Climate Change Adaptation and Natural Disaster Preparedness in Greater Alexandria

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Partners

- World Bank
- EGIS (French Consulting Consortium)
- Governorate of Alexandria
- EEAA / ICZM
- Urban Planning Authority
- Arab Academy of Science and Technology
- Holding Company for Wastewater Treatment

Objectives

- The main objectives of the study are:

1. **Assessing vulnerabilities to the climate change and natural disasters of Alexandria City by the year 2030**

2. **Formulating action plans to improve adaptation to climate change and preparedness to natural disasters;**

3. **Disseminating results and engaging stakeholders in related decision-making**

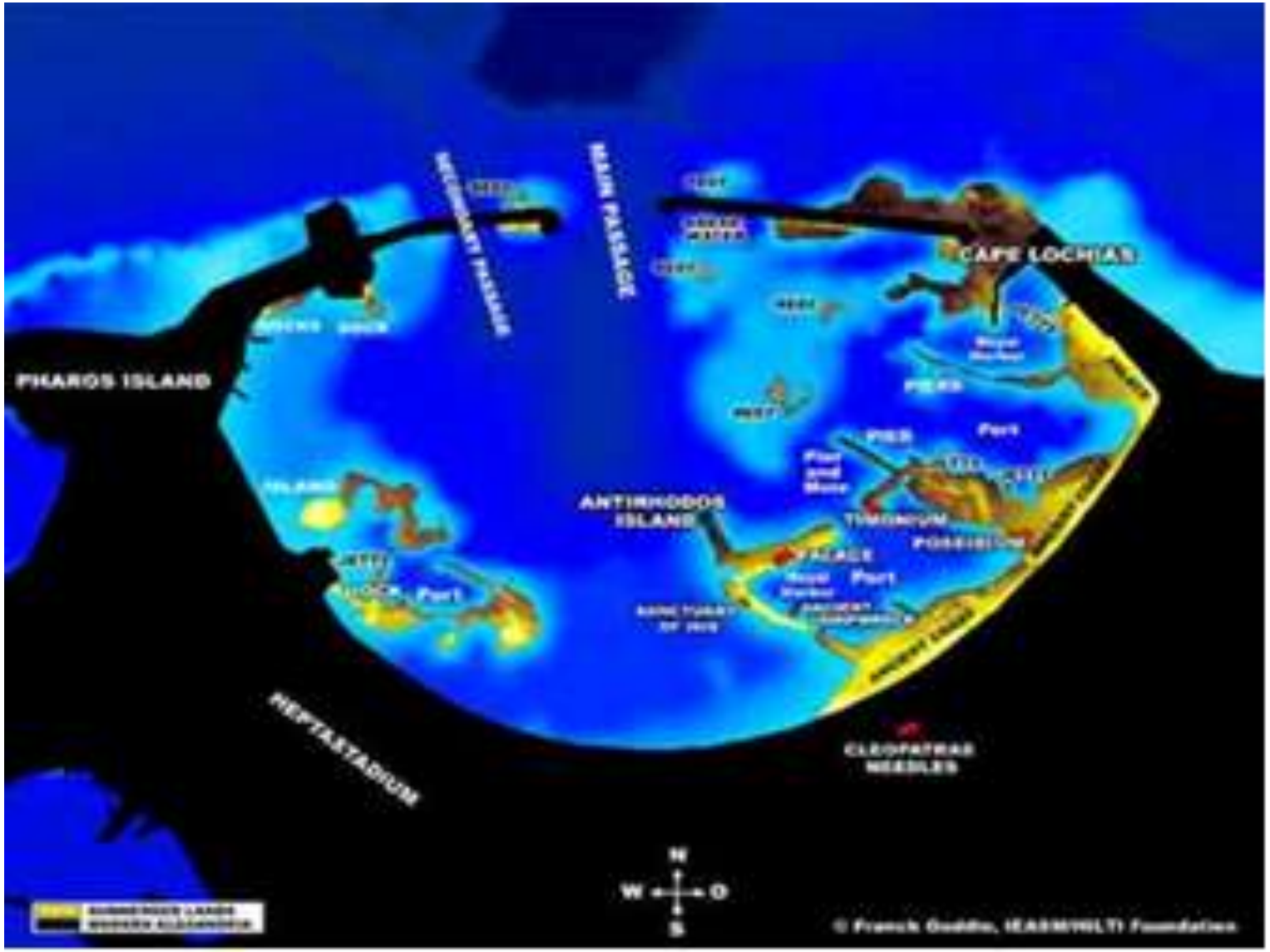
PHASE I
PRELIMINARY VULNERABILITY ASSESSMENT

Collecting information, building databases and carry out assessments on:

1. **Sea Level Rise, coastal Erosion and impact of storm surges**
2. **Investigation of potential impacts on urban flooding**
3. **Impacts on availability of Water Resources**
4. **Impacts of increasing ambient temperatures and heat island effect**
5. **Potential risks of earthquakes and tsunamis**

PHASE II –
ADAPTATION AND PREPAREDNESS ACTION PLANS

- **Recommendations for :**
  - **Urban planning aiming at minimizing vulnerabilities**
  - **infrastructure assets and the physical investments to protect or upgrade the urban assets and systems in order to adapt**
  - **institutional preparedness and emergency plans of the urban locations in view of the climate change impacts and disaster risks**
  - **Economic valuation of the recommended remedial adaptation actions against the costs of the impacts of climate change and natural disasters, if unchecked**



شكل (3-1-9) خرائط توضح مواقع الاثار الغارقة بالميناء الشرقي

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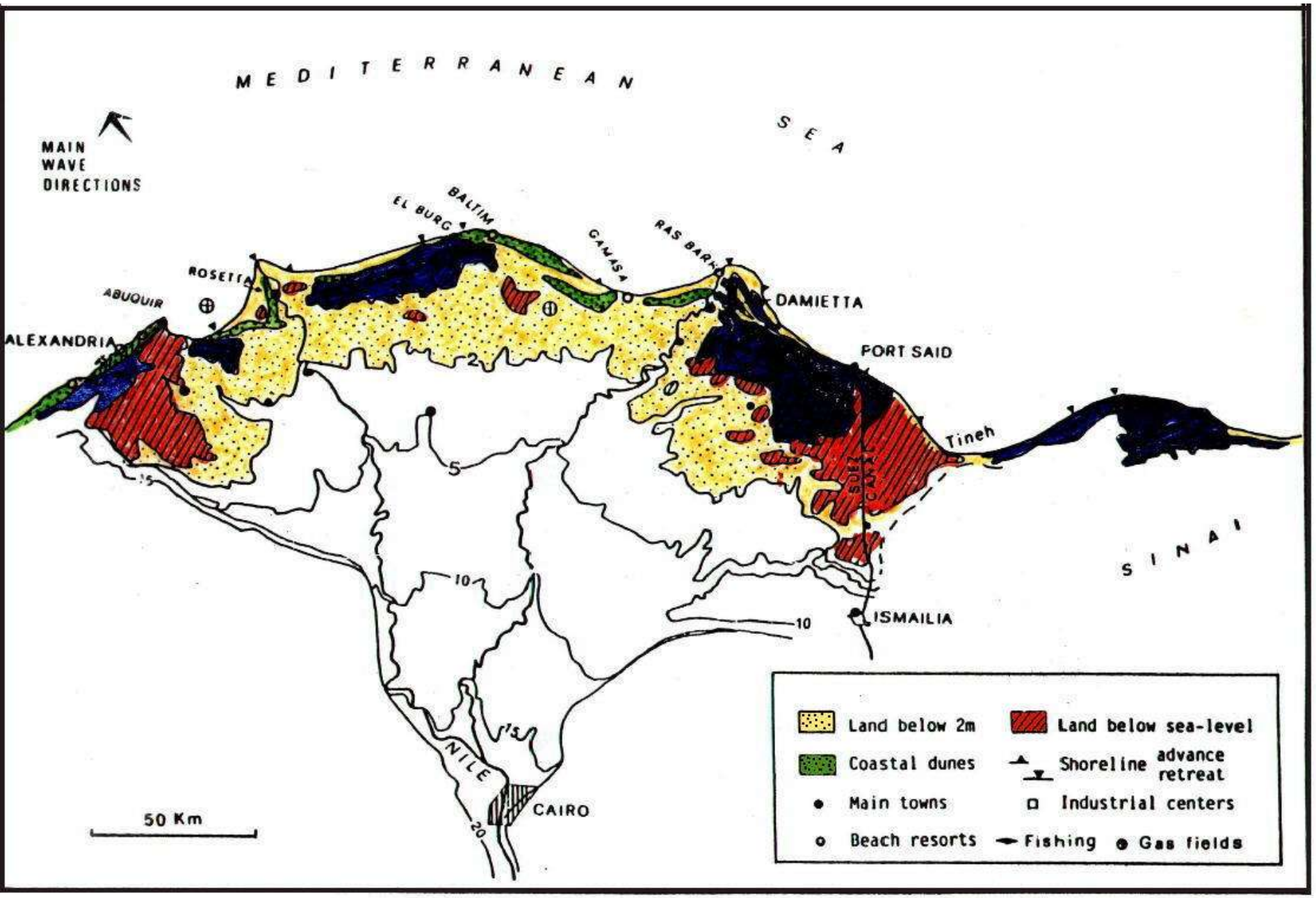

MEDITERRANEAN SEA
MAIN WAVE DIRECTIONS
EL BURG
BALTIM
GAMASA
RAS BARR
ROSETTA
ABUQUIR
ALEXANDRIA
DAMIETTA
PORT SAID
Tineh
SUEZ CANAL
SINAI
ISMAILIA
NILE
CAIRO
50 Km
Land below 2m
Land below sea-level
Coastal dunes
Shoreline advance retreat
Main towns
Industrial centers
Beach resorts
Fishing
Gas fields

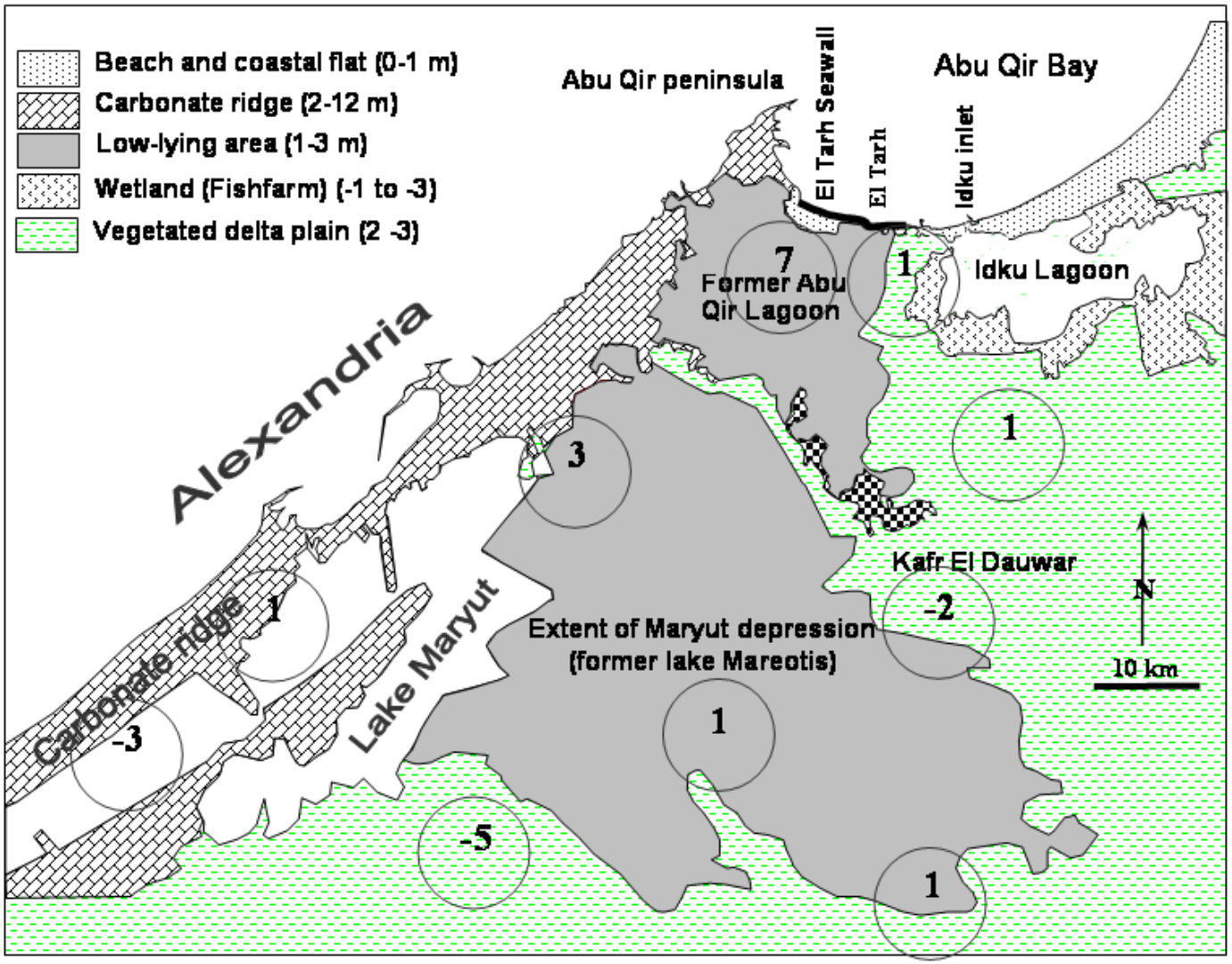
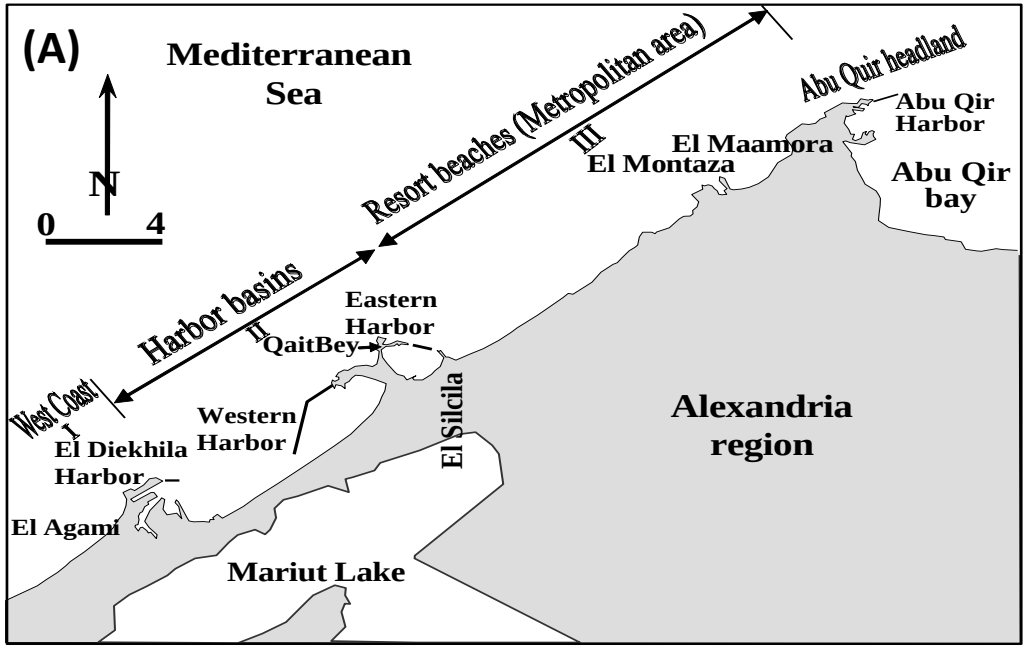
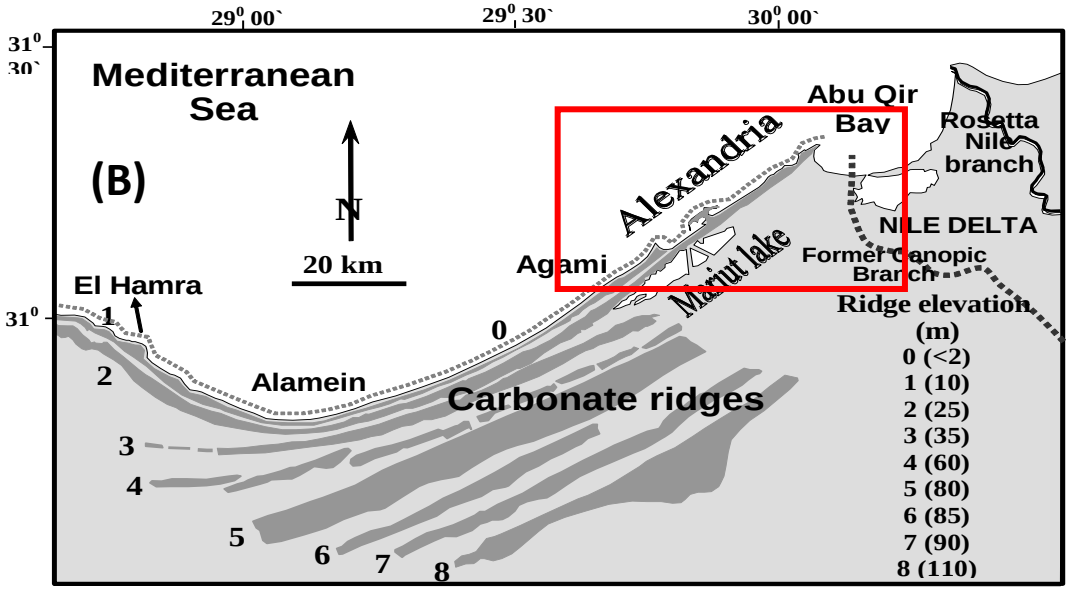


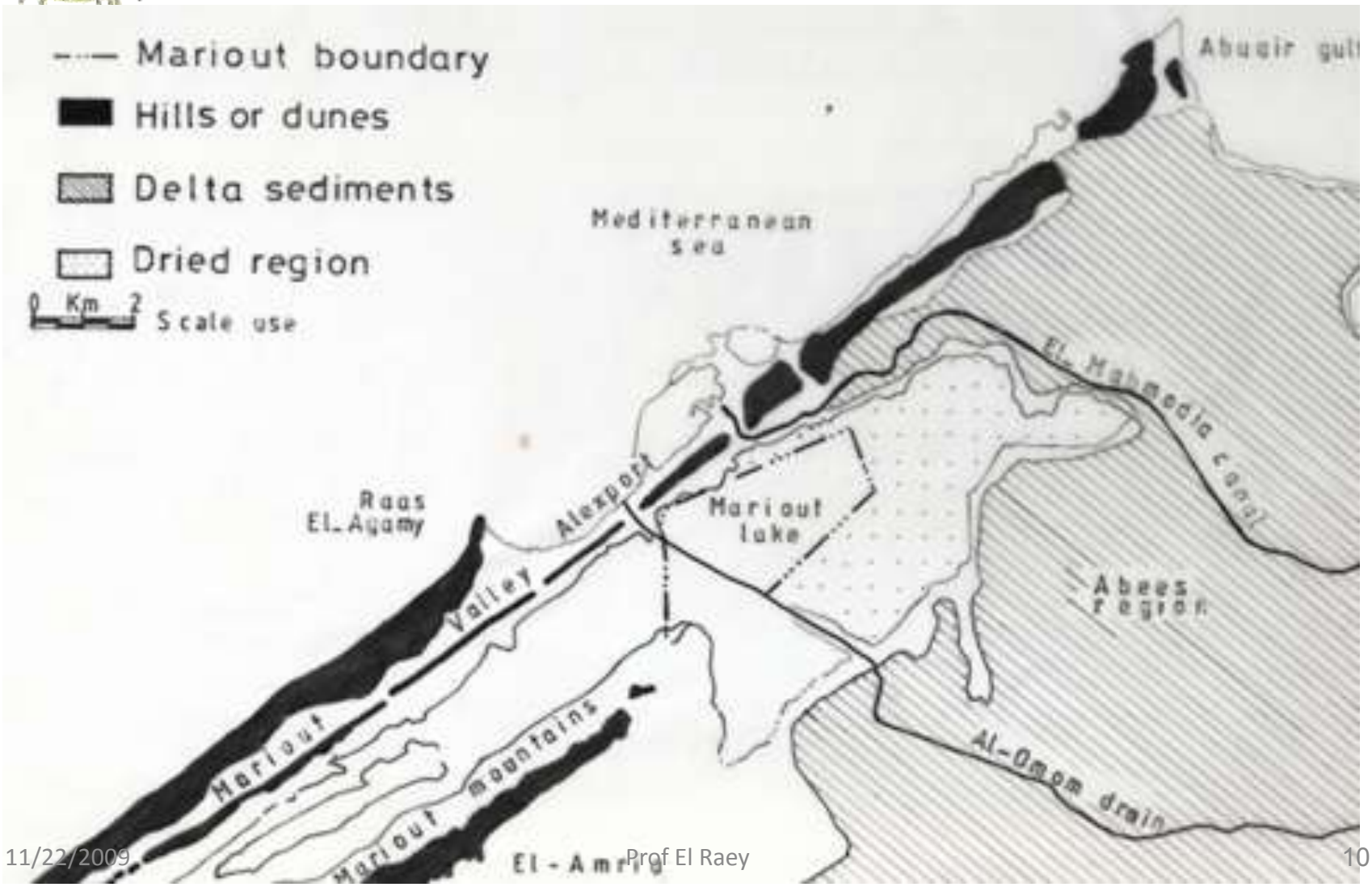
Figure 10: General topographic map of Alexandria region showing values of vertical land motion (mm/yr). Areas with overall land submergence and emergence (in circles) are denoted by positive and negative numbers, respectively (modified after Warne and Stanley, 1993). Topographic features from Frihy et al. (2009c).

General physiographic features of Alexandria

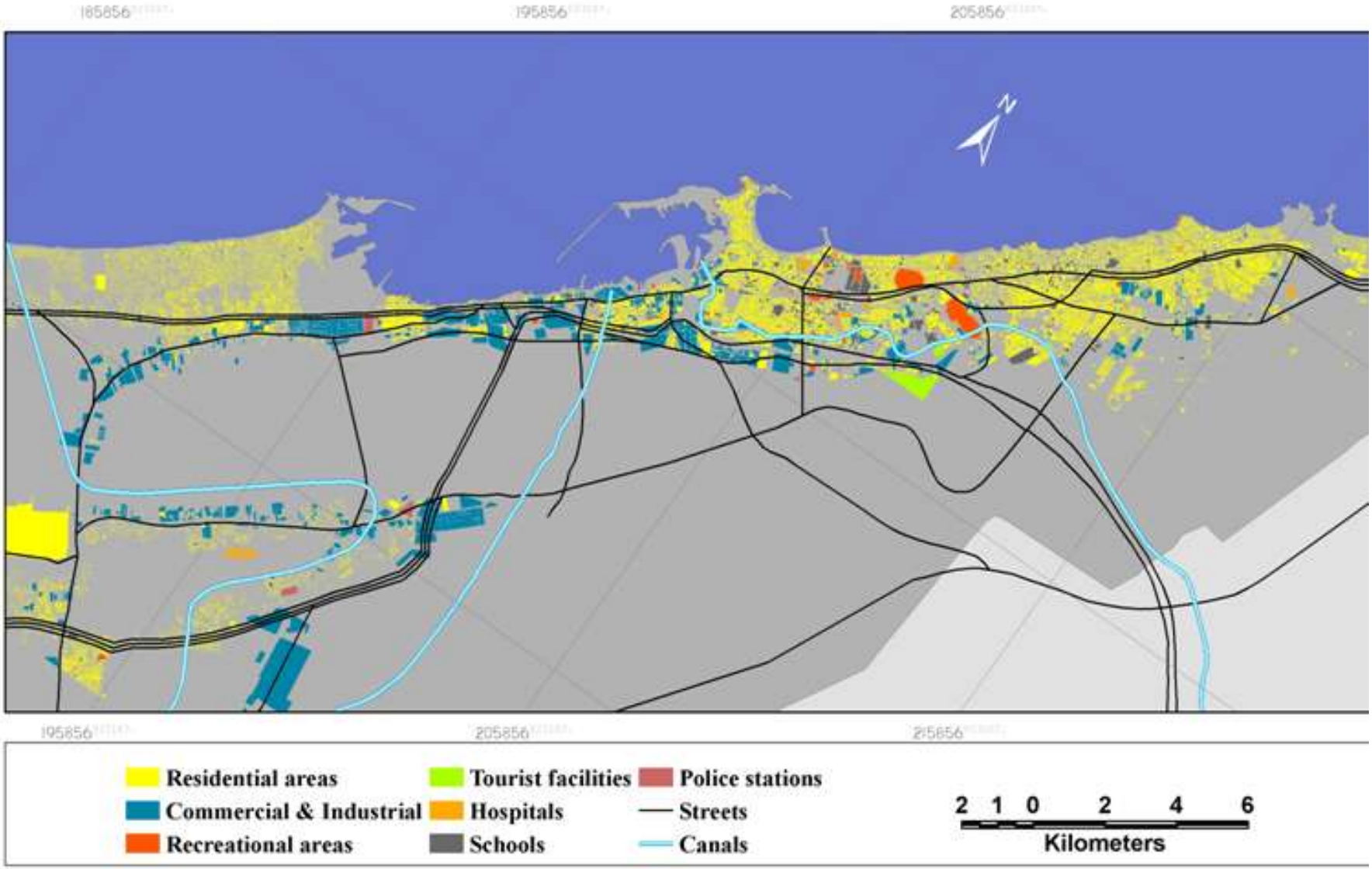




Alexandria City Ridges



Land use of Alexandria City



Nile Delta Land subsidence (Stanley et al,1993)

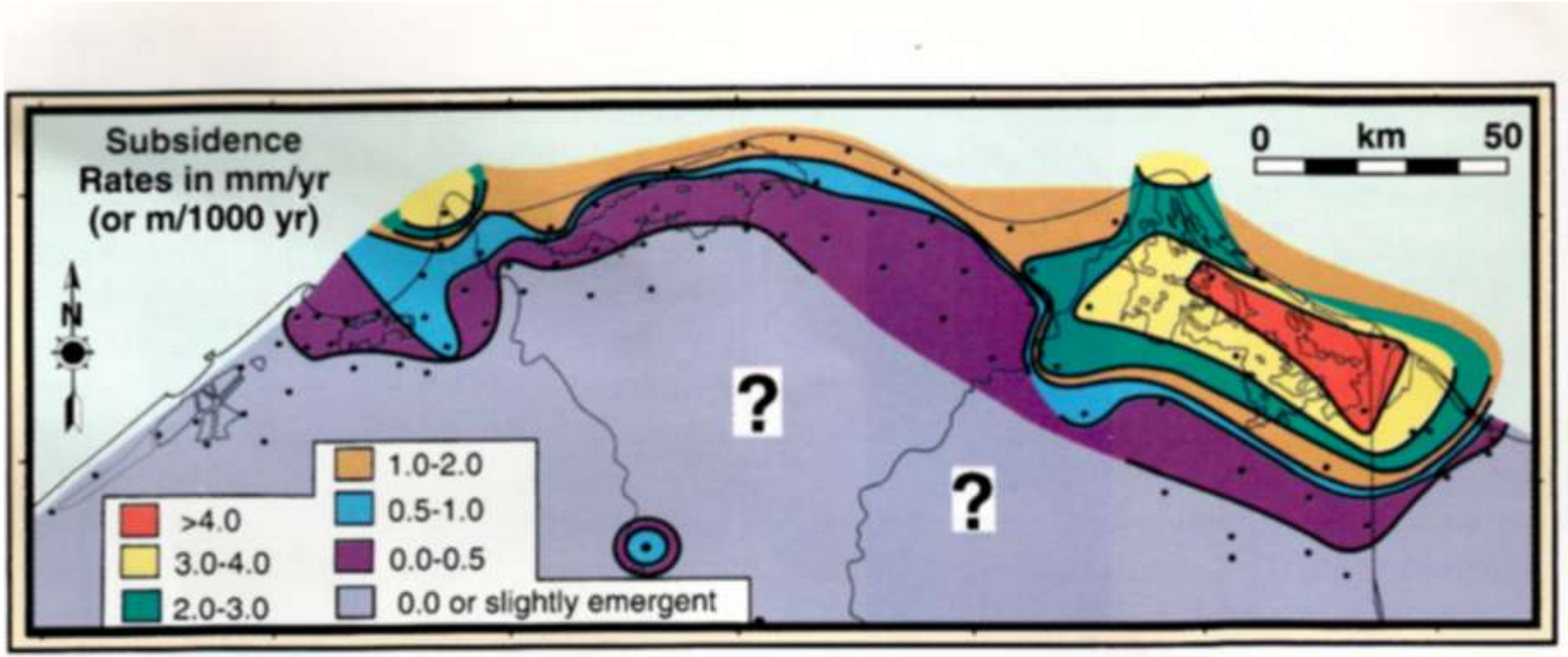
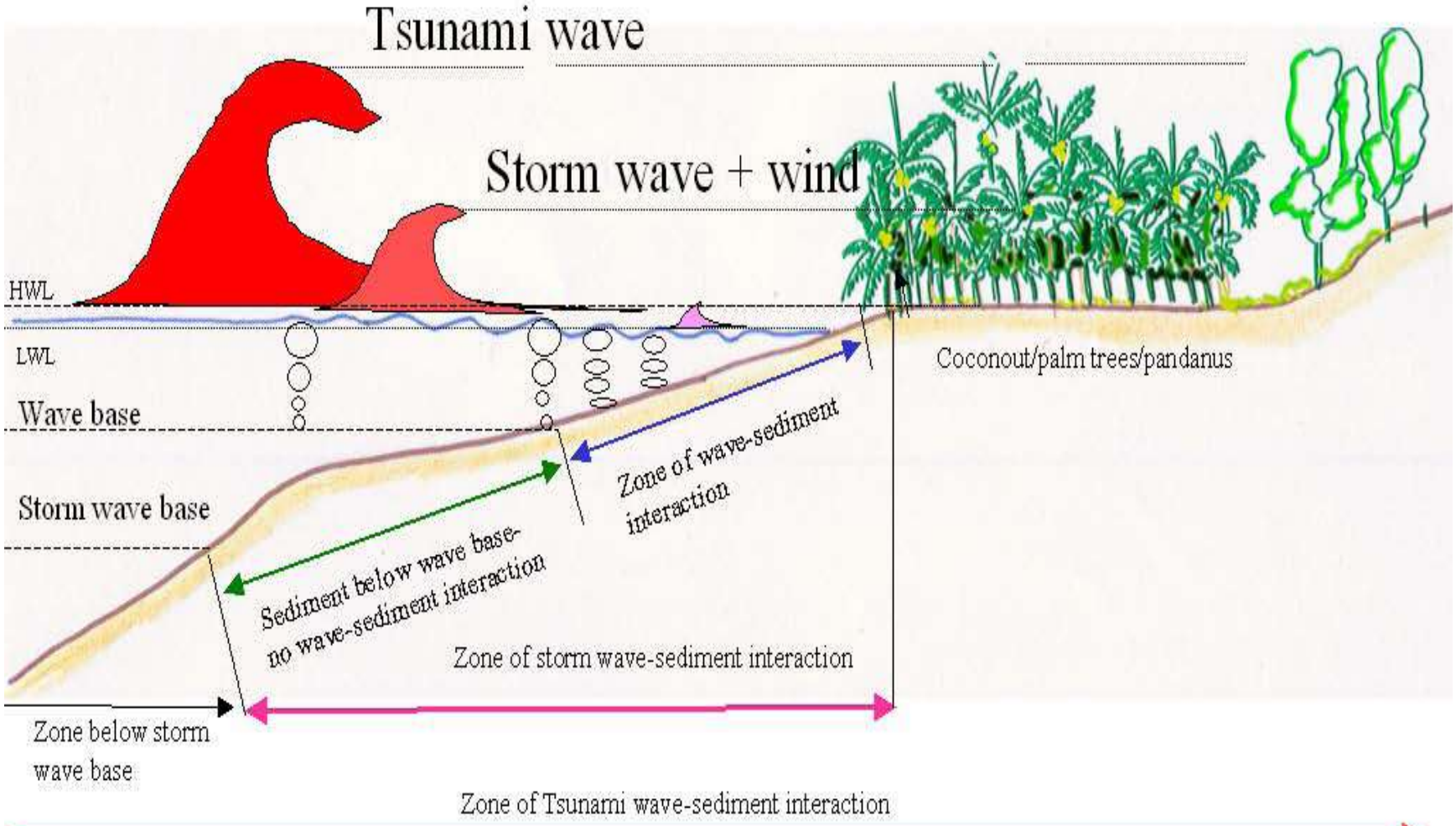


Fig. 3. Holocene subsidence rates [method of calculation in (*17*)] and flexure zone, north of which deposits thicken along the Nile delta margin.

Coastal Vulnerability of Alexandria City

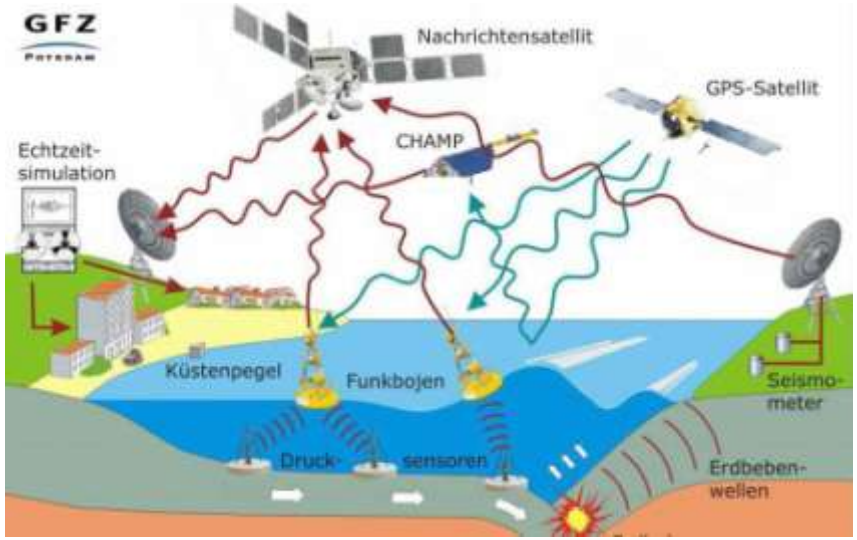
Alexandria Storms

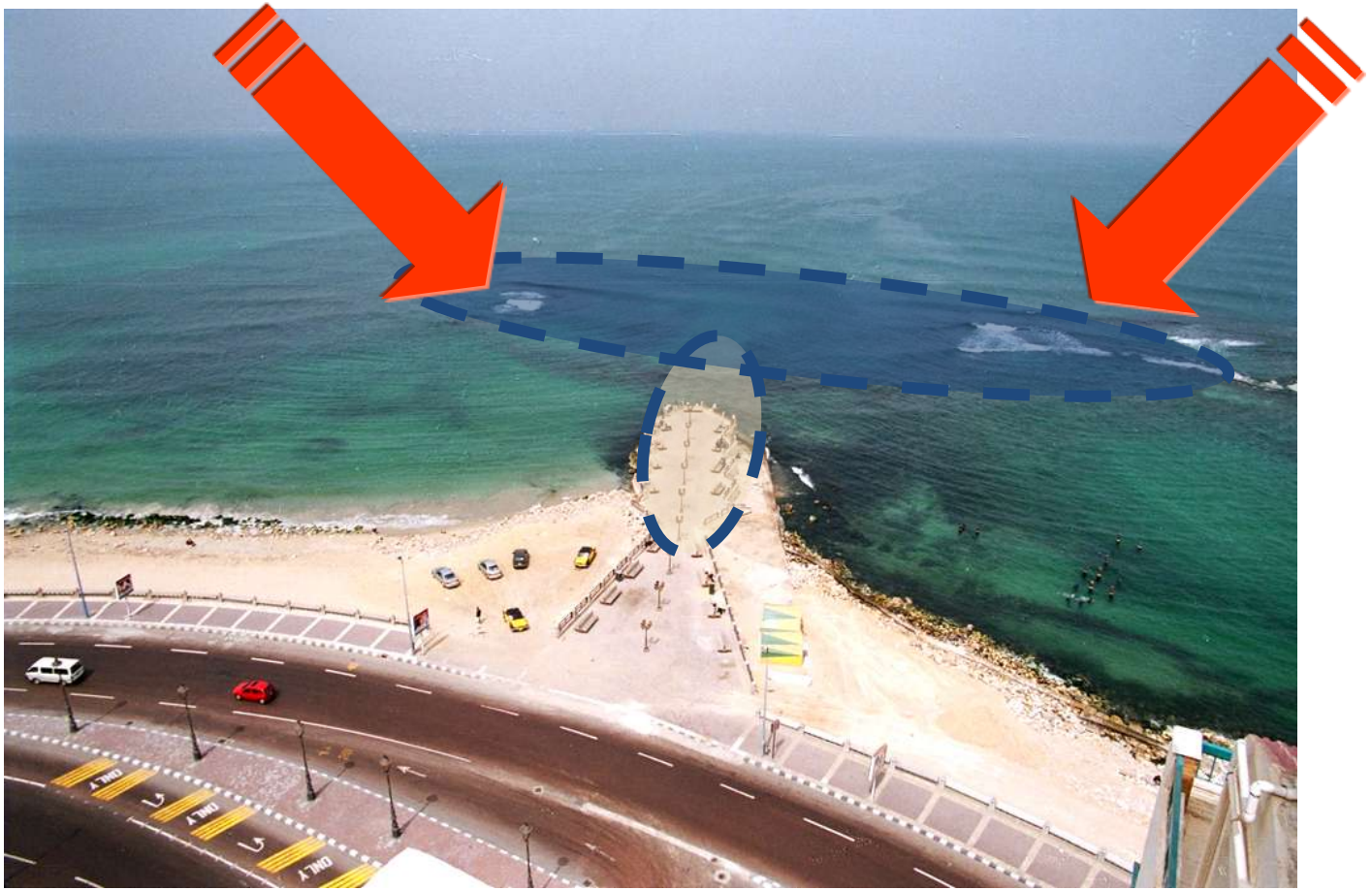
Sandy coastal risk



Adaptation : Preparedness

- Early warning systems
- Civil protection readines
- Emergency response and evacuation plans
- Public information and awareness
- Institutional coordination





In the presence of two rocks, it is desired to connect them, extending the groin, developing a touristic area and reducing currents and possibly future risks

Final touristic view

Final view of Island, marina and shaded areas

Final touristic view

Conclusion

Needs for :

1. Institutional Structure,
2. Monitoring And Early Warning Systems
3. Capacity Building
4. Adaptation Action