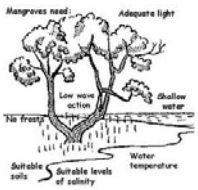
LANDSCAPE PATTERNS IN MANGROVE ECOSYSTEM

BACKGROUND

What are mangroves

- Assemblage of woody halophytes
- Foundational species of intertidal forest and shrubland ecosystems
- Along tropical and subtropical coastlines
- Total global coverage -180,000 square km.
- 112 countries and territories.
- 80 species throughout the world



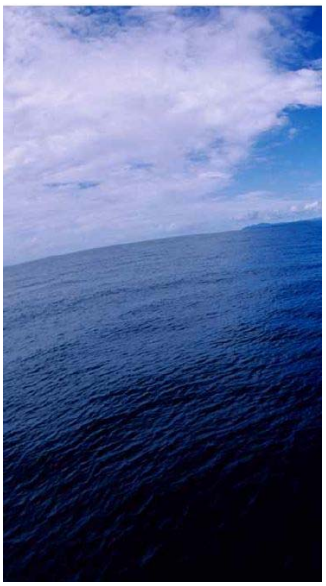
BACKGROUND

Contribute US$25,000 billion annually to the global economy through ecosystem services (Nellemann, et al., 2009)

- Provision of salts and food products
- Filtration of pollutants and retention of flood waters
- Shielding of juvenile aquatic organisms
- Support biodiversity
- Supporting aquatic food-chains
- Sequestration green house gases
- …..

STATEMENT OF PROBLEM

- Climate change efforts aimed at reduction of CO_2
- Conservation and restoration of efficient carbon sinks
- Mangroves among the most carbon-rich forests in the tropics



STATEMENT OF PROBLEM

"The most crucial, climate combating coastal ecosystems are disappearing faster than anything on land and much may be lost in a couple of decades…… If the world is to decisively deal with climate change, every source of emissions and every option for reducing these should be ***scientifically evaluated and brought to the international community's attention****."*

(Achim Steiner UN Under-Secretary General and Executive Director, UNEP)

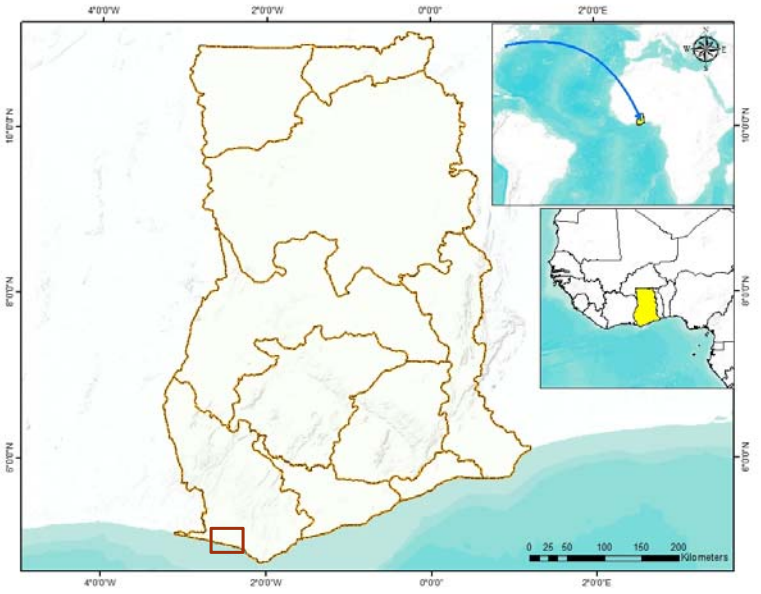
OBJECTIVES

- Map the current spatial dimension of mangrove forests.
- Detect changes in historical land cover pattern to help estimate the rate of degradation.
- Predict/model future trajectory based on current and perceived threats.

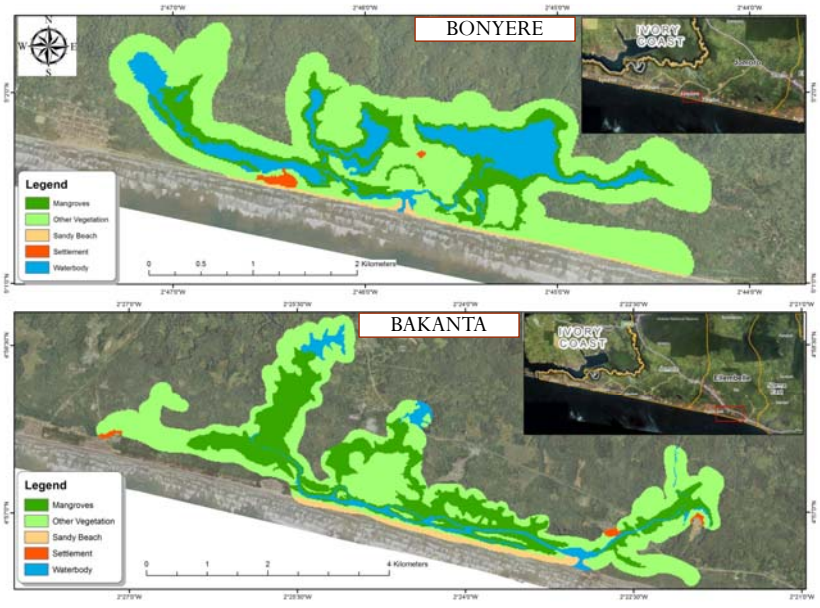
- Description of the landscape pattern of the two mangrove forests.
- Explore the relationship between grain size and landscape metrics

METHODOLOGY

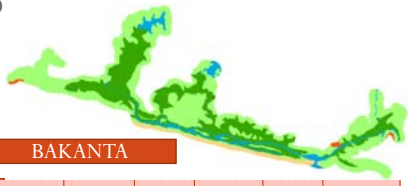
Study Area



METHODOLOGY

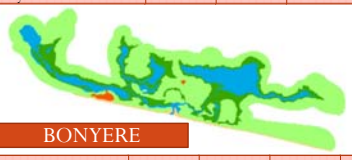


CLASS-LEVEL METRICS



BAKANTA

TYPE	CA	PLAND	LPI	TE	ED	TCA	CPLAND	NDCA	DCAD
Other Vegetation	638.3025	56.5435	23.4035	75780	67.1291	559.3275	49.5476	55	4.8721
Waterbody	79.8975	7.0777	4.3132	40695	36.0493	40.5675	3.5936	50	4.4292
Mangroves	359.865	31.8783	25.4405	81915	72.5637	275.265	24.3841	44	3.8977
Settlement	7.1775	0.6358	0.2531	2055	1.8204	5.1525	0.4564	3	0.2658
Sandy Beach	43.6275	3.8647	3.793	7365	6.5242	35.5275	3.1472	2	0.1772

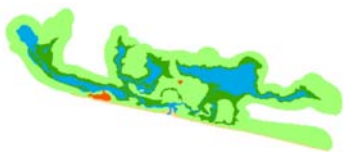


BONYERE

TYPE	CA	PLAND	LPI	TE	ED	TCA	CPLAND	NDCA	DCAD
Other Vegetation	366.39	63.3915	61.8538	38475	66.568	324.945	56.2208	13	2.2492
Waterbody	97.74	16.9106	8.2023	31575	54.6299	67.2975	11.6436	31	5.3635
Mangroves	99	17.1286	8.9147	52500	90.8336	46.53	8.0505	76	13.1492
Settlement	3.87	0.6696	0.5995	1650	2.8548	2.2275	0.3854	2	0.346
Sandy Beach	10.98	1.8997	1.0628	5820	10.0696	3.8925	0.6735	47	8.1318

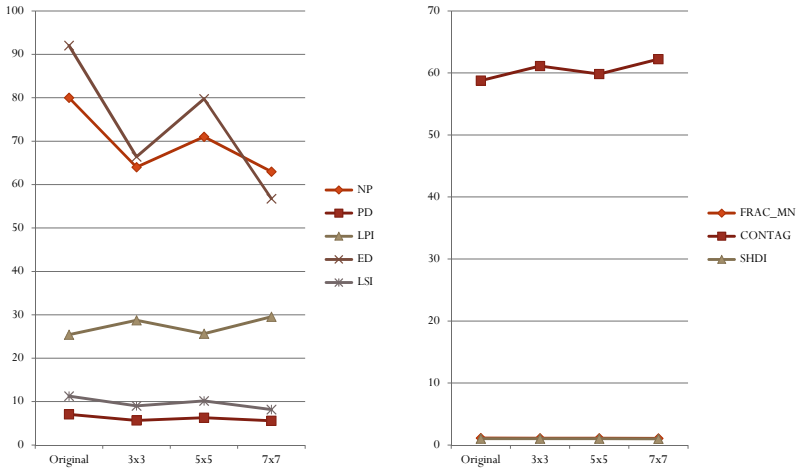
LANDSCAPE-LEVEL METRICS

TA	NP	PD	LPI	TE	ED	LSI	AREA_MN	AREA_SD	AREA_CV	SHAPE_MN	SHAPE_AM	FRAC_MN	FRAC_AM	PAFRAC	TCA	NDCA	DCAD	CONTAG	SHDI	SHEI
1128.87	80	7.0867	25.4405	103905	92.0434	11.2667	14.1109	47.3412	335.4947	2.117	5.4285	1.1227	1.2286	1.3808	915.84	154	13.642	58.7748	1.0322	0.6413



TA	NP	PD	LPI	TE	ED	LSI	AREA_MN	AREA_SD	AREA_CV	SHAPE_MN	SHAPE_AM	FRAC_MN	FRAC_AM	PAFRAC	TCA	NDCA	DCAD	CONTAG	SHDI	SHEI
577.98	37	6.4016	61.8538	65010	112.4779	9.2523	15.6211	58.4791	374.36	2.5623	6.5442	1.1451	1.2581	1.4826	444.8925	169	29.2398	58.6988	1.0005	0.6217

GRAIN SIZE AND LANDSCAPE METRICS



THANK YOU