



United Nations  
Educational, Scientific and  
Cultural Organization

Organisation  
des Nations Unies  
pour l'éducation  
la science et la culture

Organización  
de las Naciones Unidas  
para la Educación  
la Ciencia y la Cultura

Организация  
Объединенных Наций по  
вопросам образования  
науки и культуры

• Intergovernmental  
Oceanographic  
Commission

• Commission  
océanographique  
intergouvernementale

• Comisión  
Oceanográfica  
Intergubernamental

• Межправительственная  
океанографическая  
комиссия

## NEAMTWS and its current developments

13th Eastern Atlantic Hydrographic Commission  
(EAtHC) of IHO  
Casablanca, 16-18 September 2014

Francesca Santoro  
Head of the Technical Secretariat for the NEAMTWS  
(IOC-UNESCO)

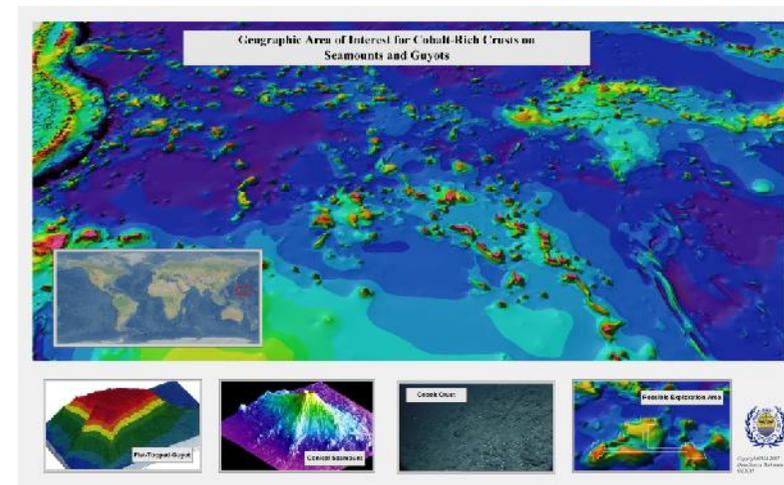
## IOC in UN



UNESCO is the only UN agency having the ‘S’ of science,  
and the IOC is the only body of UN with a mandate for  
**Ocean Science**



- The IOC is the UN focal point for ocean observation, ocean sciences and services, and for ocean data exchange
- The IOC is the international organization with a mandate for marine sciences according to UNCLOS
- 145 Member States



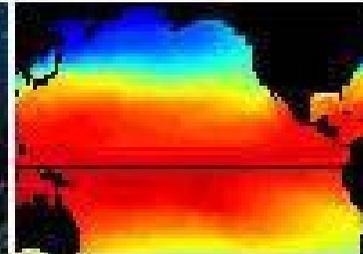
## IOC Issues



Marine Environmental Protection



Fisheries & Ecosystems



Climate Change



Ocean Observing and Monitoring



Coastal Area Management



Data & Information Management



Disaster Mitigation

Ocean Observation

Ocean Science

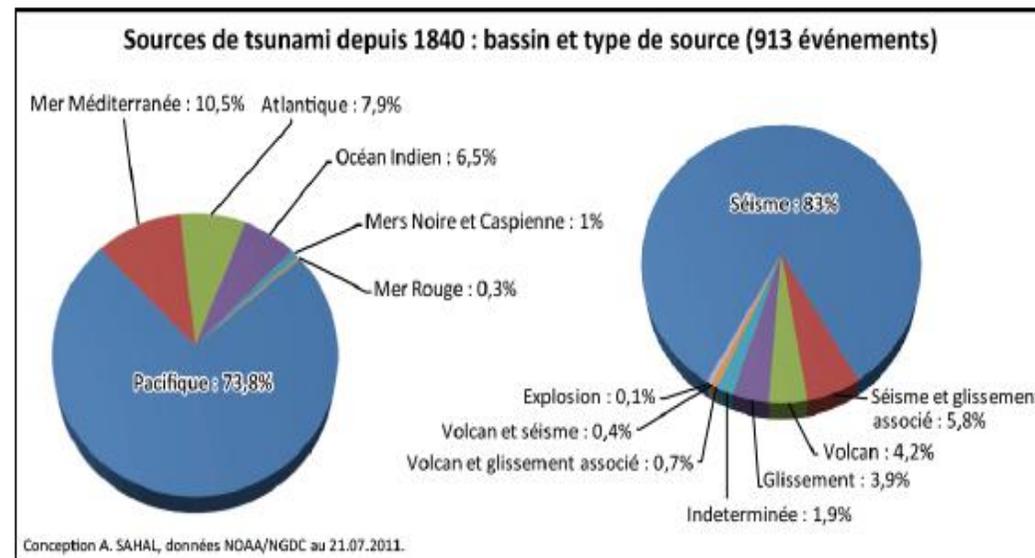
Ocean Observation

Marine Policy

Tsunami

# Tsunami risk in the NEAM region

- Although less frequent than in the Pacific tsunamis can hit the Mediterranean and North East Atlantic coastal areas causing extensive loss of lives and properties



## Growing risk and growing concerns

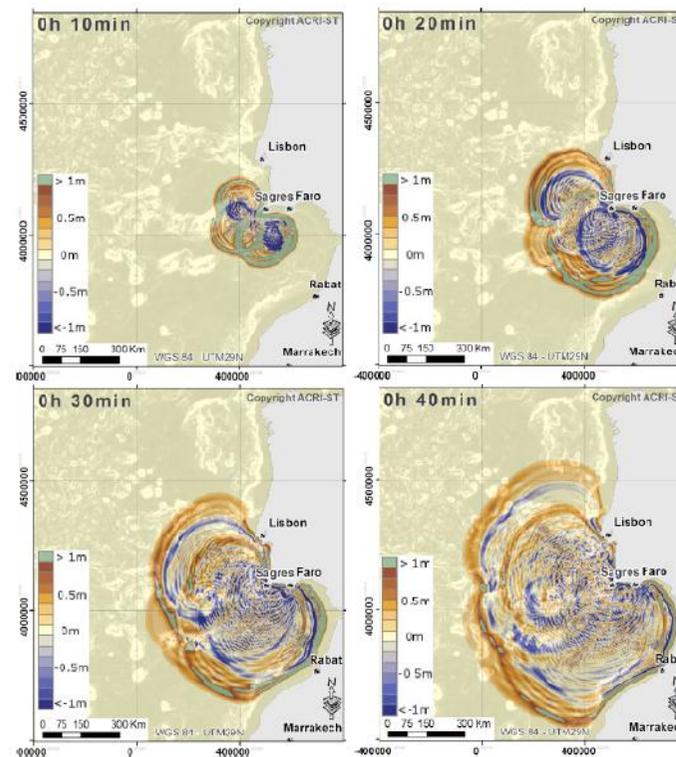
- The population density in the coastal zone is very high, and will continue to increase in the next years
- Many activities including industries and some of the biggest ports in the world can be found in the coastal areas of Europe and of North-Africa

# Major events in the NEAM region



# The Moroccan case (1)

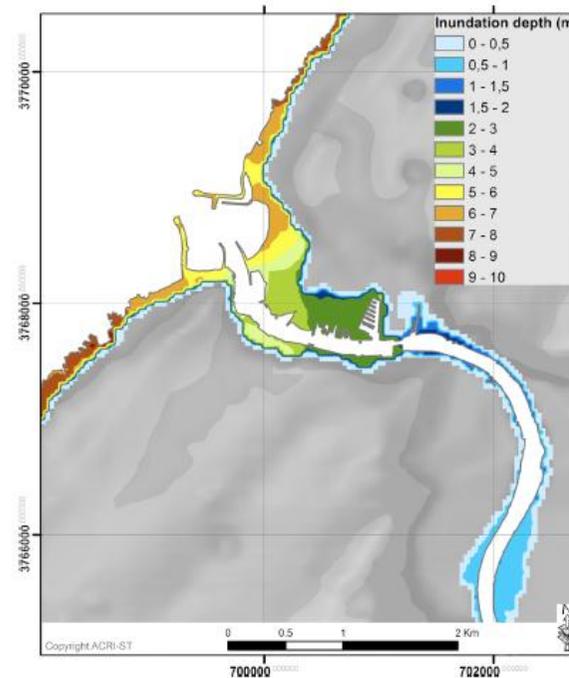
*Among African countries, Morocco is probably one of the most exposed to tsunami (Renou et al., 2011)*



Propagation steps of the 1755 Lisbon scenario  
(from Baptista et al., 2003)

## The Moroccan case (2)

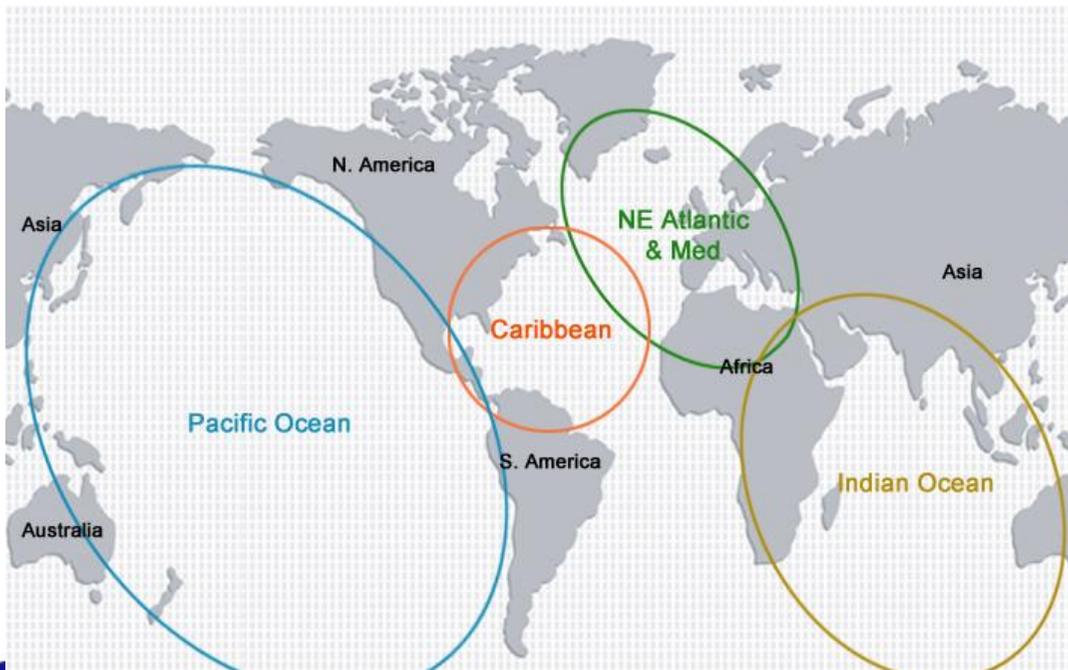
*Models results of 1755 scenario show that the most affected area would be along the Rabat and Salé coasts with maximum water elevation of 7-8 m (Renou et al., 2011)*



Inundation depth (from Renou et al., 2011)

# IOC Coordination of Tsunami Warning Systems

The IOC has coordinated the Pacific Tsunami Warning System (PTWS) since 1965. In the aftermath of the Sumatra tsunami on December 26, 2004, the IOC received the mandate to assist all Member States in establishing three more tsunami and other ocean related hazards EWS. Done through ICGs that report to IOC Assembly.



**IOTWS**

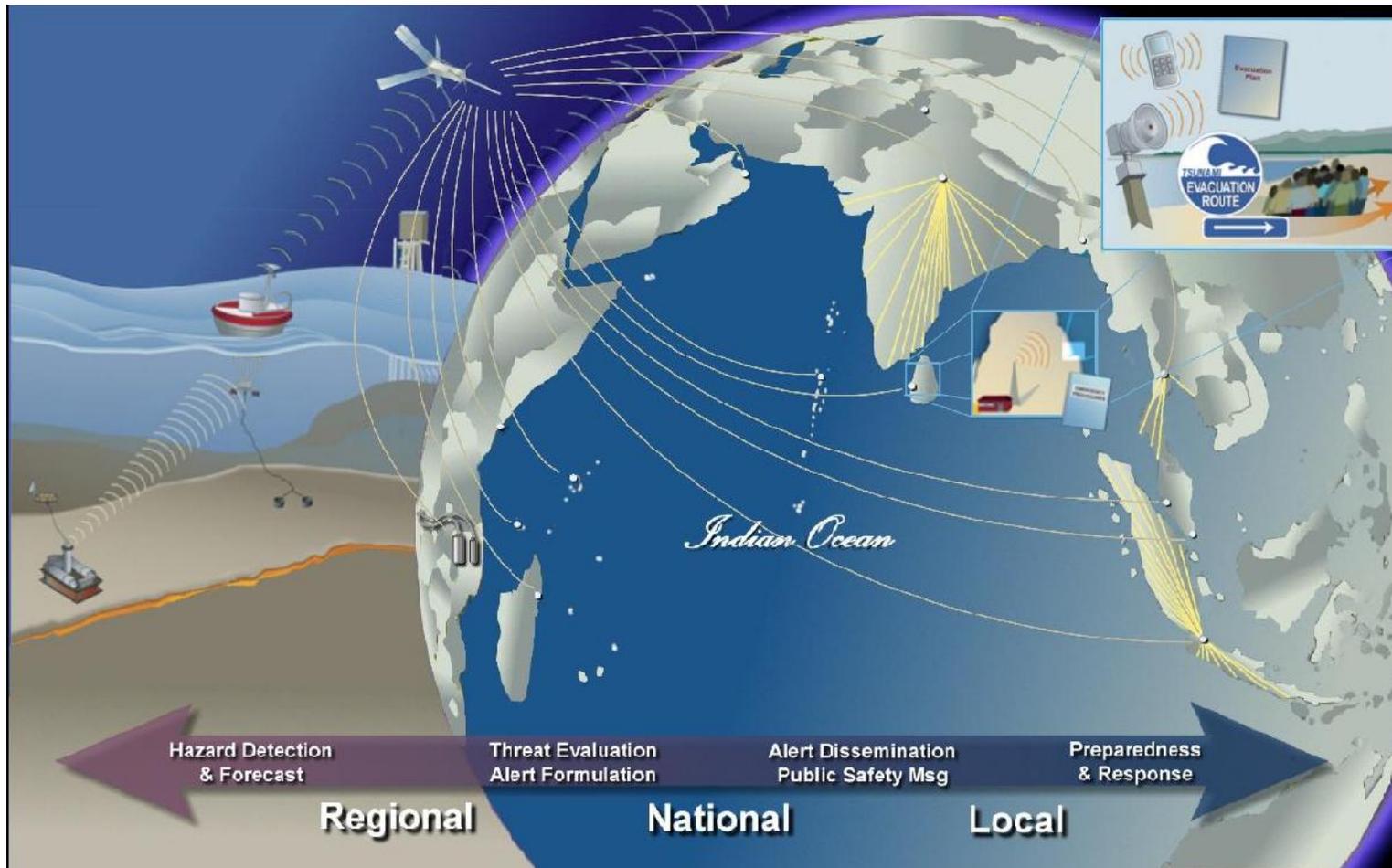
**CARIBE-EWS**

**NEAMTWS**  
(NE Atlantic,  
Mediterranean  
and connected  
seas)

## IOC mandate on NEAMTWS

- The IOC Assembly, during its twenty-third Session (21-30 June 2005), formally established the ICG/NEAMTWS through Resolution IOC-XXIII-14.
- The Council of the European Union with its Conclusion of December 2007 ([15473/07](#)) emphasised, in order to avoid duplications, the importance of integrating forthcoming proposals into the ongoing IOC's NEAMTWS initiative

# End-to-End Tsunami Warning System





## Up-Stream

### Sensor systems

- Seismometer
- GPS
- Tide Gauge
- Buoy Systems
- Others

### Warning Centre

- Processing
- Simulation
- Decision-Support
- Warning Message

**Measurement, Analysis, Decision**

**Dissemination**

## Down-Stream

**Local Administration**

**Local Communities**

**Awareness, Preparedness, Reaction**



**t**

# Tsunami Warning Systems: Essential Elements

- Intergovernmental Coordination incl. technical WGs
- Infrastructure (Alert centers, detection network, communication, data exchange)
- Capacity development, training, awareness raising, advocacy, education, TWS exercises
- Facilitation of science in support and enhancement of tsunami warning systems



# NEAMTWS Governance

- Intergovernmental Coordination Group
- 4 Working Groups
  - Hazard Assessment and Modelling
  - Seismic and Geophysical Measurements
  - Sea Level Data Collection and Exchange
  - Public Awareness, Preparedness and Mitigation
- 2 Task Teams
  - Communication Tests
  - Tsunami Exercises

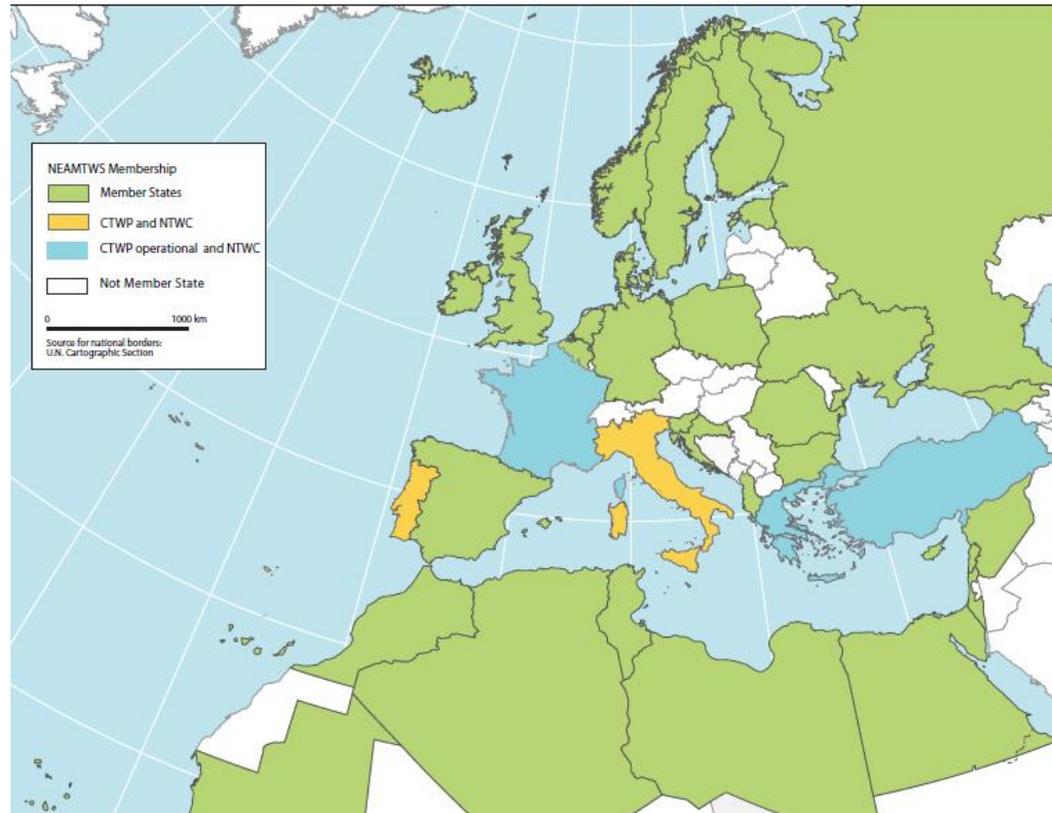


# NEAMTWS Structural Elements

- Tsunami Watch Providers
  - Disseminate tsunami warning messages to other MSs
- Tsunami National Contact
  - Is the person designated by an ICG/NEAMTWS Member States to represent his/her country
- Tsunami Warning Focal Point
  - Is the 24/7 institution designated to receive the message from the TWP and notifying the national emergency authorities
- National Tsunami Warning Centres
  - Collects, records and processes earthquake data for the rapid initial warning messages



# NEAMTWS Status





# SEA LEVEL STATION MONITORING FACILITY

Intro

Map

Station lists

Station details

Services

## Sealevel stations

Status at 2014-09-14 15:50 GMT

Type



Legend:

- Station is offline, or data is outdated
- Station is online
- Station is not available at this site

Offline = No data received since 3 times the transmit interval.

The status is checked every 5 minutes.

The quality of the transmitted data is not checked.

- To obtain more details about a station - move mouse over station and click.
- To zoom in - hold down the Shift-key while holding down the mouse button and drawing a rectangle or use the Scroll mouse button, or use the control buttons in upper left part of map.
- To pan - drag the map, or use the control buttons in upper left part of map.
- Or use the [KML file](#).

Lat: 37 Lon:79.76



# IOC Oceanographic Data Exchange Policy

- Resolution IOC-XXII-6

## Clause 1

Member States shall provide timely, free and unrestricted access to all data, associated metadata and products generated under the auspices of IOC programmes.

## Clause 2

Member States are encouraged to provide timely, free and unrestricted access to relevant data and associated metadata from non-IOC programmes that are essential for application to the preservation of life, beneficial public use and protection of the ocean environment, the forecasting of weather, the operational forecasting of the marine environment, the monitoring and modelling of climate and sustainable development in the marine environment.

## Clause 3

Member States are encouraged to provide timely, free and unrestricted access to oceanographic data and associated metadata, as referred to in Clauses 1 and 2 above, for non-commercial use by the research and education communities, provided that any products or results of such use shall be published in the open literature without delay or restriction.



## Sea level data and marine disasters

- The Intergovernmental Coordination Group of NEAMTWS (ICG/NEAMTWS) at its 10th session recommended that:
  - that, as a priority, all sea-level data should be made available to the CTWPs and NTWCs using bilateral agreements between NTWC's whenever possible
- IHO- Resolution 1/2005 as amended
  - the fundamental role of hydrography in prediction the impact of marine disasters and supporting early warning

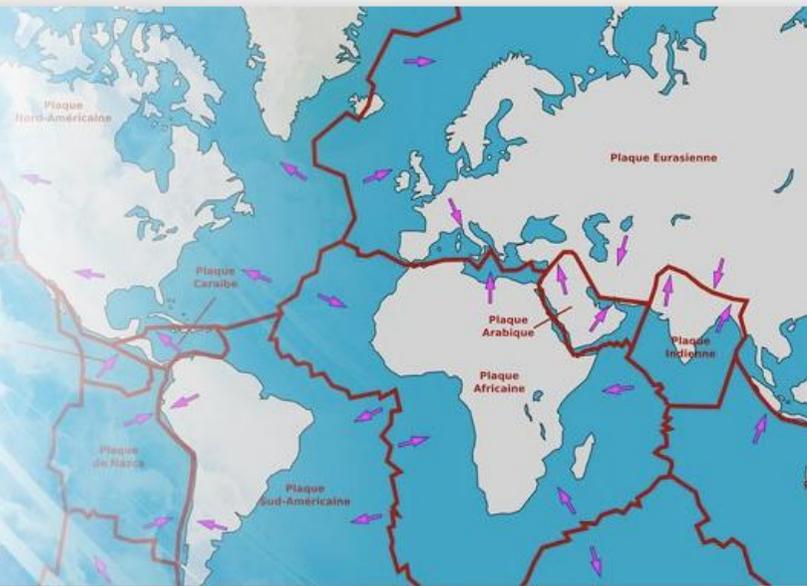
## Main activities of NEAMTWS

- Enlarged Communication Tests, using email, fax, GTS, and sms
- Tsunami Exercises:
  - Next one NEAMWave14 (28-30 October 2014)
  - 20 out of 39 NEAMTWS Member States participating
  - Preparation workshop (Rabat, 23-24 September)
  - First time test of the Union Civil Protection Mechanism
- Awareness raising and education
  - NEAMTIC



# The cause OF TSUNAMI

[LEARN MORE](#)



# Suggestions for cooperation between NEAMTWS and EaTHC

- Acknowledge the developments of NEAMTWS since 2005
- Acknowledge that the members of EaTHC can contribute with respect to the developments of the NEAMTWS
- Where possible, Member States: upgrade national sea level stations identified by NEAMTWS Implementation Plan to real time data delivery and participate in data exchange.
- Member States: exchange coastal bathymetry data in accordance with relevant resolution of IOC and IHB CL 36/2006 to the IHB.  
[Tsunami & coastal inundation modelling]

Thank you!  
Merci!  
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