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The Future of Marine Spatial Planning in Thailand:

A case study in Koh Lan, Pattaya, Thailand

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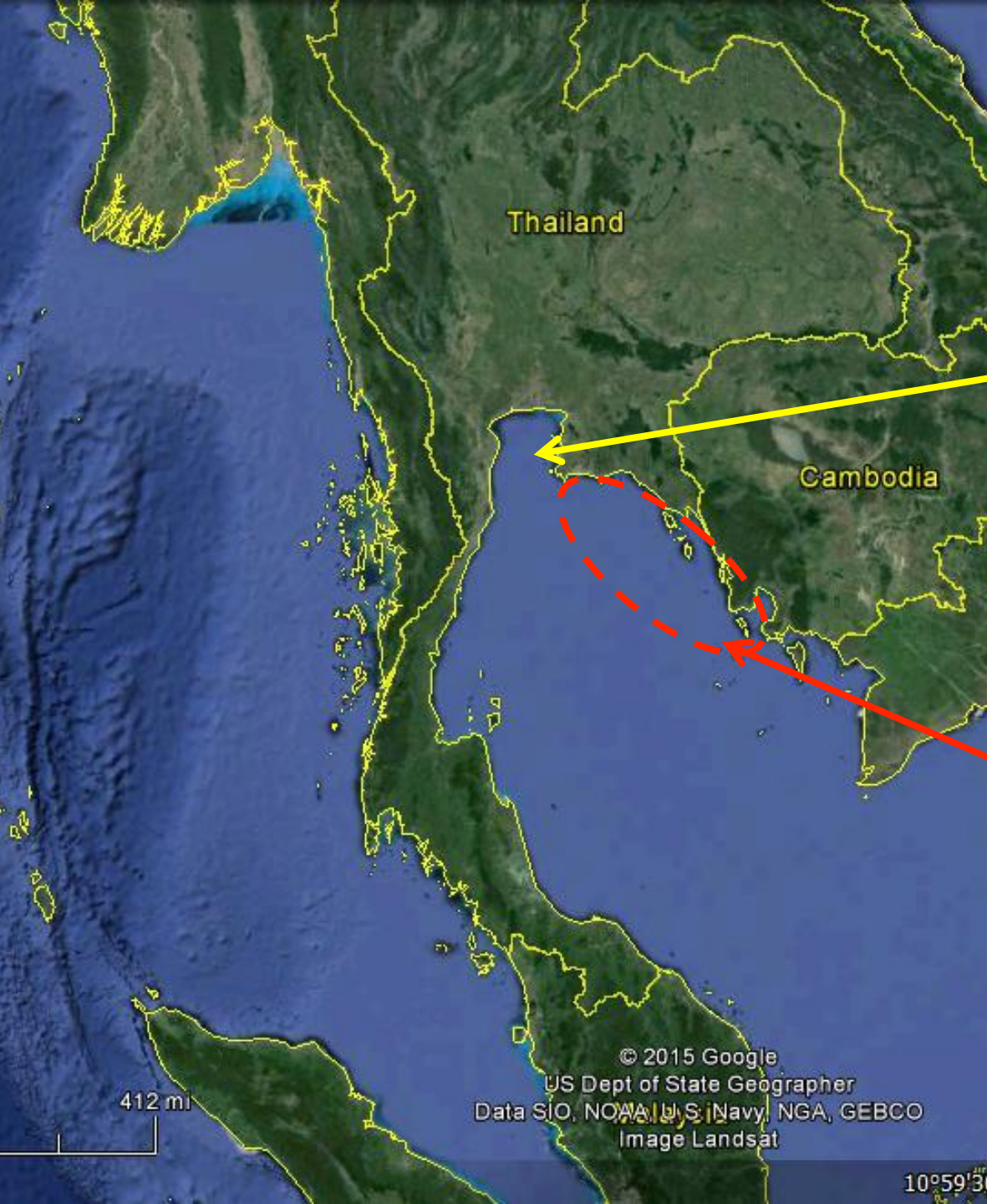
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Empowered lives.
Resilient nations.





- Koh Lan and other islands, Pattaya municipality
- Koh Lan, Koh Khok, Koh Sak

- 4 Provinces in the Eastern GOT
- Total coastline 550 km
- 9 Littoral cells
- PEMSEA-ICM Program has been implemented in Chonburi expand to all Eastern coastal provinces

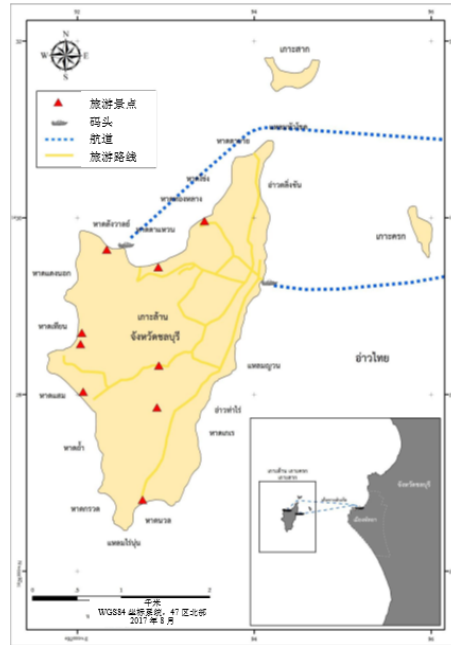
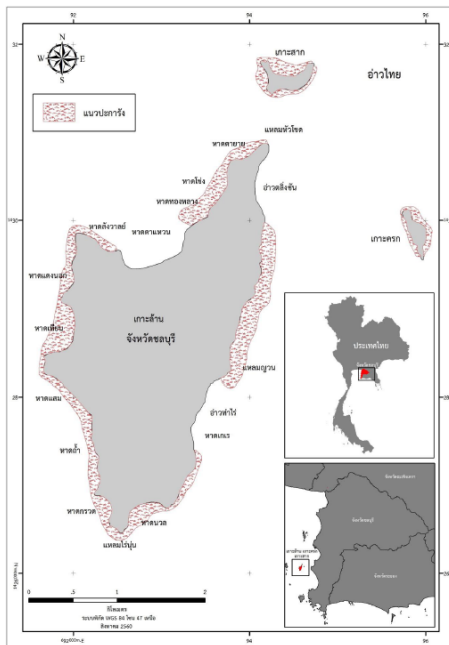


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US Dept of State Geographer
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image Landsat

10°59'30"

1. Remote Sensing and Related Data

We collected and processed the high-resolution, multispectral remote sensing images, and data related to geology, biology and human activities of Koh Lan island.



Coral distribution

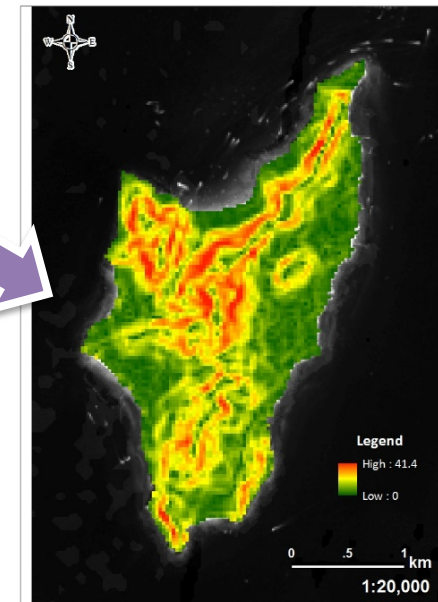
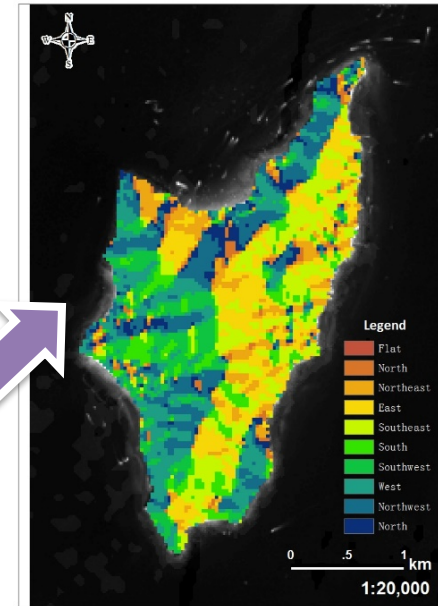
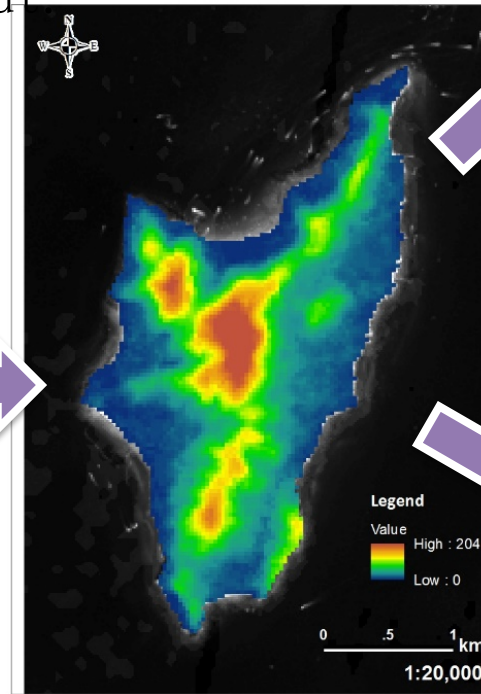
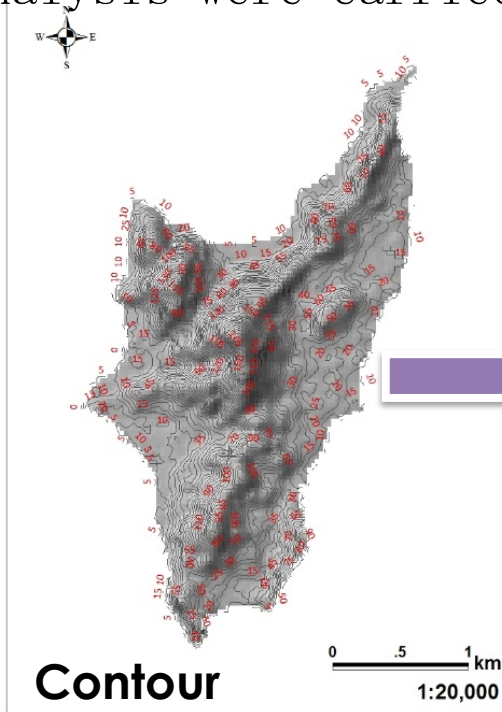
Transport

Landsat 8 (2018 01)

Googlemap

2. Topographic Factor

Based on the global 30m elevation data of SRTM, the contour map and DEM of the study area were constructed, and the slope, aspect and other topographic analysis were carried out

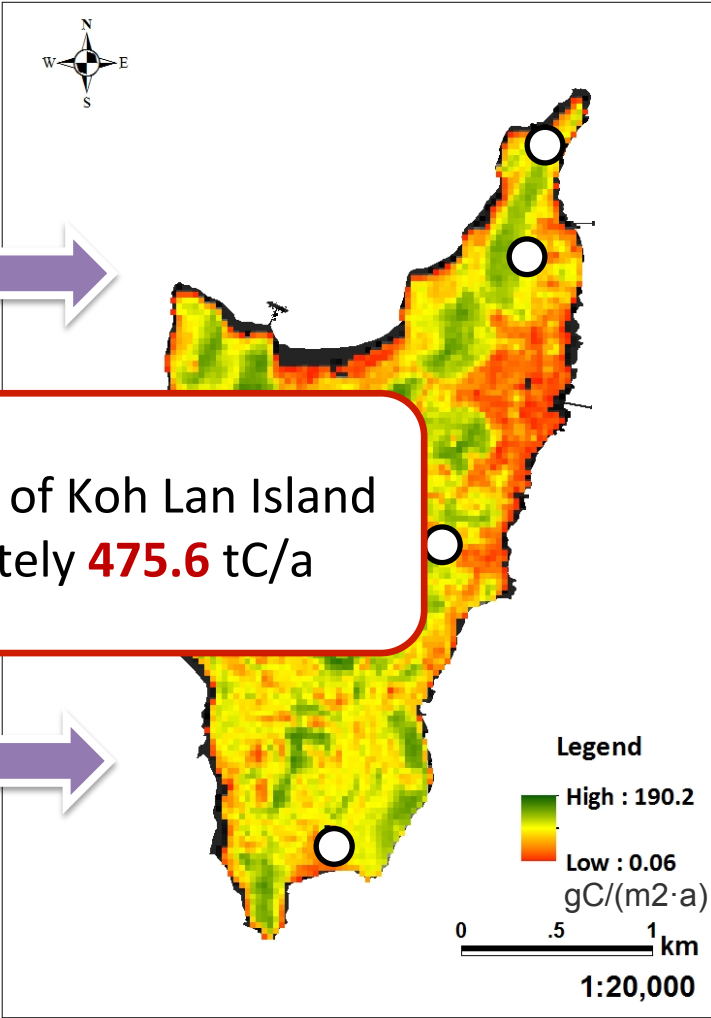


3. Ecological Index

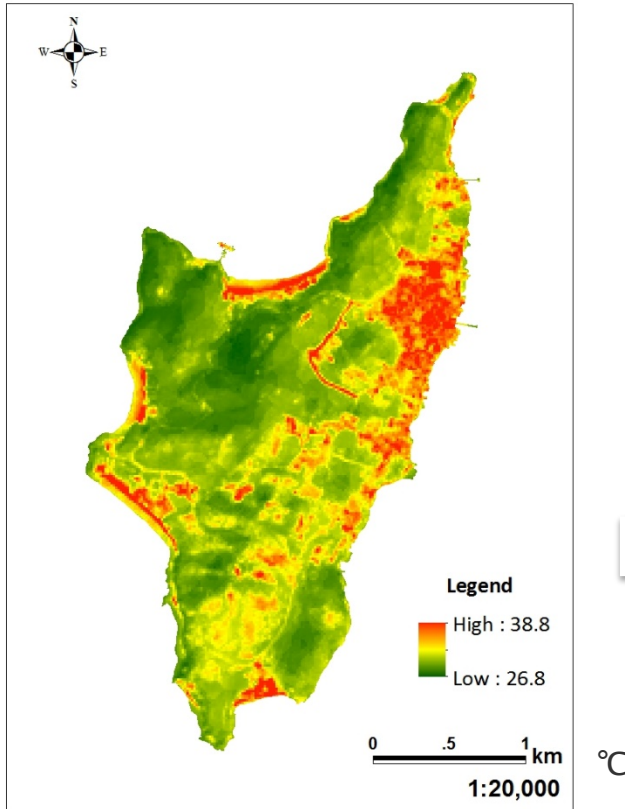
Net Primary Productivity Assessment



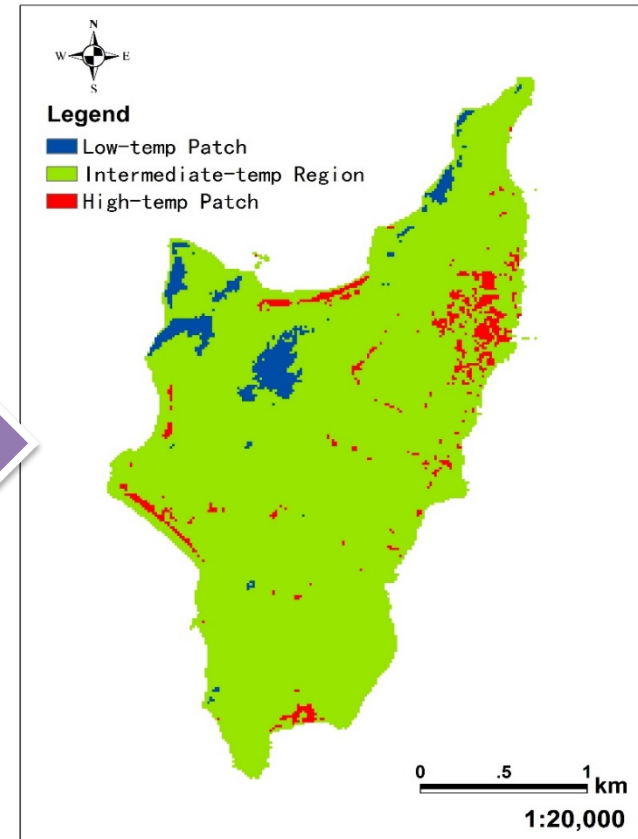
The annual NPP of Koh Lan Island is approximately **475.6** tC/a



4. Surface Thermal Environment



Cold and hot patches identification

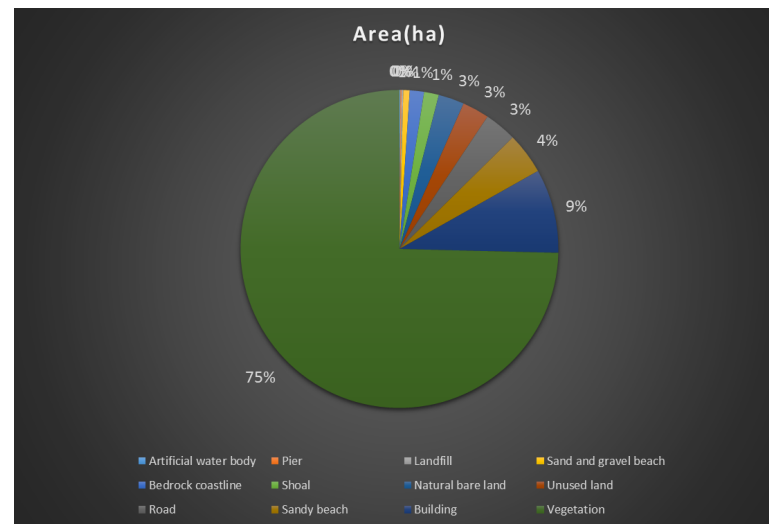
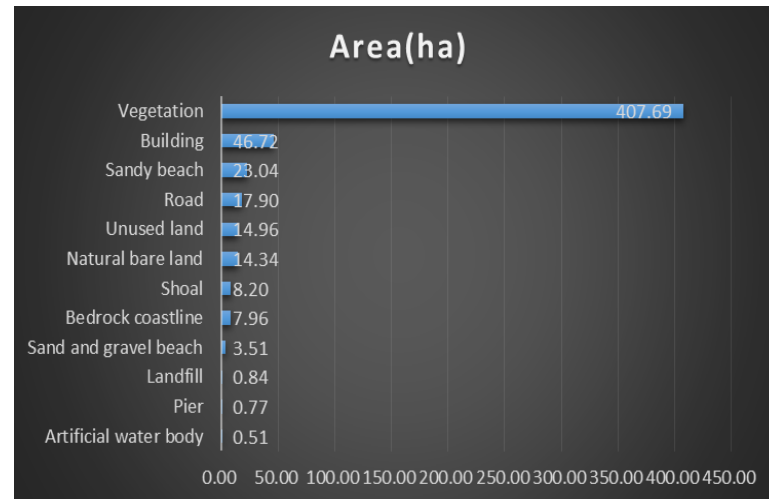
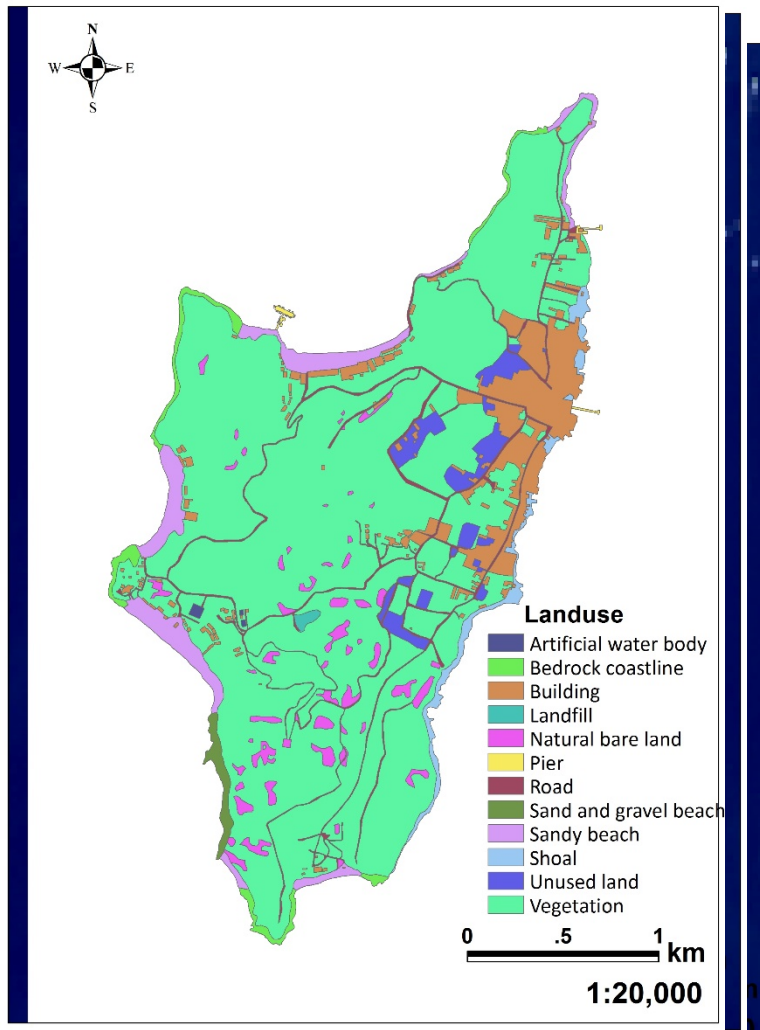


Split-window algorithm for estimating land surface temperature during the investigation period

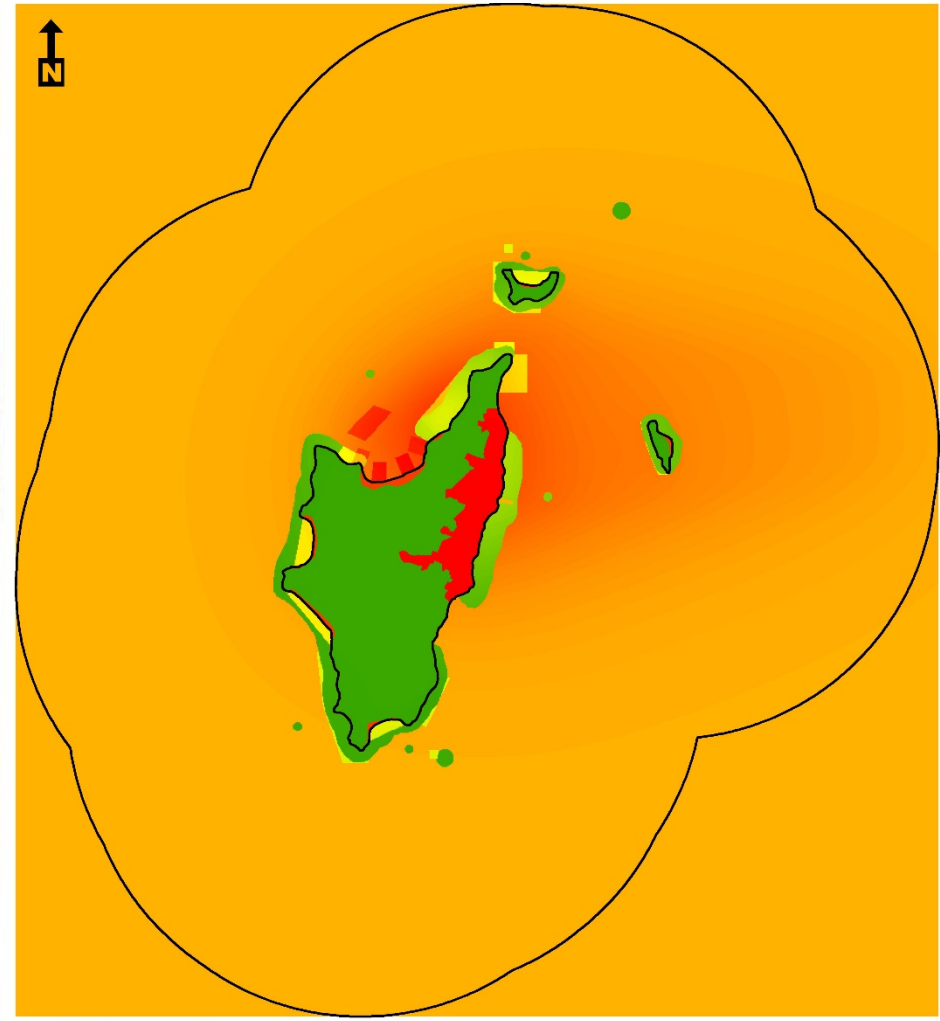
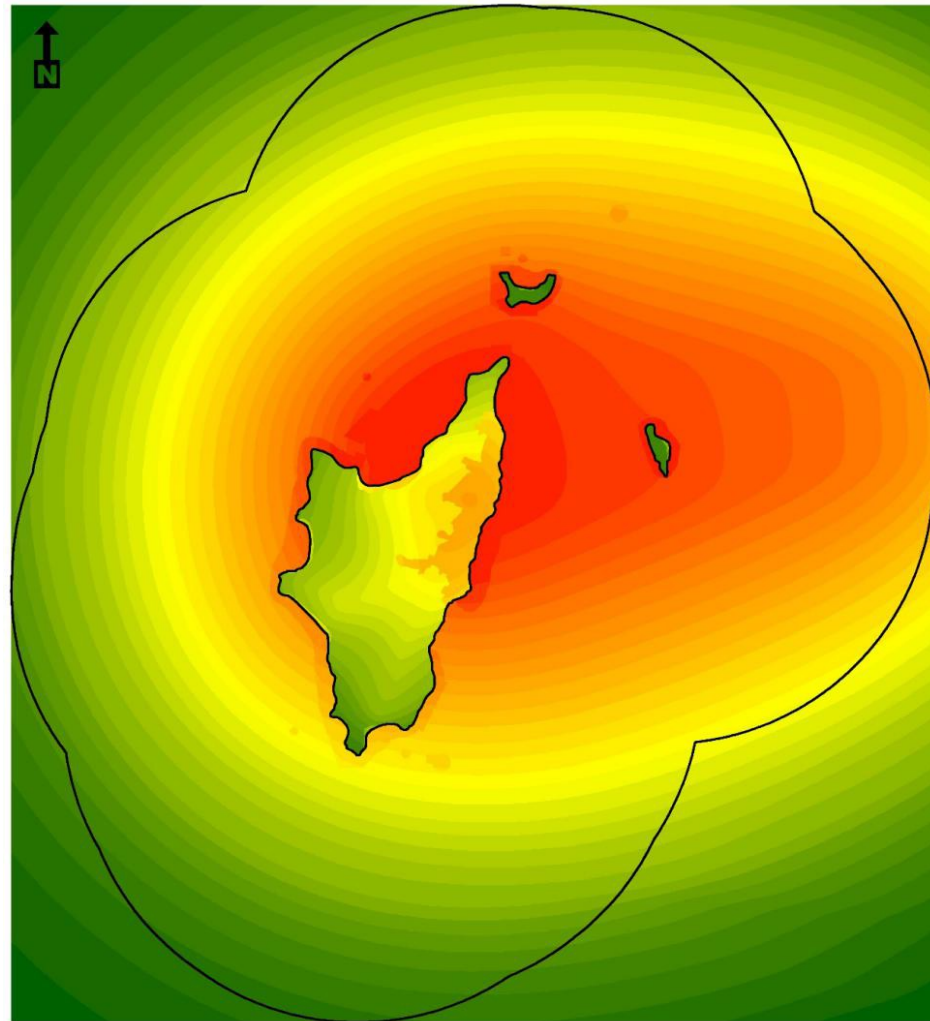
- **High-temp patches** are small and scattered, mainly distributed in residential areas, roads, beaches and bare land.
- **Low-temp patches** is relatively large, mainly concentrated in areas with high vegetation and high elevation.

5. Landscape Ecological Index

Based on the object-oriented recognition method, vectorization are carried out to produce ultrafine land use data



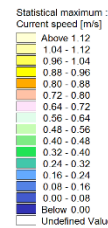
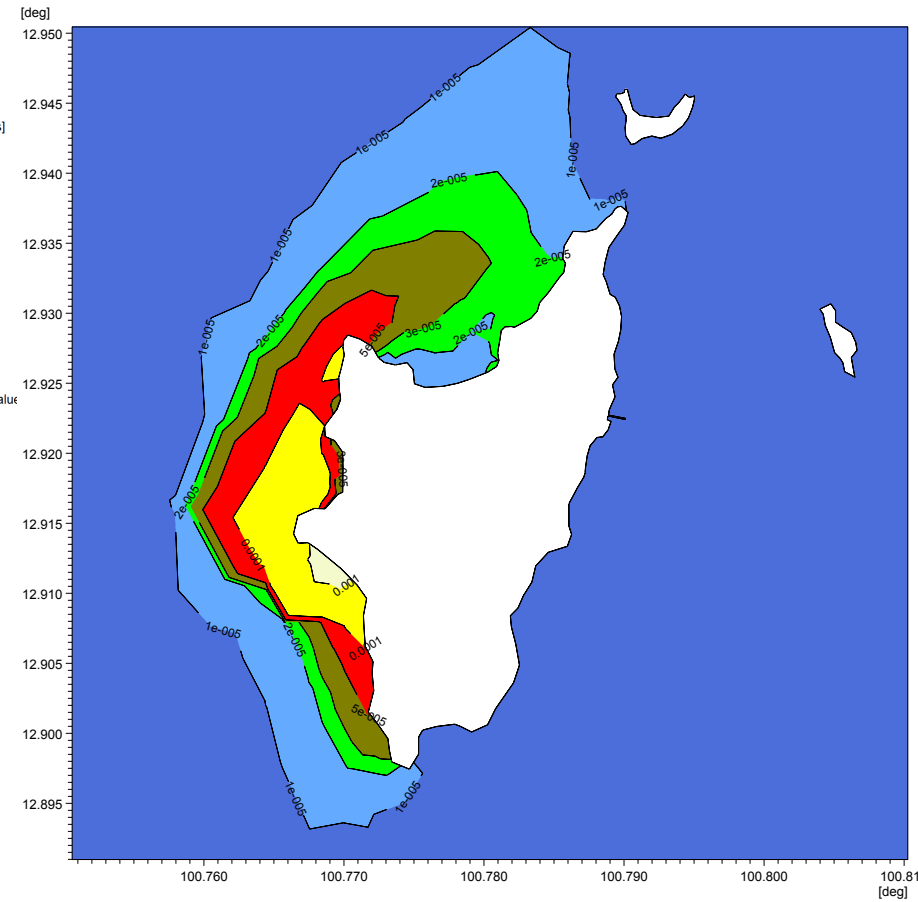
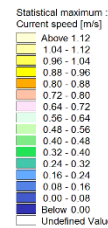
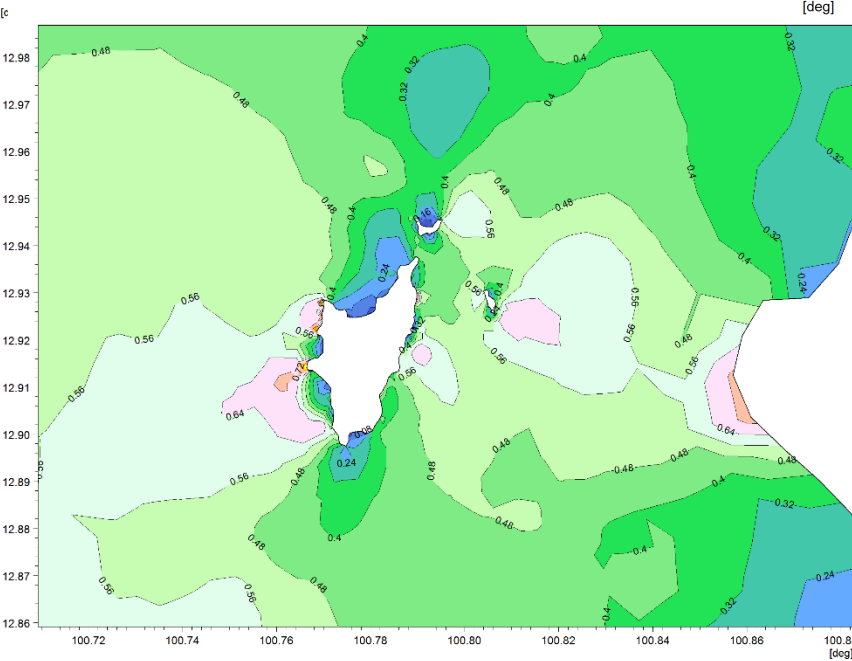
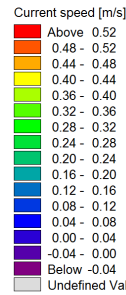
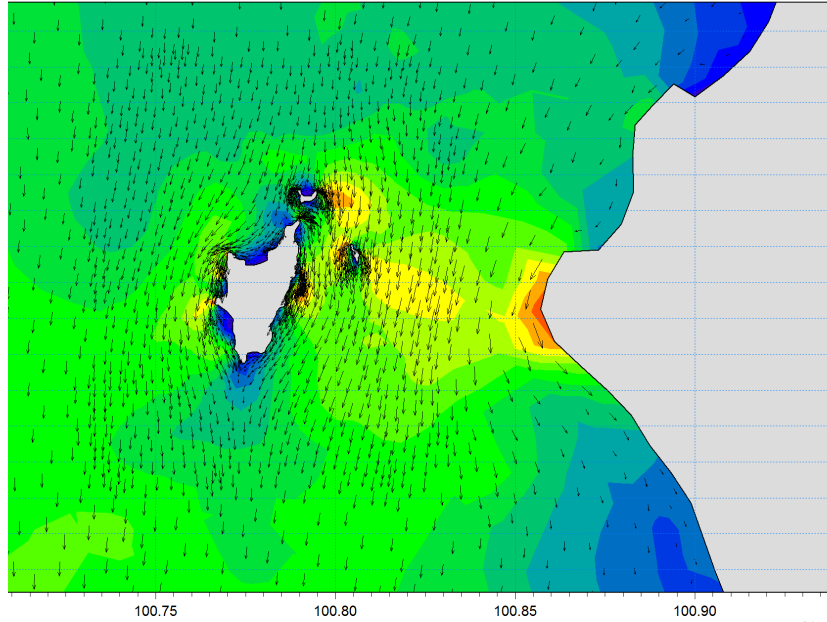
InVEST-Habitat Quality Assessment



0 .5 1 2 Kilometers **Habitat Degradation** Low High

0 .5 1 2 Kilometers **Habitat Quality** Low High

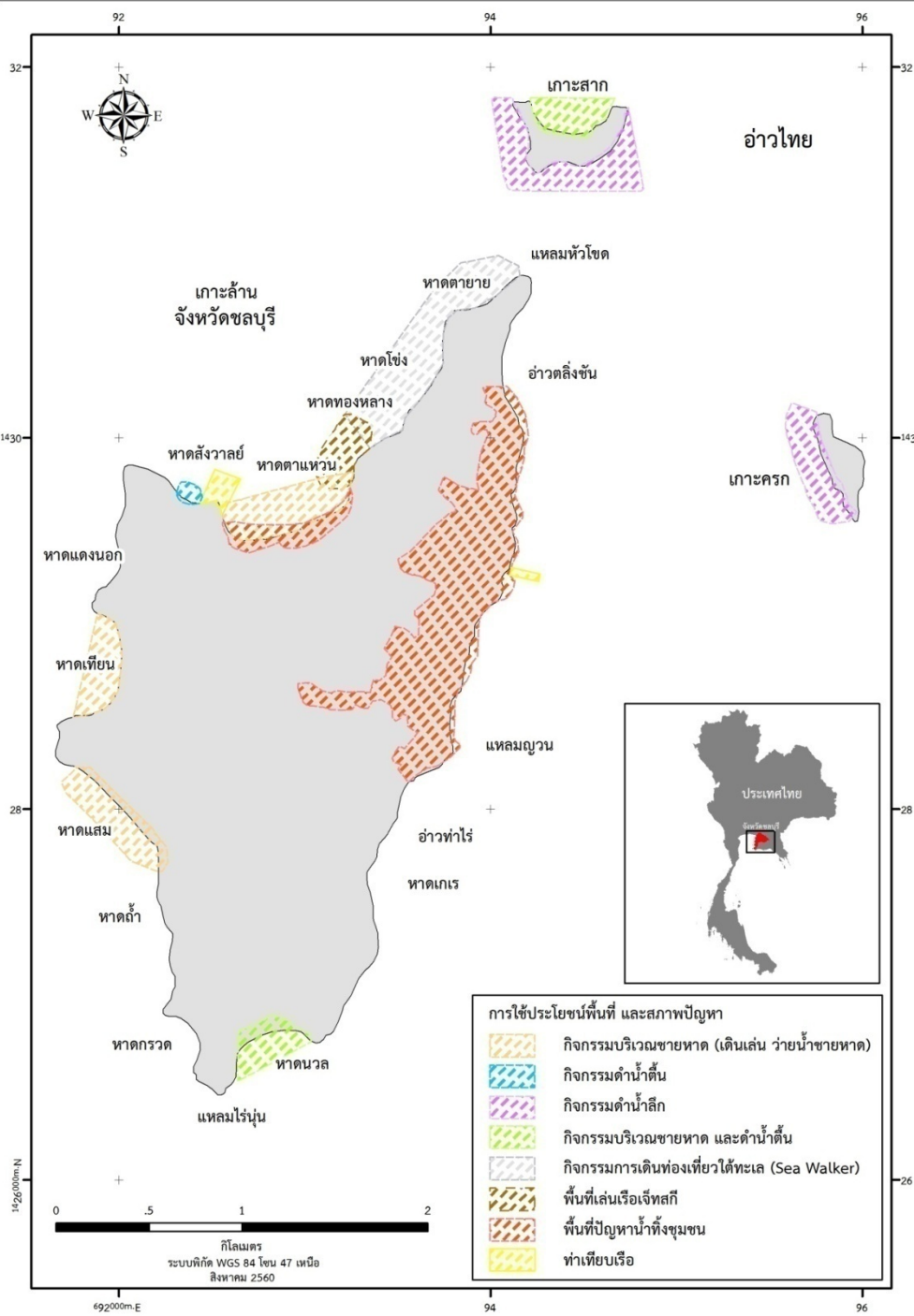
5. Hydrodynamic Analysis



Coastal and Sea Uses Analysis

Various activities in the Marine area have been identified and mapping.

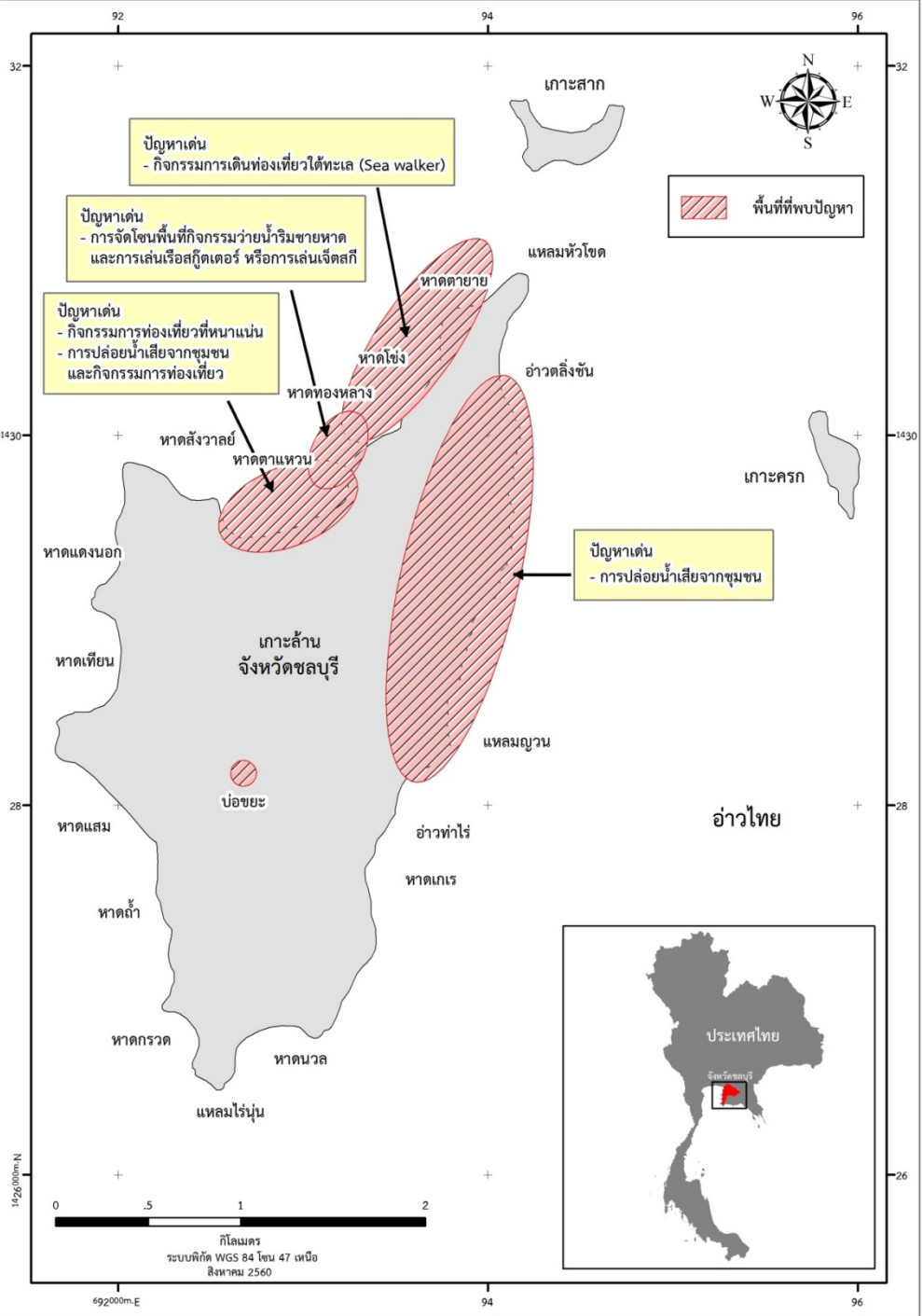
- Scuba diving
- Snorkelling
- Sea Walker
- Scooter and Jet Ski
- Swimming
- Beach walking
- Boat parking areas
- Piers
- Boat route

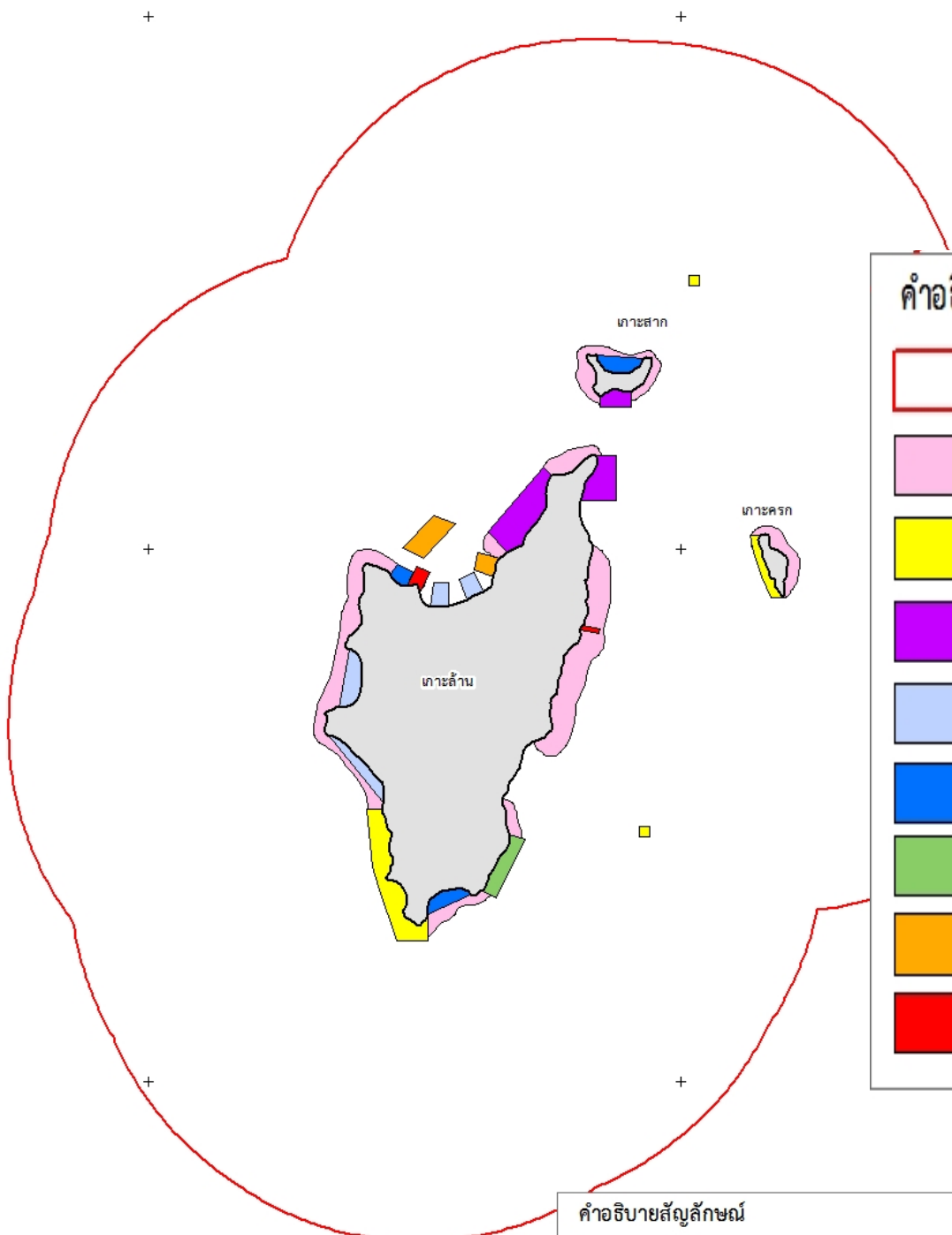


Conflict Analysis







A variety of uses in the coastal and marine areas have led to conflict between users and natural habitat degradations. Key issues area;

- Sea walker in coral reef
- Hazard from Scooter/Jet ski and speed boat to swimming, scuba diver and snorkellers
- Crowding of uses and over capacity
- Sewage discharge from tourism and communities





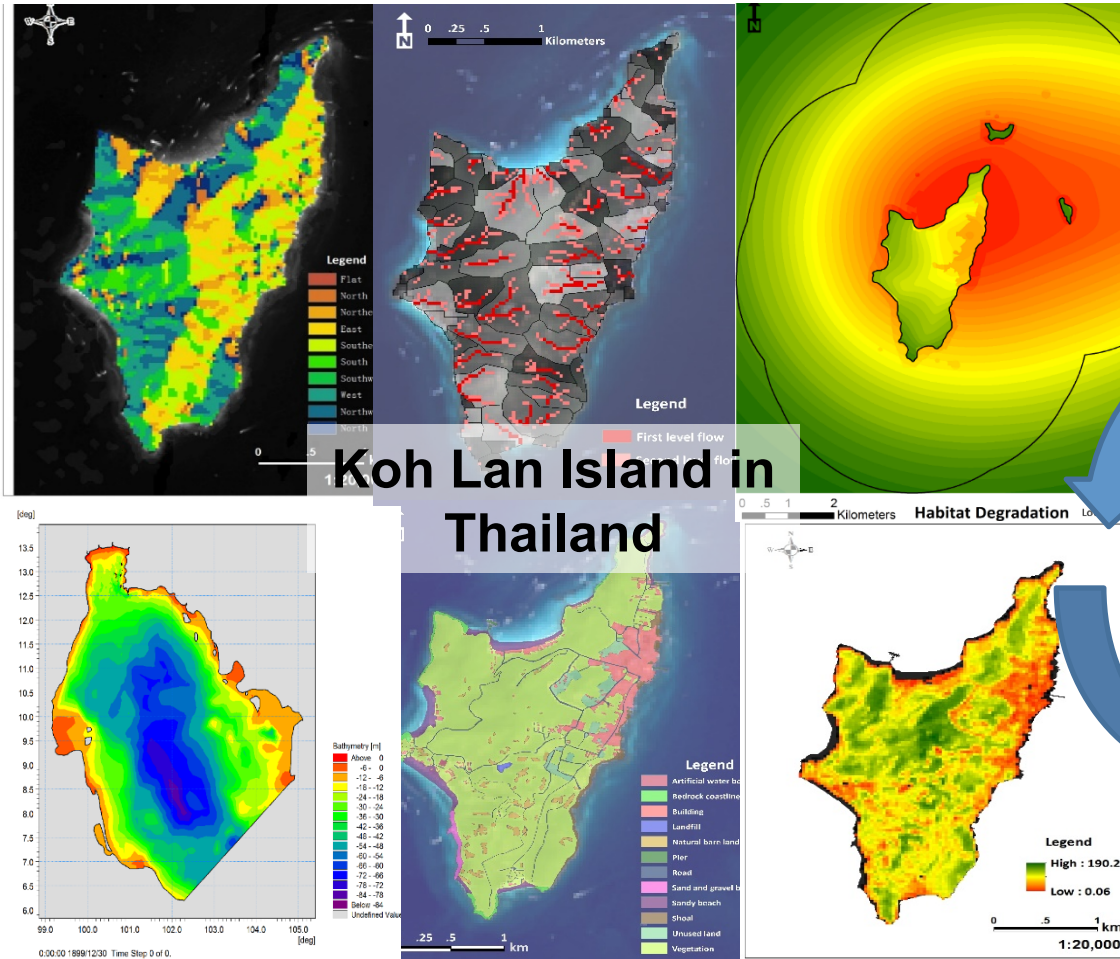
คำอธิบายสัญลักษณ์

-  เขตคุ้มครองทางทะเล (Marine protection zone)
-  เขตคุ้มครองแนวปะการัง (Coral reef protection zone)
-  เขตท่องเที่ยวดำน้ำ (Scuba diving zone)
-  เขตท่องเที่ยวเดินใต้ทะเล (Seawalker)
-  เขตว่ายน้ำ (Swimming zone)
-  เขตท่องเที่ยวดำผิวน้ำ (Snorkeling zone)
-  พื้นที่ฟื้นฟูแนวปะการัง (Coral reef rehabilitation area)
-  พื้นที่จอดเรือ (Boat parking area)
-  พื้นที่ท่าเทียบเรือ (Pier area)

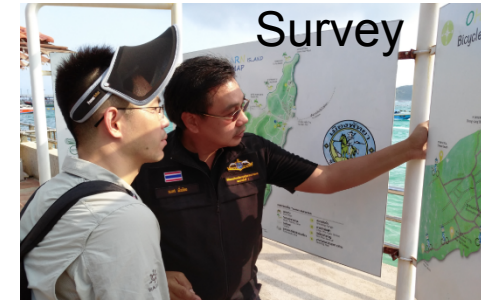
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Lesson Learnt



Koh Lan Island in Thailand



Using quantitative methods and in-site survey to optimize the layout of marine functional areas, and the bridge the natural science with the management.

Thanks for your attention!!



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