

*The ASEAN Workshop on ASEAN Academic Networking in
Water & Disaster Management and Climate Change among ASEAN countries*

VULNERABILITY OF VIETNAMESE COASTS DUE TO COASTAL DISASTERS AND CLIMATE CHANGE



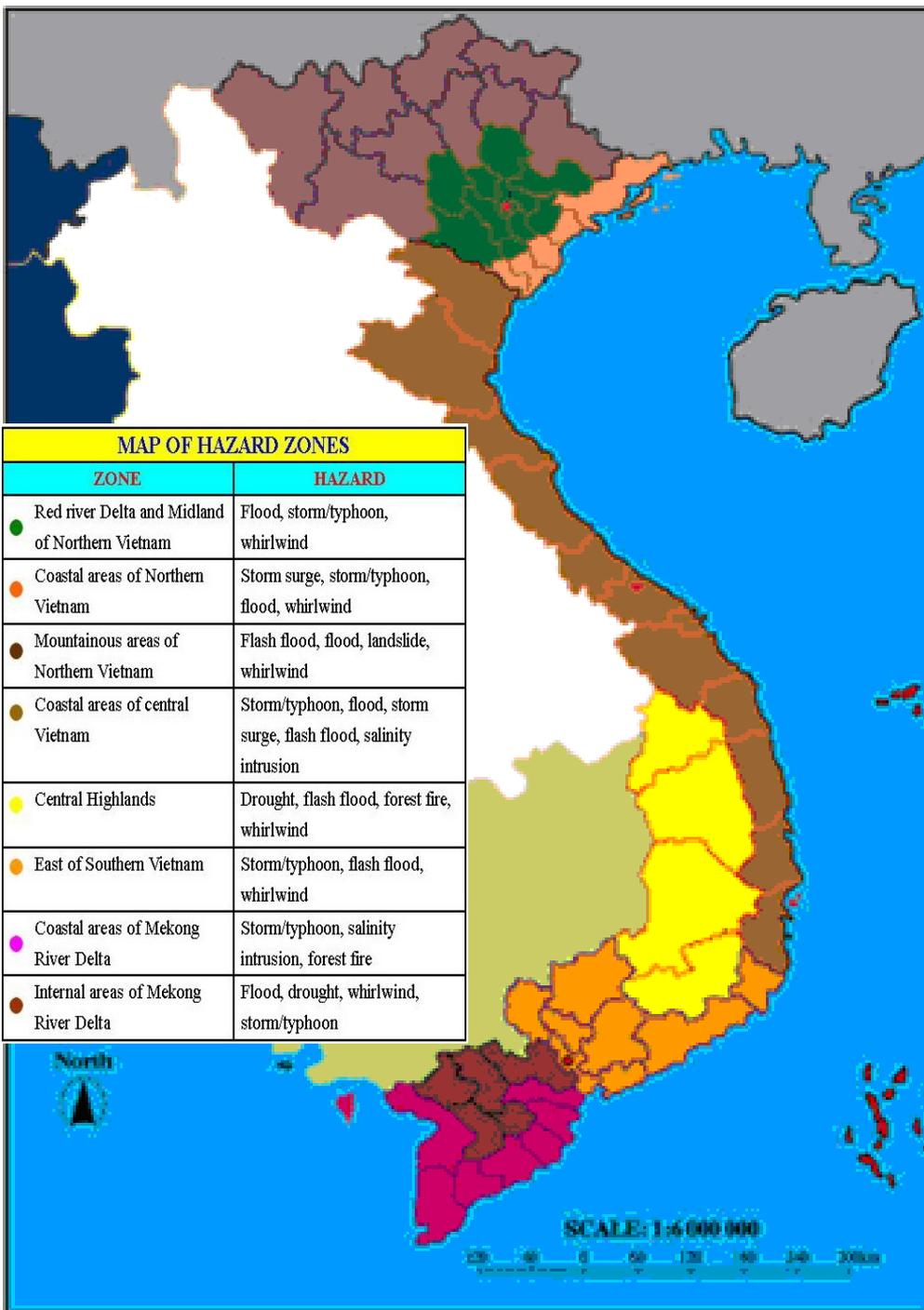
NGUYEN DANH THAO

Department of Port and Coastal Engineering
Ho Chi Minh City University of Technology

Bangkok, January 28-30, 2015

- Indian Ocean Tsunami in 2004
- Cyclone Nargis that hit Myanmar in 2008, which was the strongest cyclone in the last 60 years, caused devastating damage to low-lying areas of the country
- The 2011 Tohoku Tsunami: described as a one in 1,000 years event
- Typhoon Haiyan in the Philippines in 2013: 6,201 individuals dead, 28,626 injured and 1,785 still missing

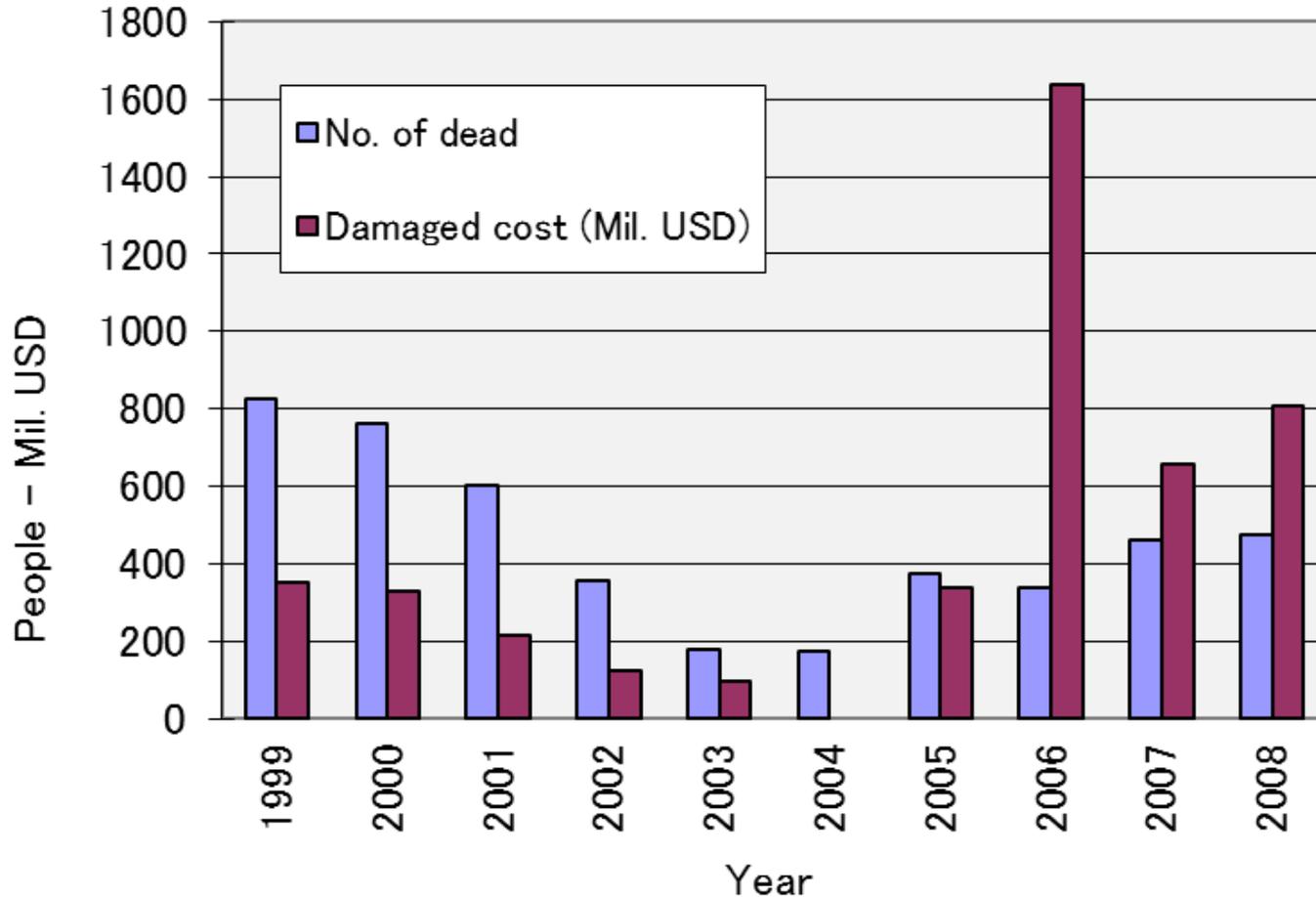
Introduction



DISASTER RELATIVE FREQUENCY

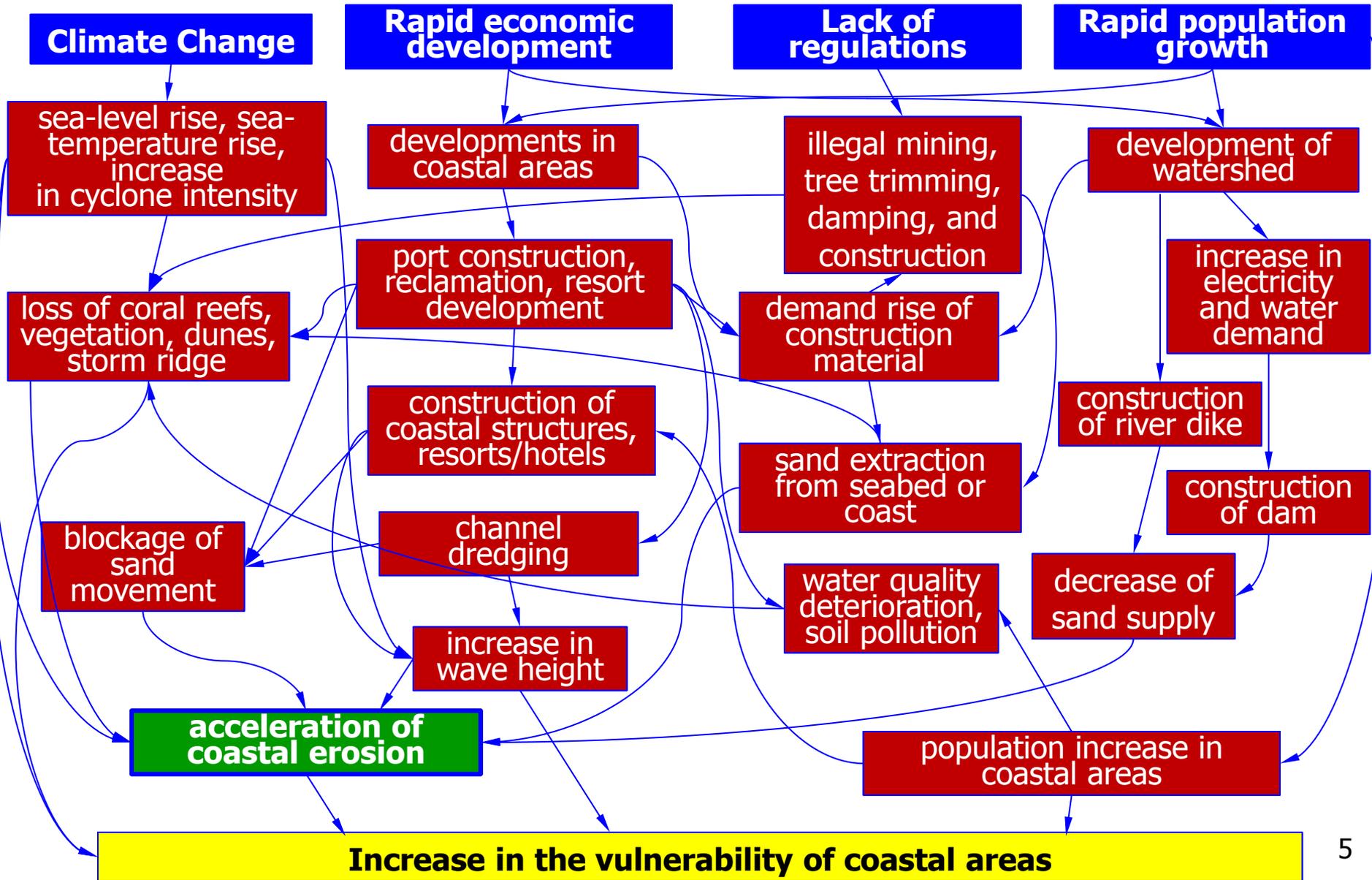
HIGH	MEDIUM	LOW
Storm/Typhoon	Landslide	Earthquake
Whirlwind, cyclone	Forest fire	Tsunami
Flood, inundation	Salinity intrusion	Frost
Flash flood	Storm surge	Hail rain
Drought, desertification		Accident (technology)
Erosion		

Damages caused by natural disasters



- In 50 years, Vietnam has been hit by 380 typhoons and depressions (7-8 typhoons/year)
- Average annually deaths (From 1989-2011): 567 people/year

Factors leading to coastal vulnerability



Coastal Issues in Vietnam



Coastal Environment

Coastal Erosion
Pollution

Coastal Disaster

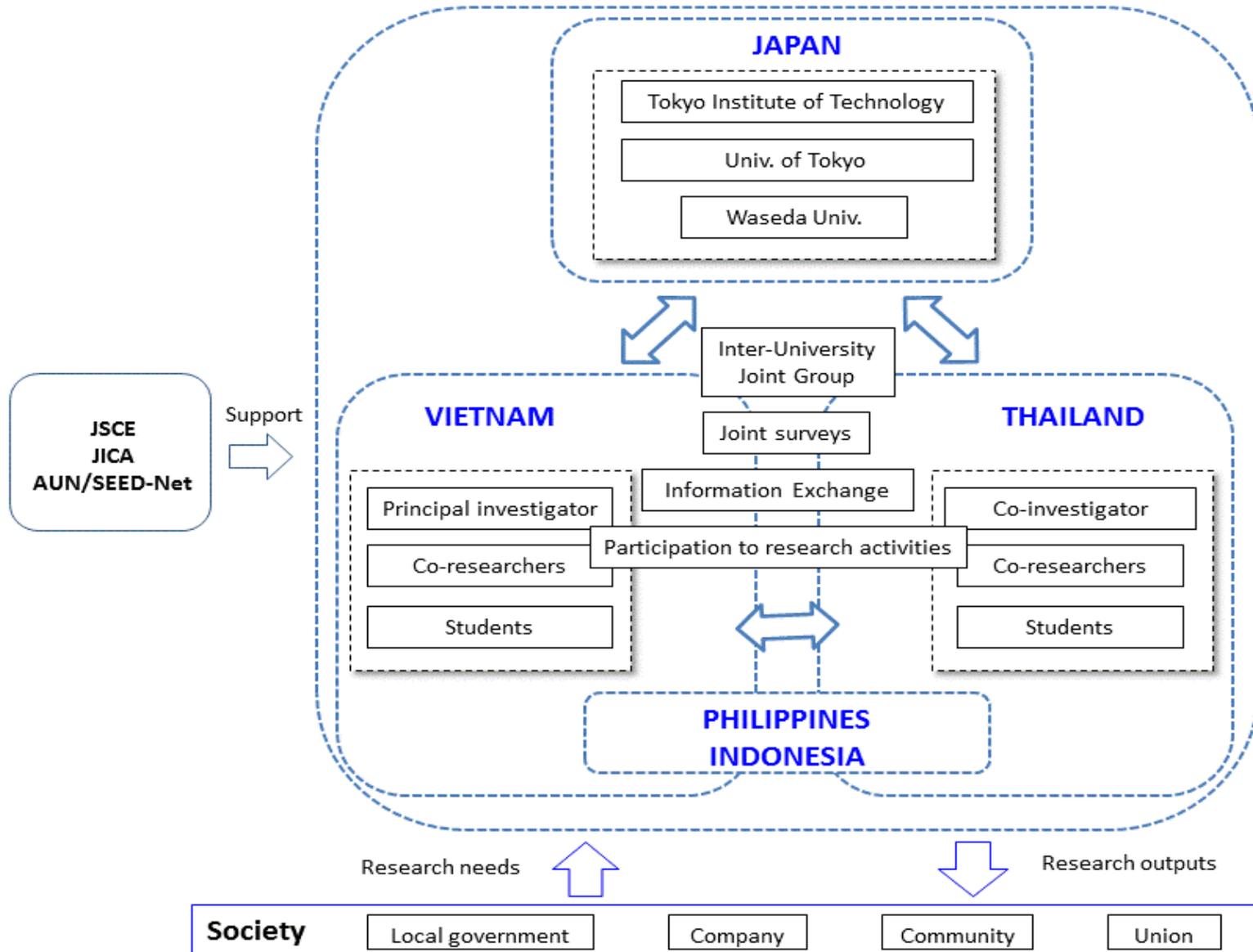
Typhoon and Storm Surge
Tsunami, High Wave, Sea
Level Rise

Having better management
plans and reducing the risks

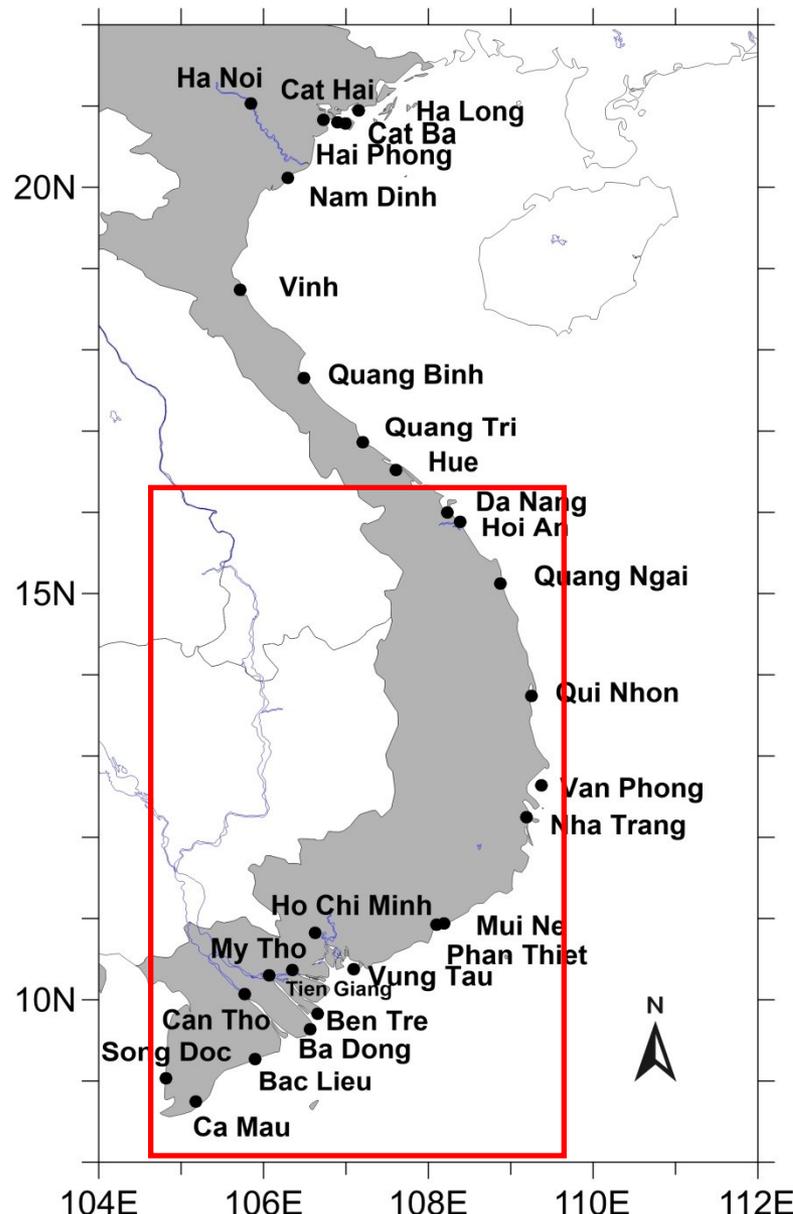
People's
awareness

Sustainable development for coastal areas

Research Collaboration



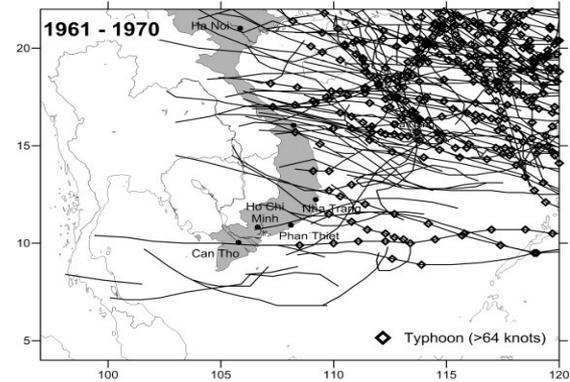
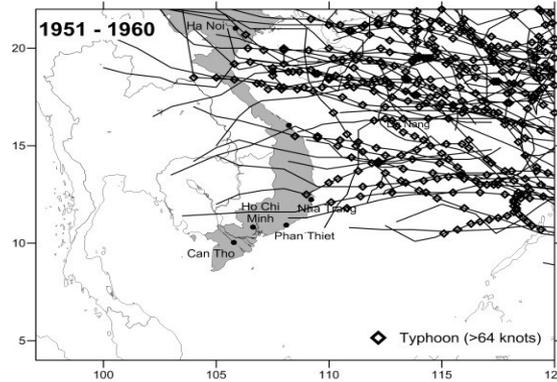
Field surveys



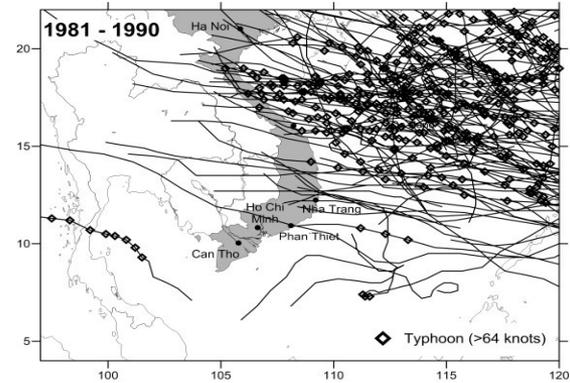
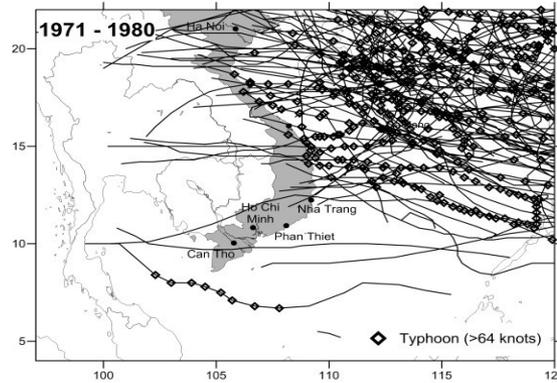
Typhoons



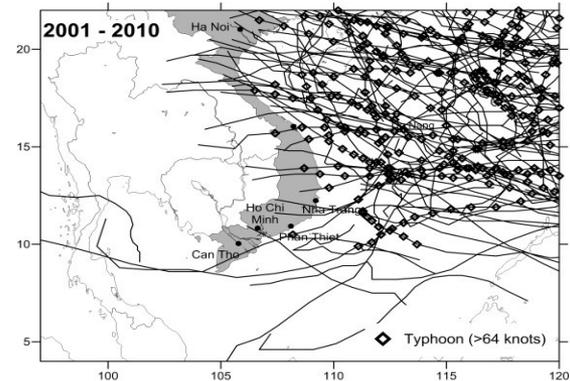
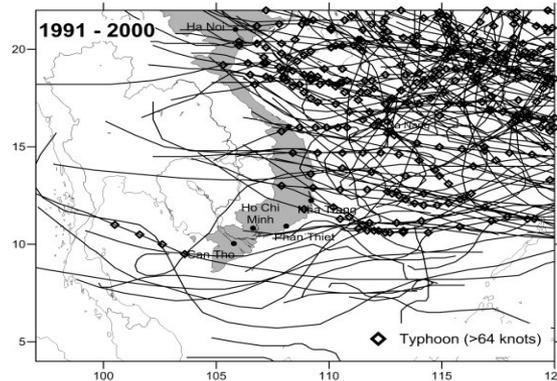
- Like in the Philippines, the return period of a really strong typhoon is not clear



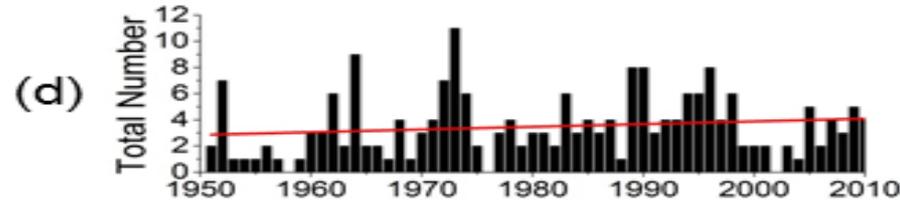
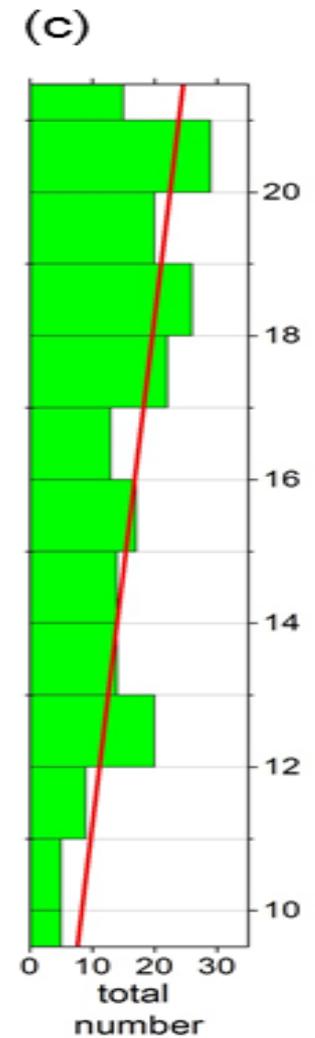
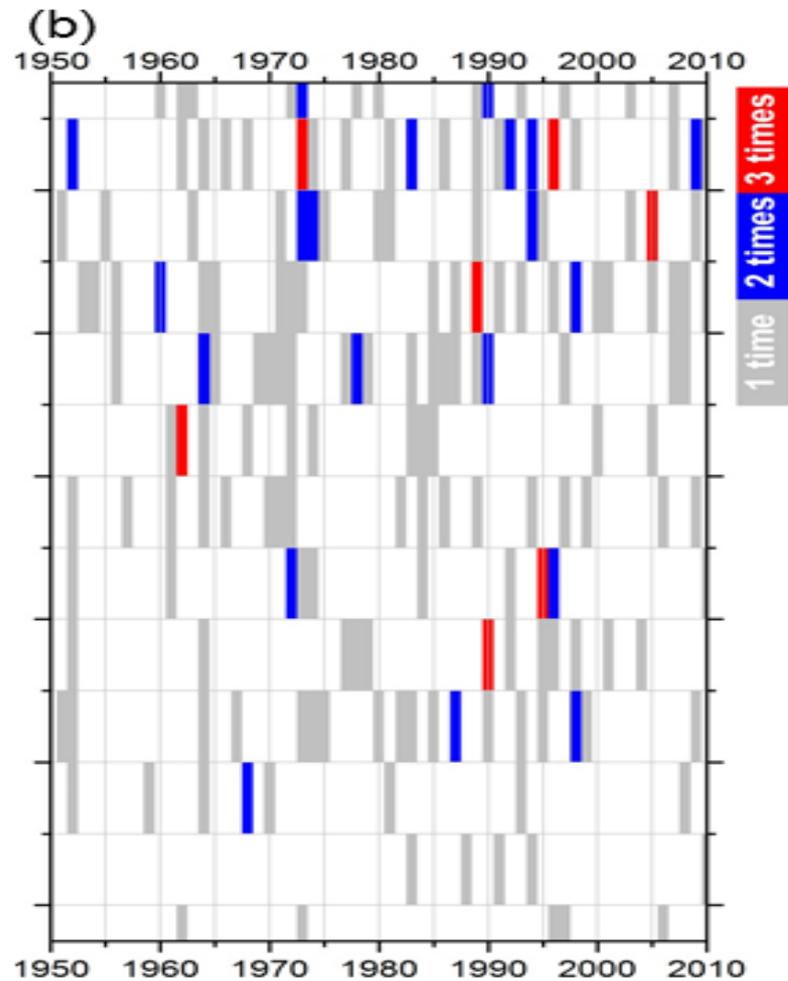
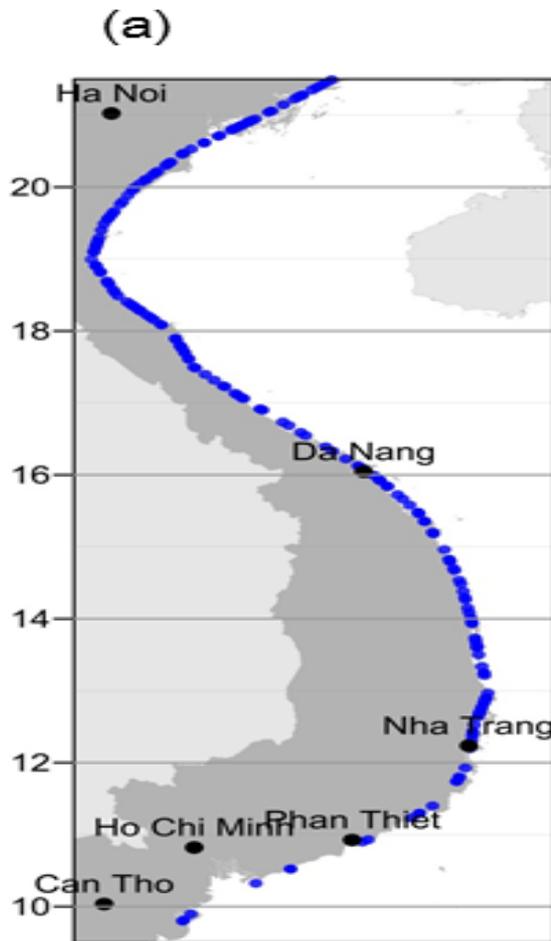
- These typhoons generally affect the north of the country



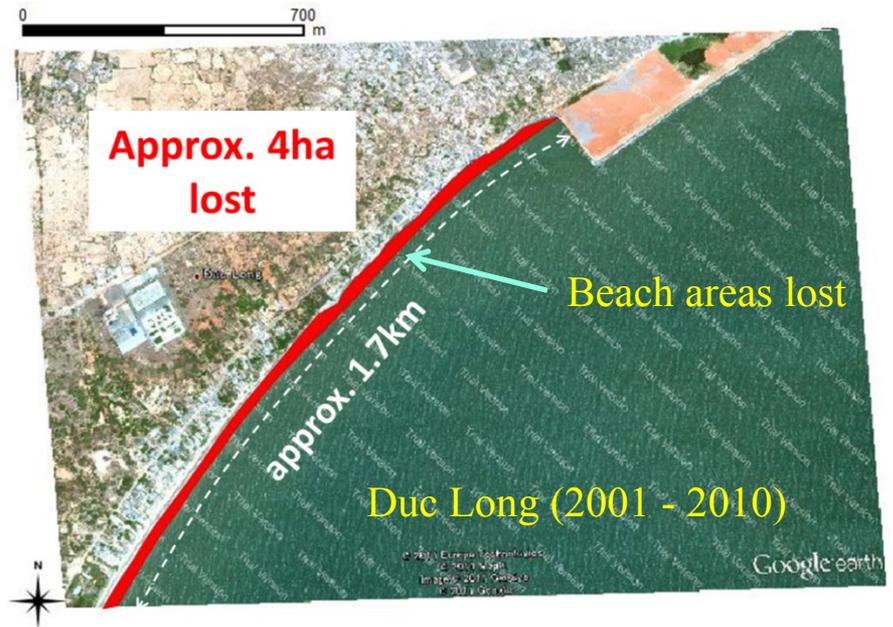
- However some of them also venture to the south (see map)



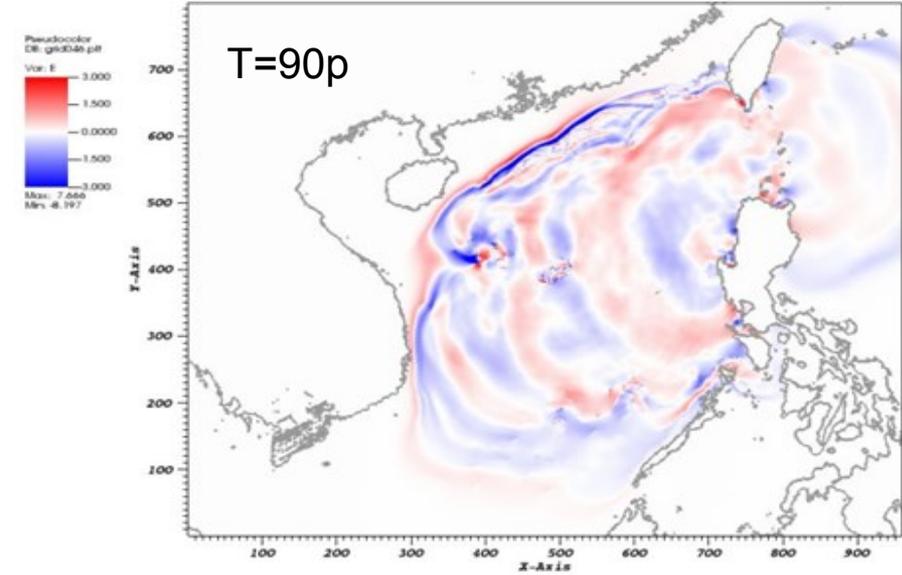
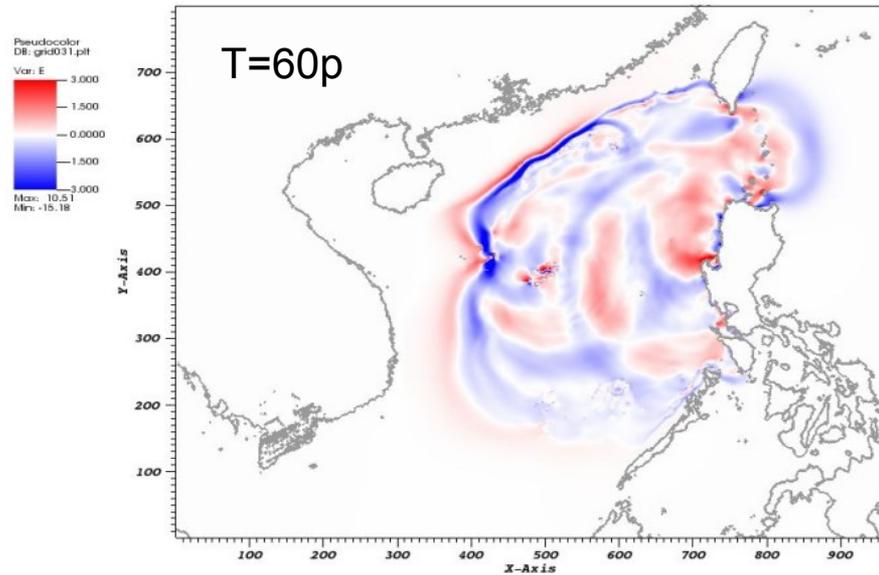
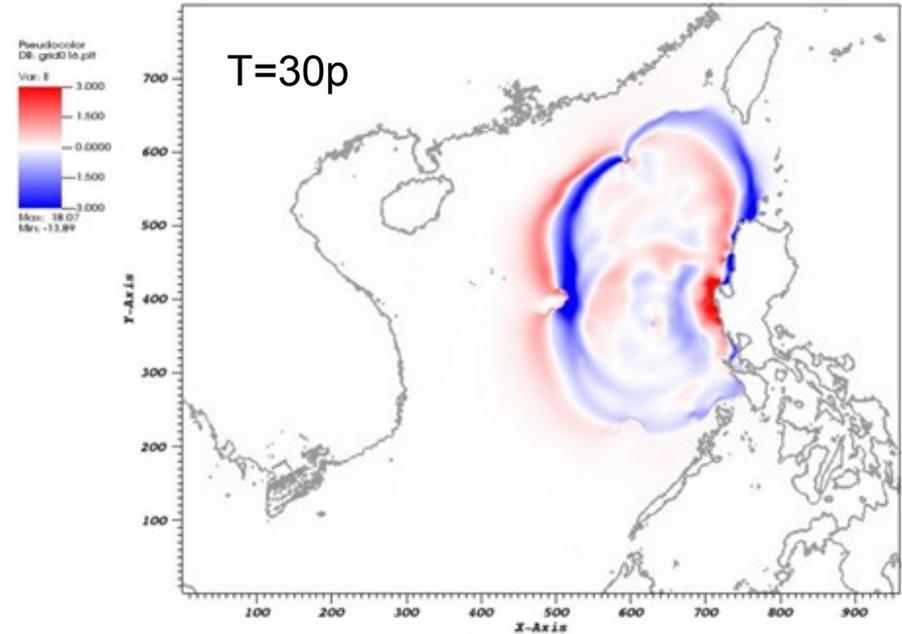
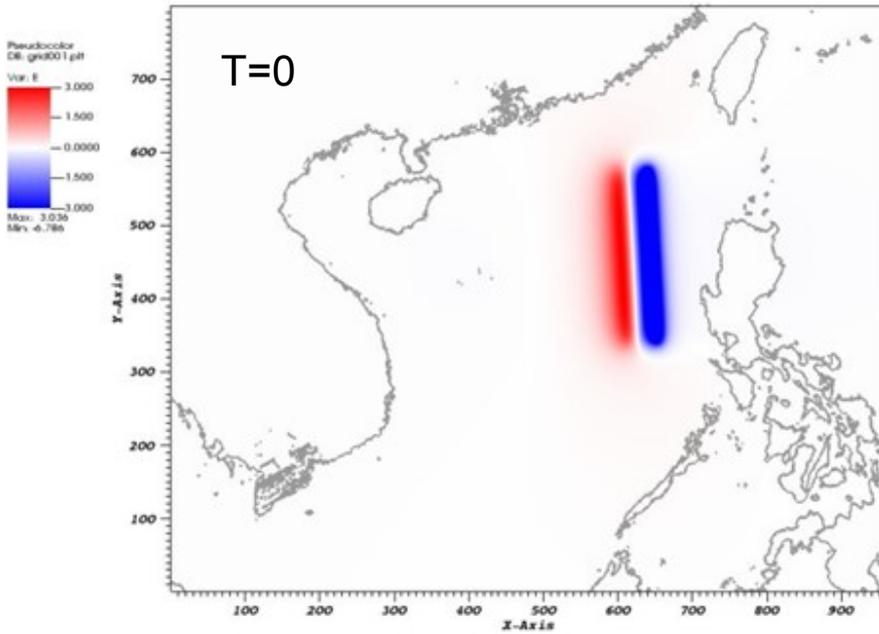
Typhoons



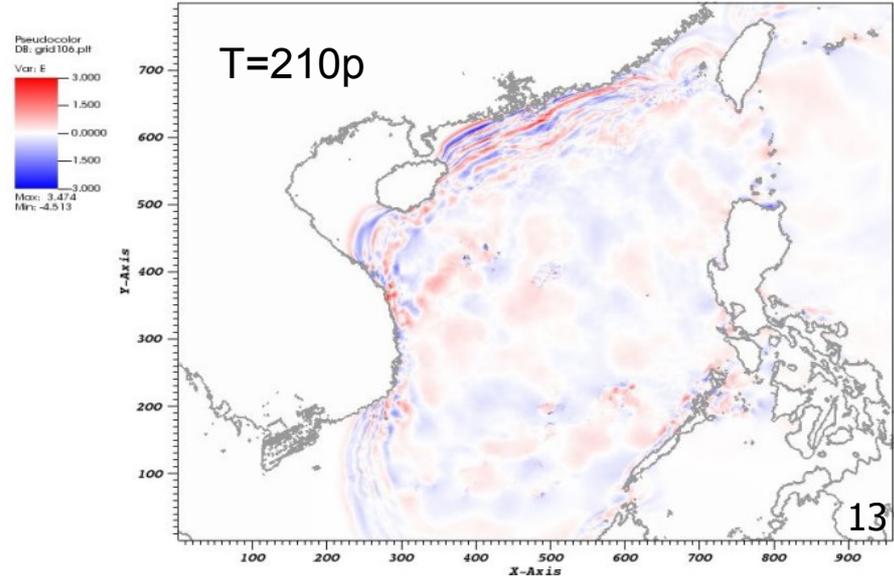
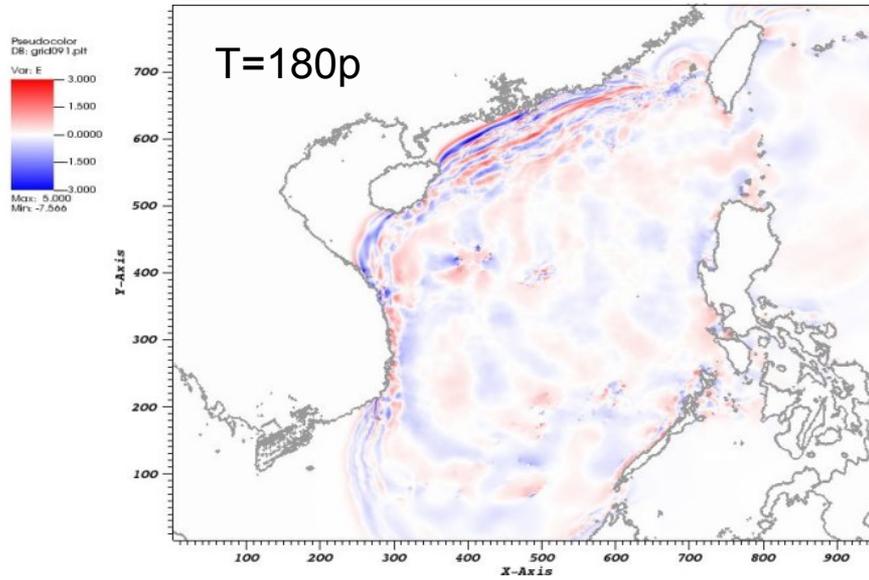
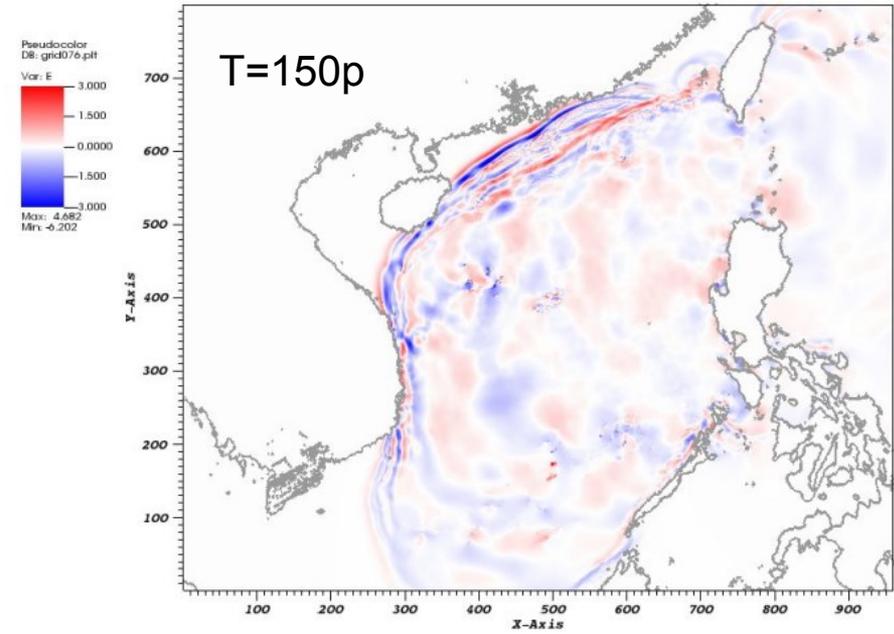
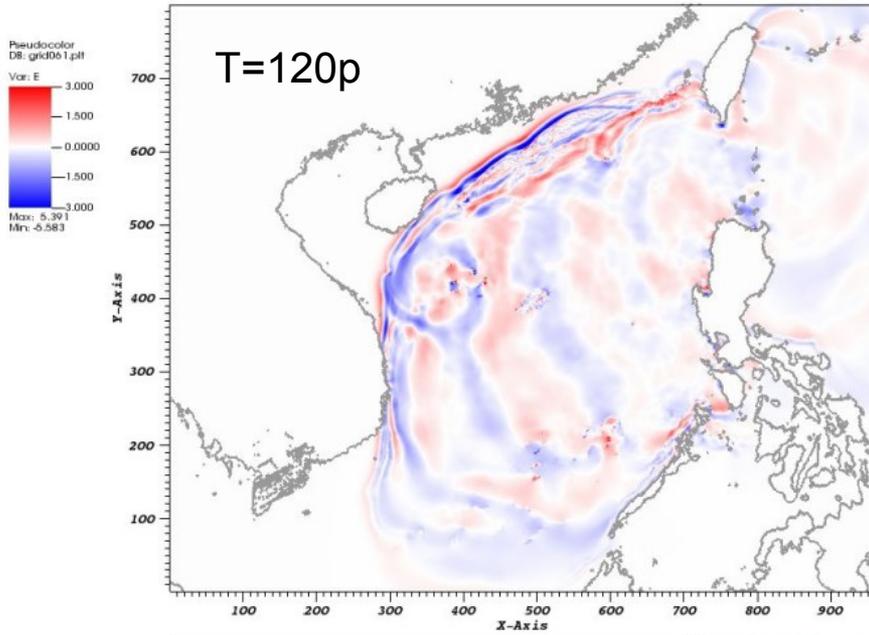
Coastal changes



Tsunami

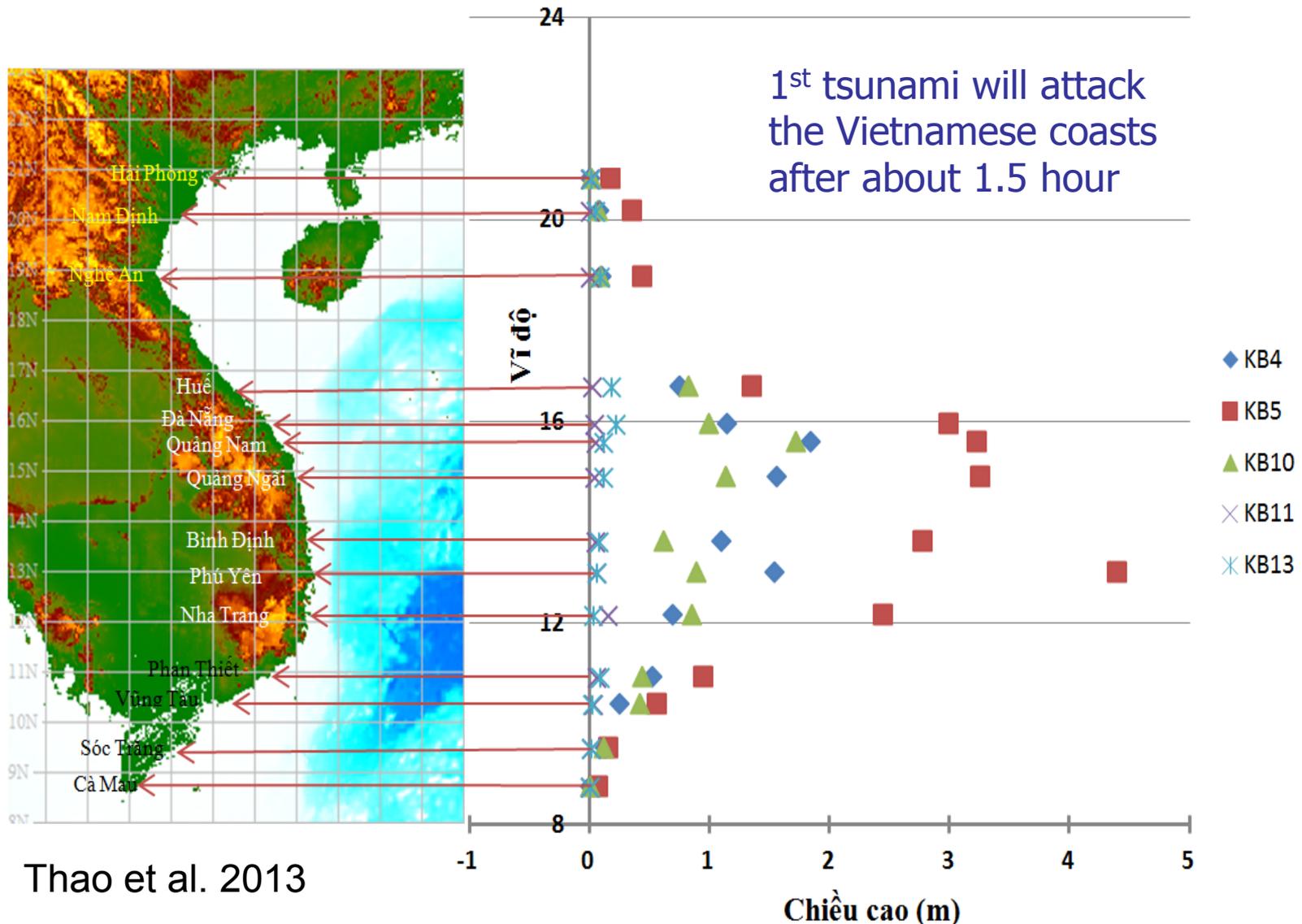


Tsunami



Maximum tsunami height

CHIỀU CAO SÓNG LỚN NHẤT



Urban flooding



People's awareness to coastal disaster

Interviews were conducted with local residents in urban and rural communities in order to grasp the tendency of people's awareness to disasters and climate change.

questionnaire

1. There are some terms concerning disaster and phenomenon below. Please whichever you know what it is. (Multiple choices)

(Dưới đây sẽ có một vài thuật ngữ liên quan tới thảm họa và các hiện tượng liên quan đến thảm họa. Xin vui lòng lựa chọn bất cứ khái niệm nào mà bạn biết. Đáp án có thể có nhiều lựa chọn).

- Flooding (Lũ lụt).
- Typhoon (Bão).
- Salinity Intrusion (Xâm nhập mặn).
- Tsunami (Sóng thần).
- Storm Surge (Triều dâng do bão).
- Sea Level Rise (Nước biển dâng).

2. Is your place in danger of flooding? (Please tick one answer)

(Nơi bạn sống có gặp nguy hiểm về ngập lụt không? (vui lòng đánh dấu một câu trả lời))

- Not at all (Không có).
- Moderate (Có, mức độ trung bình).
- Very strongly (Rất thường xảy ra).
- Little (Ít có khả năng xảy ra).
- Strongly (Thường xảy ra).

3. How often do you suffer flooding? (Nơi bạn ở thường bị ngập lụt như thế nào)

- Once a few days (Một lần trong một vài ngày).
- Once a week (Một lần trong một tuần).
- Once a month (Một lần trong một tháng).
- Once a few years (Một lần trong một vài năm).
- Never (Chưa bao giờ).

What month do you experience the most severe flood in the year?

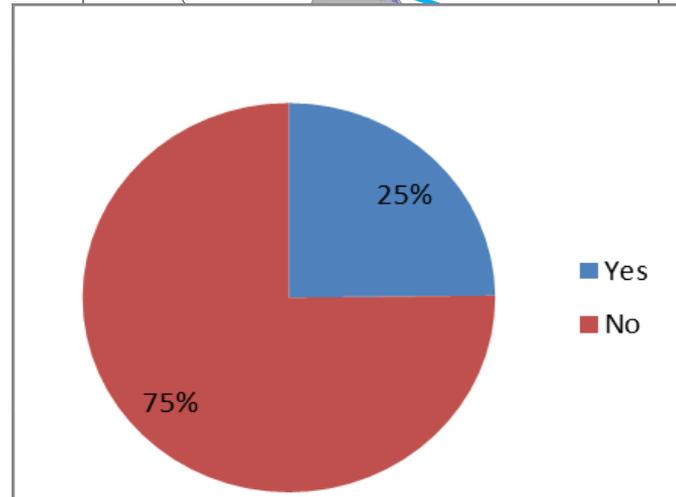
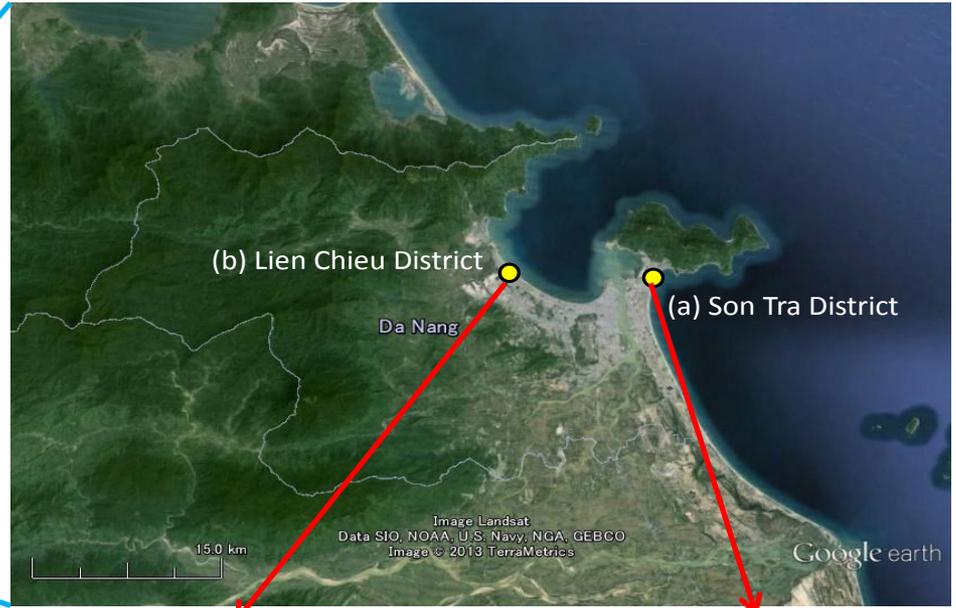
(Tháng nào là tháng mà bạn bị qua ngập lụt nhiều nhất trong một năm)

From January to February (Từ tháng 1 đến tháng 2).

From March to April (Từ tháng 3 đến tháng 4).



Coastal Disaster Preparedness



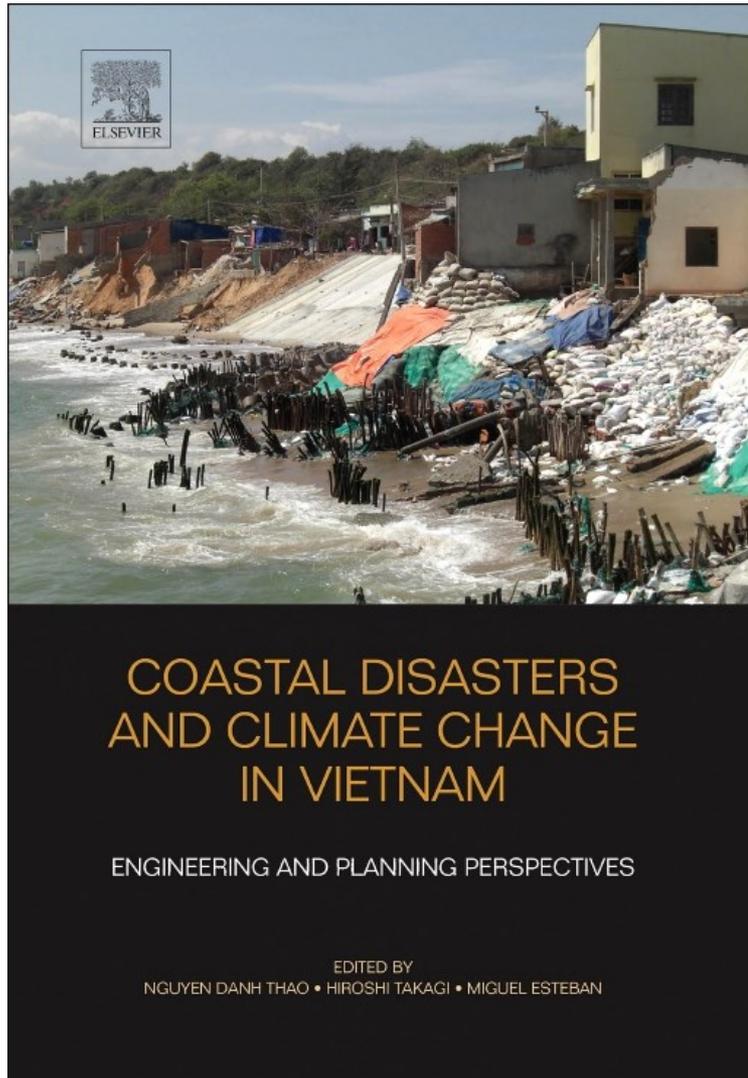
Know there is a tsunami warning system in this area

Tsunami warning system in Da Nang



- Vietnamese coasts are vulnerable to coastal hazards and climate change
- Coastal disasters and climate change in Vietnam are more and more complicated and unpredictable
- It is necessary to develop not only structural countermeasures but also improve the awareness of both authorities and local people and setting up a proper evacuation plan
- Need to have more collaboration in wide range and many levels, domestic and international

Introduction of our recent publication



Coastal Disasters and Climate Change in Vietnam Engineering and Planning Perspectives

Nguyen Danh Thao

*Department of Port and Coastal Engineering,
Faculty of Civil Engineering,
Ho Chi Minh City University of Technology,
Ho Chi Minh City, Vietnam*

Hiroshi Takagi

*Department of International Development Engineering,
Graduate School of Science and Engineering,
Tokyo Institute of Technology,
Tokyo, Japan*

Miguel Esteban

*Project Associate Professor,
Graduate Program in Sustainability Science—
Global Leadership Initiative (GPSS-GLI),
Graduate School of Frontier Sciences,
University of Tokyo, Japan*



AMSTERDAM • BOSTON • HEIDELBERG • LONDON • NEW YORK • OXFORD
PARIS • SAN DIEGO • SAN FRANCISCO • SINGAPORE • SYDNEY • TOKYO

Thao N.D., Takagi H., Esteban M. (2014): *Coastal Disasters and Climate Change in Vietnam: Engineering and Planning Perspectives*, 1st ed., Elsevier, 393p.

THA 2015

International Conference on
“Climate Change and Water &
Environment Management
in Monsoon Asia”



28-30 January 2015

Swissôtel Le Concorde,
Bangkok, Thailand

Thank you very much!

Contact:

Dr. Nguyen Danh Thao

Department of Port and Coastal Engineering

Faculty of Civil Engineering, HCMC University of Technology

Email: ndthao@hcmut.edu.vn