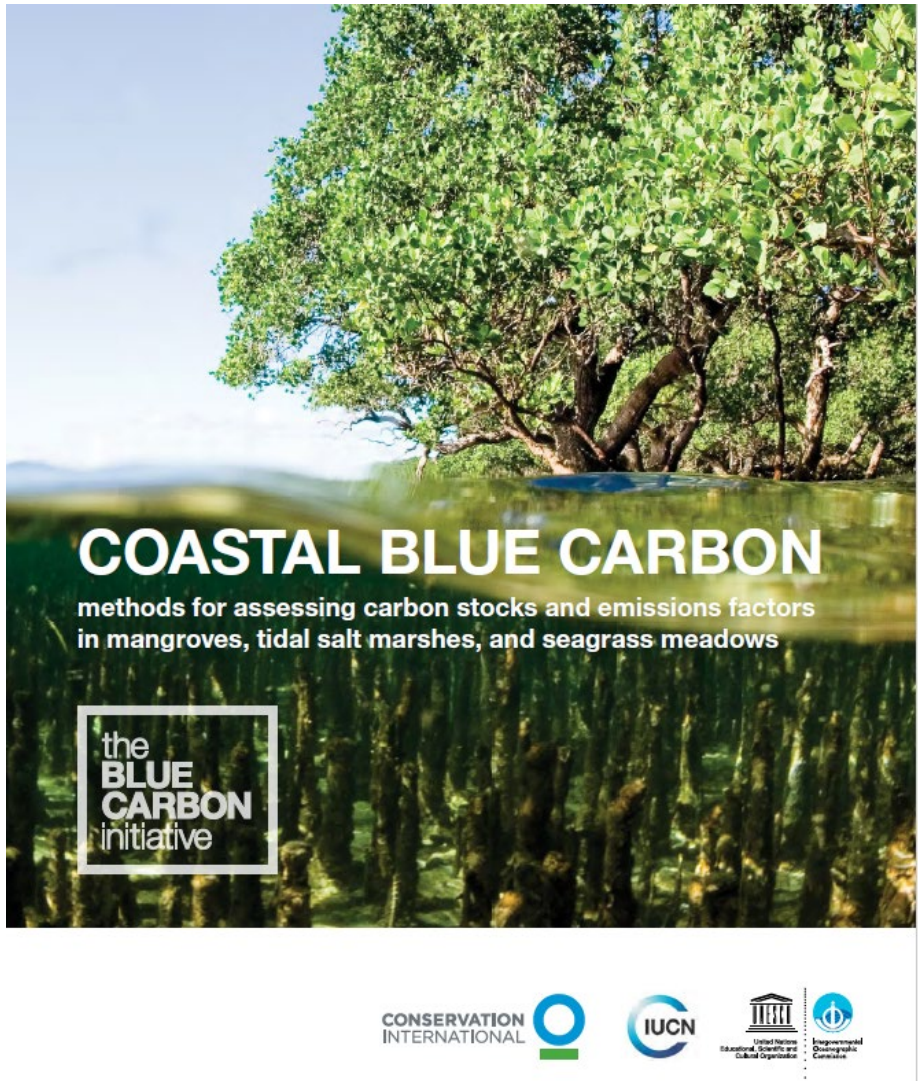



Seagrass
Coral
Sand
Water
Mud
Forest
Developed
Bare
Cloud
Algae
235 m
gerulmud
0 5 10 20 Kilometers
N
Esri, NASA, NGA, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS

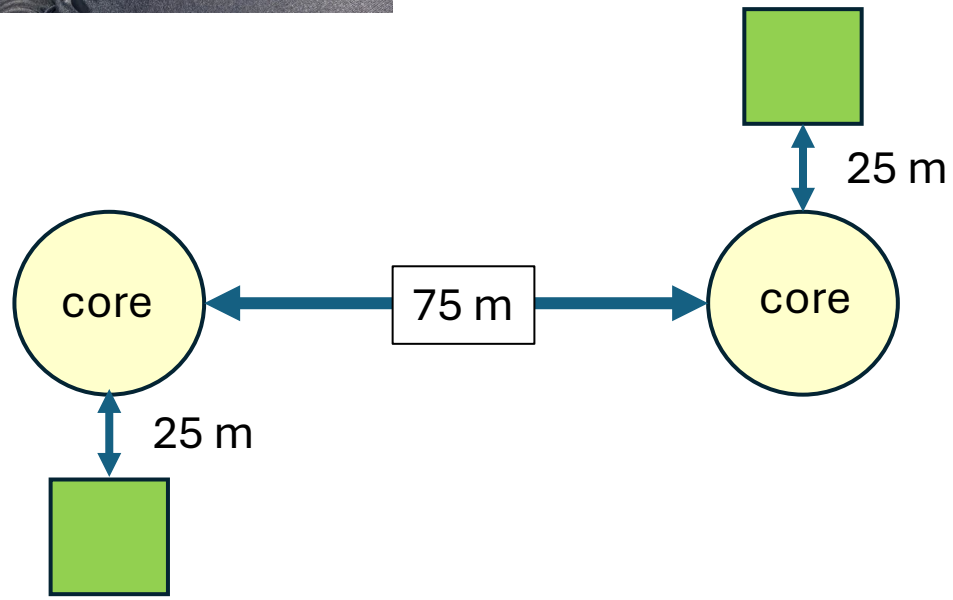

Sites
Seagrass
235 m
Ngerulmud
PALAU
Seagrass area
166 km2
0 5 10 20 Kilometers
N
Esri, NASA, NGA, USGS, Esri, TomTom, Garmin, Foursquare, FAO, METI/NASA, USGS

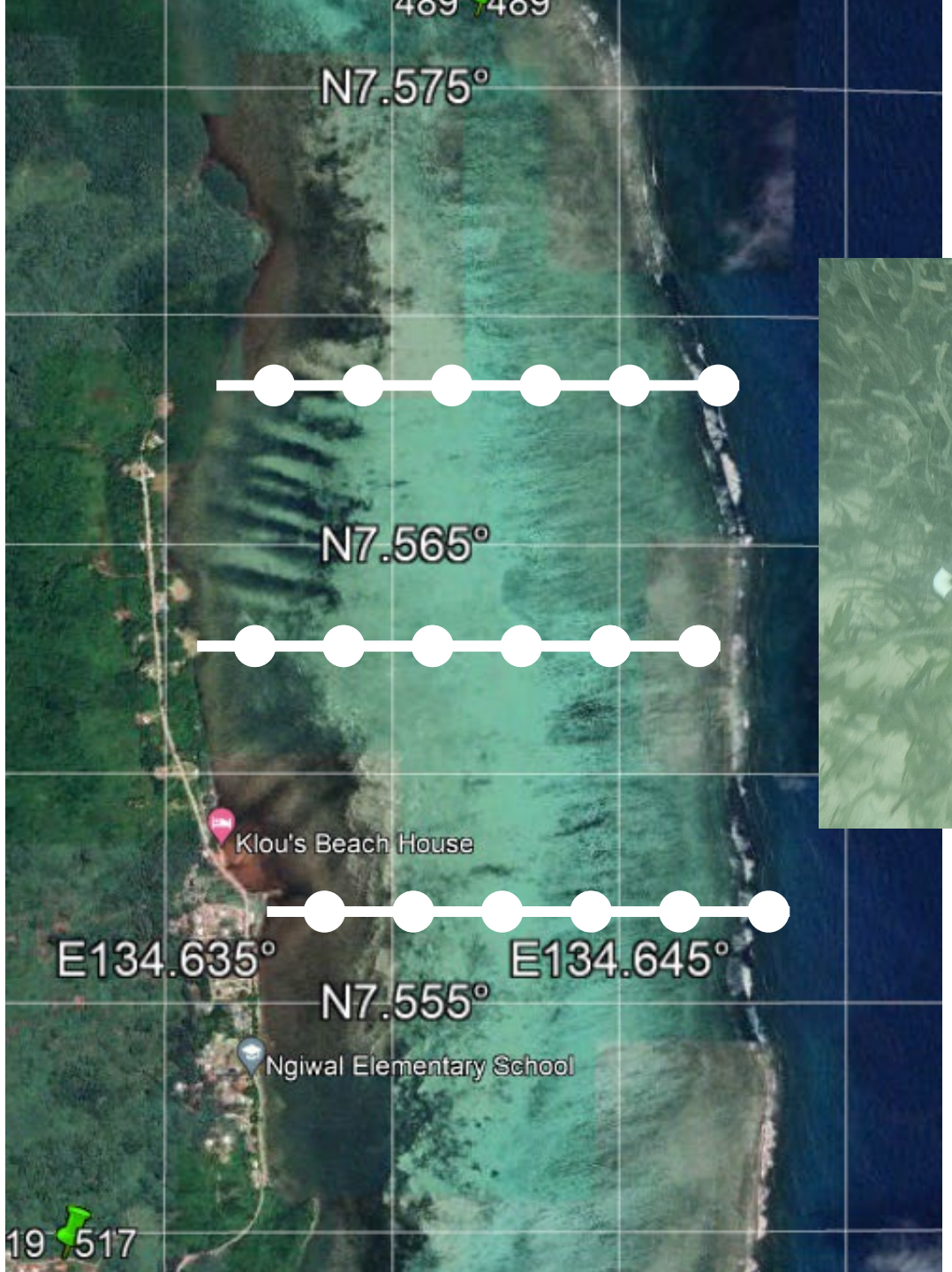
Field sampling

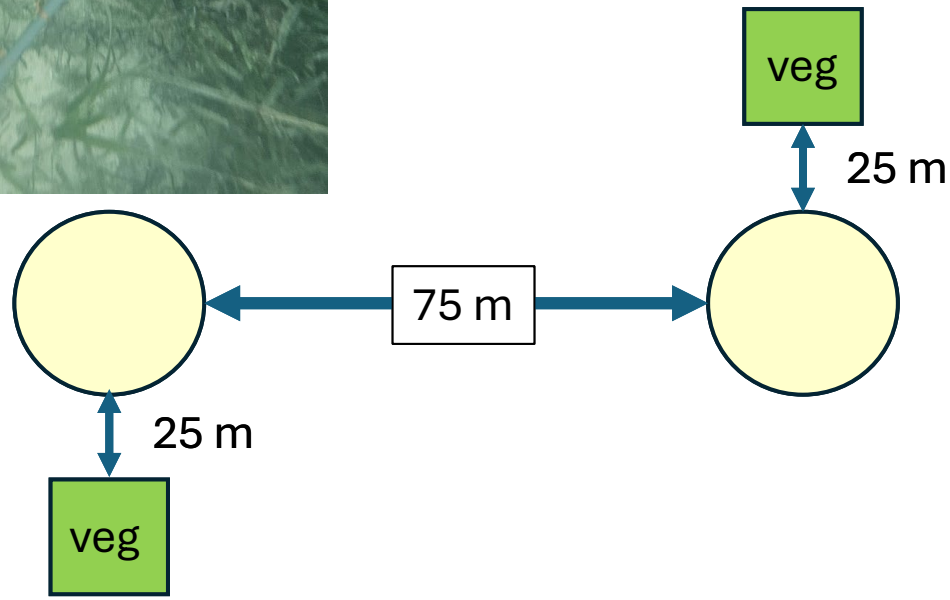


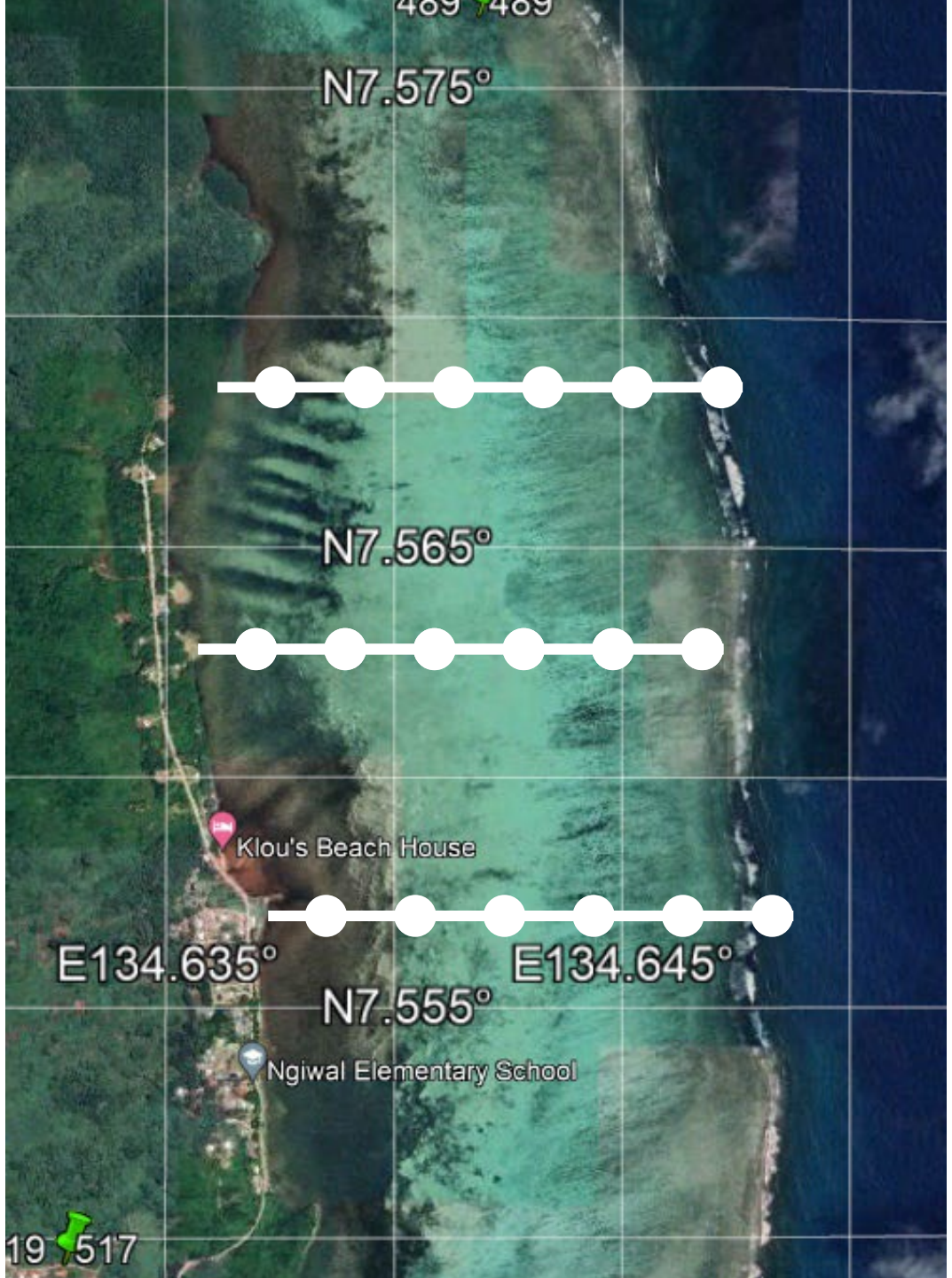


Field sampling




N7.575°
N7.565°
Klou's Beach House
E134.635°
E134.645°
N7.555°
Ngiwal Elementary School


veg
25 m
75 m
25 m
veg


N7.575°
N7.565°
Klou's Beach House
E134.635°
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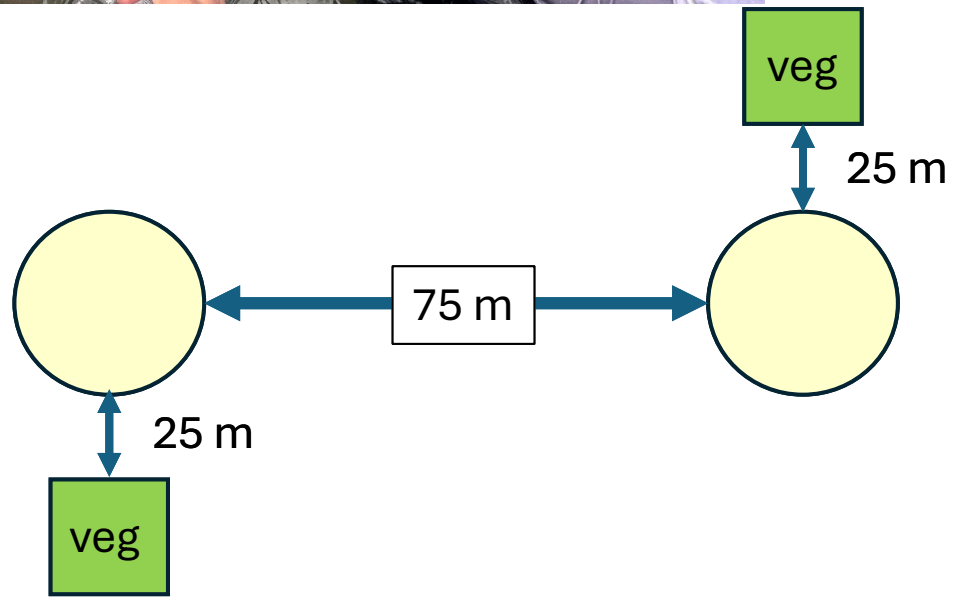
N7.555°
Ngiwal Elementary School


veg
25 m
75 m
25 m
veg

What worked?

1) Created a trained Blue Carbon Dream Team

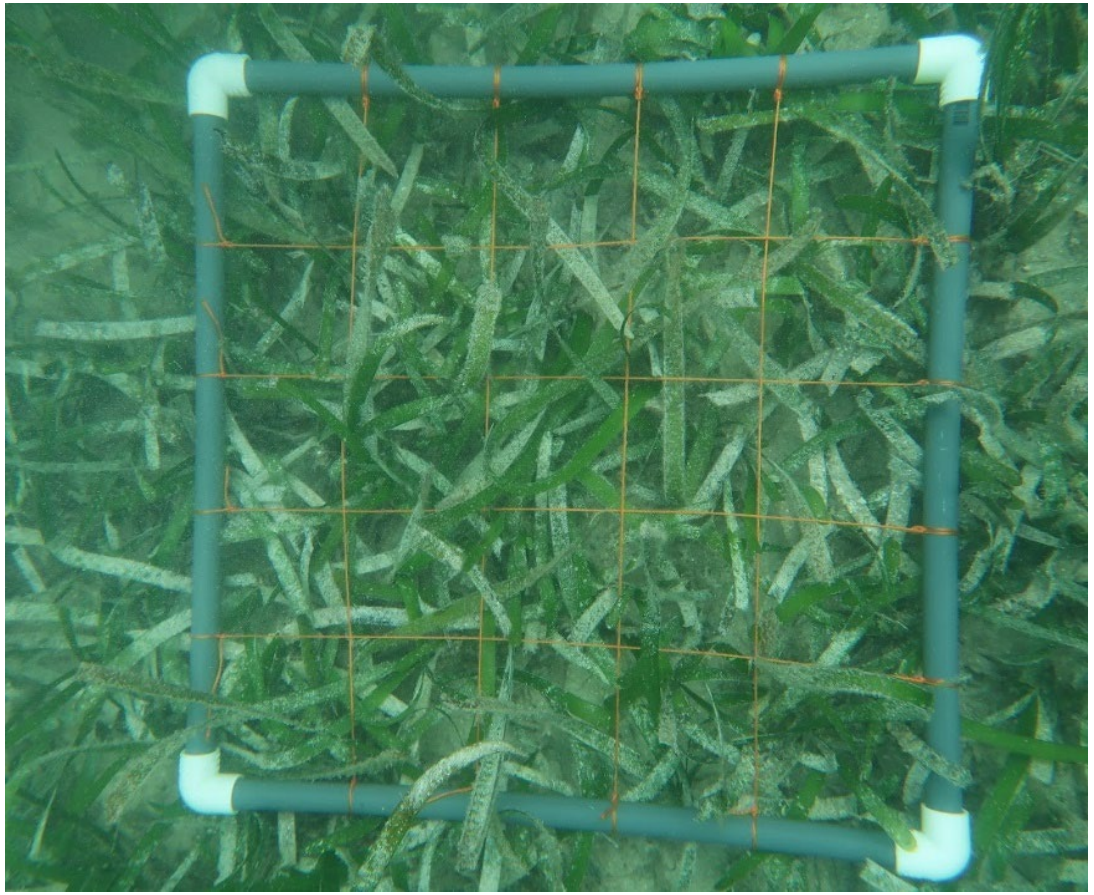
    - ready to assess Samoa's BCEs (2025) and (maybe) Fiji's BCEs (2026)

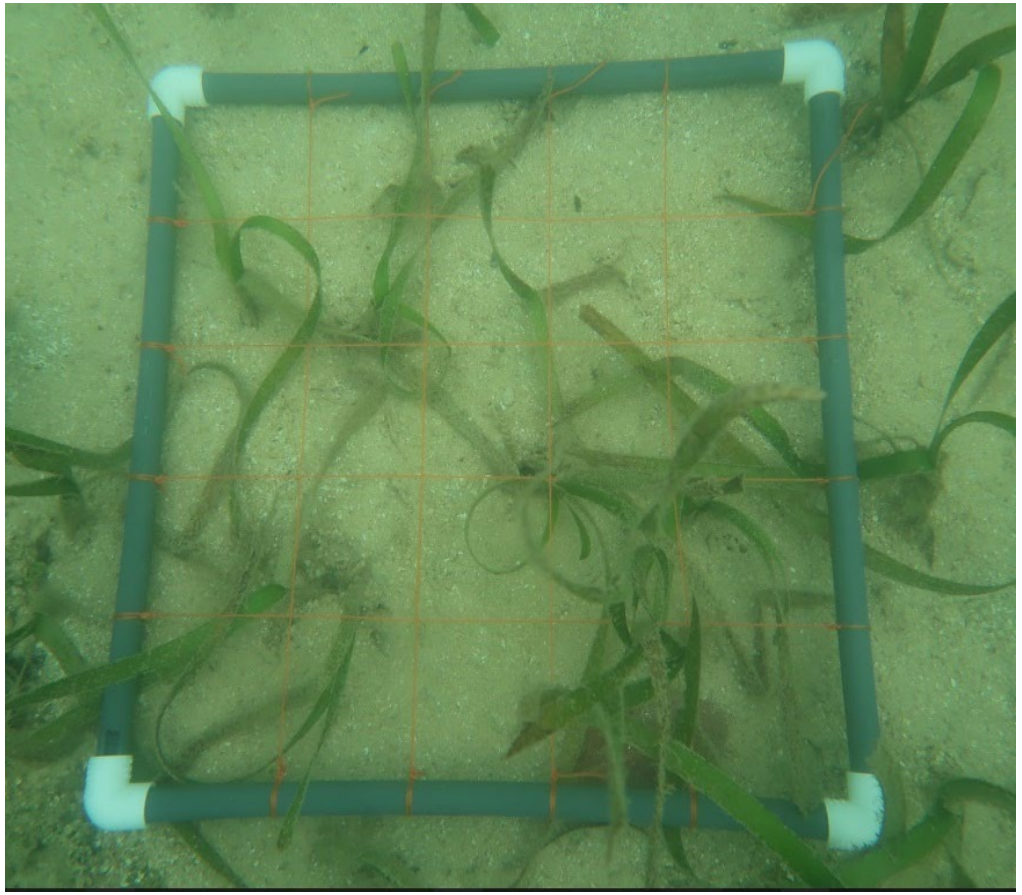
2) Generated aerial estimates and carbon stocks of mangroves that have been used in Palau's national communications

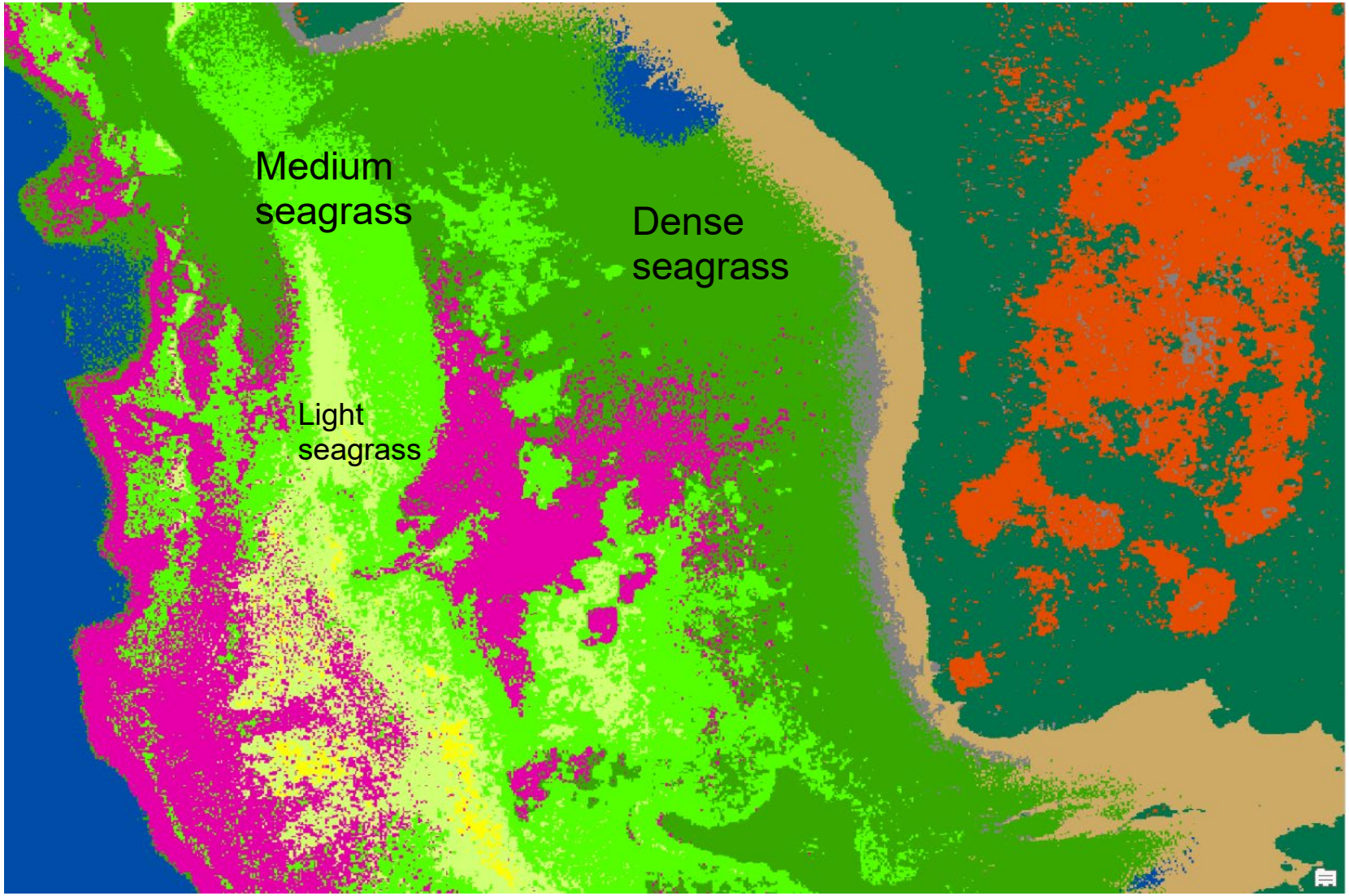
3) Generated aerial estimates and carbon stocks (soon) of seagrasses that will be used in Palau's national communications

• Lessons learned/challenges

1) Include density estimates (light (0-10%); medium (10-50%); dense (50-100%)






Medium
seagrass
Dense
seagrass
Light
seagrass

• Lessons learned/challenges

1) Include density estimates (light (0-10%); medium (10-50%); dense (50-100%)

2) How to separate species for vegetation carbon stocks

3) Depth of water and tidal height correction could improve mapping process

4) Assessing mixed pixels (e.g., coral and seagrass, algae and seagrass, etc.)

5) Better spread of ground-truthing points

• Lessons learned/challenges

1) Include density estimates (light (0-10%); medium (10-50%); dense (50-100%)

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4) Assessing mixed pixels (e.g., coral and seagrass, algae and seagrass, etc.)

5) Better spread of ground-truthing points

6) Accounting for compaction in soils cores

7) Effectively removing $CaCO_3$ from soil cores

8) Crocodiles?

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