



World Meteorological Organization

Working together in weather, climate and water

WMO

Marine Meteorology and Oceanography Programme

Conference of Directors West Africa, April 2016



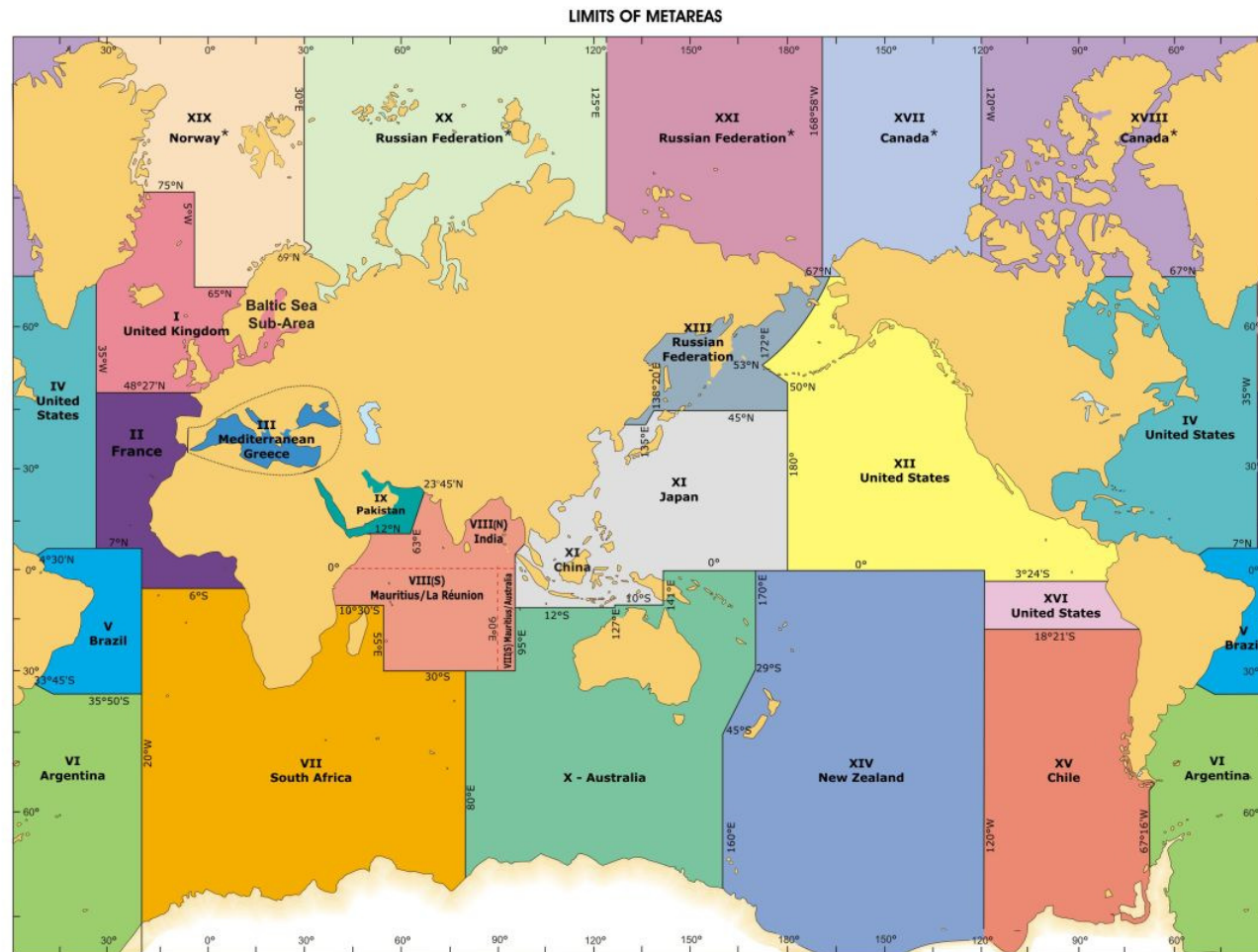
Maritime Safety Information (MSI)

- SOLAS states...
”Contracting Governments are obliged to provide and promulgate meteorological information & warnings to shipping”
- And also...
Forecasts, warnings, synoptic & other meteorological data intended for ships shall be issued and disseminated by NMHS in the best position to serve various coastal & high seas areas, in accordance with mutual arrangements made by Contracting Governments, in particular as defined by WMOs
GMDSS.





MSI: METAREAS



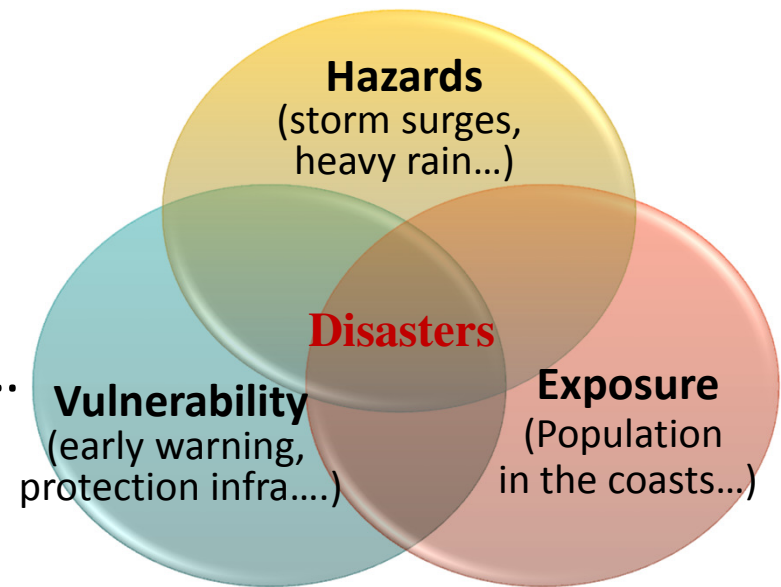
* The GMDSS is under implementation for the Arctic METAREAS and is expected to be fully operational by 2010/11

WMO Metareas align with IMO Navareas



Exposure to coastal inundation is large and growing

- Population is attracted to coasts by an abundance of local resources
 - Growing coastal population
 - Urbanising coastal zone
 - Tourism, recreation, retirement...
- In many parts of the world, the population is directly exposed to the coastal hazards and this will increase with Climate Change and Sea Level Rise.
- A reactive approach to adaptation increase the vulnerability.

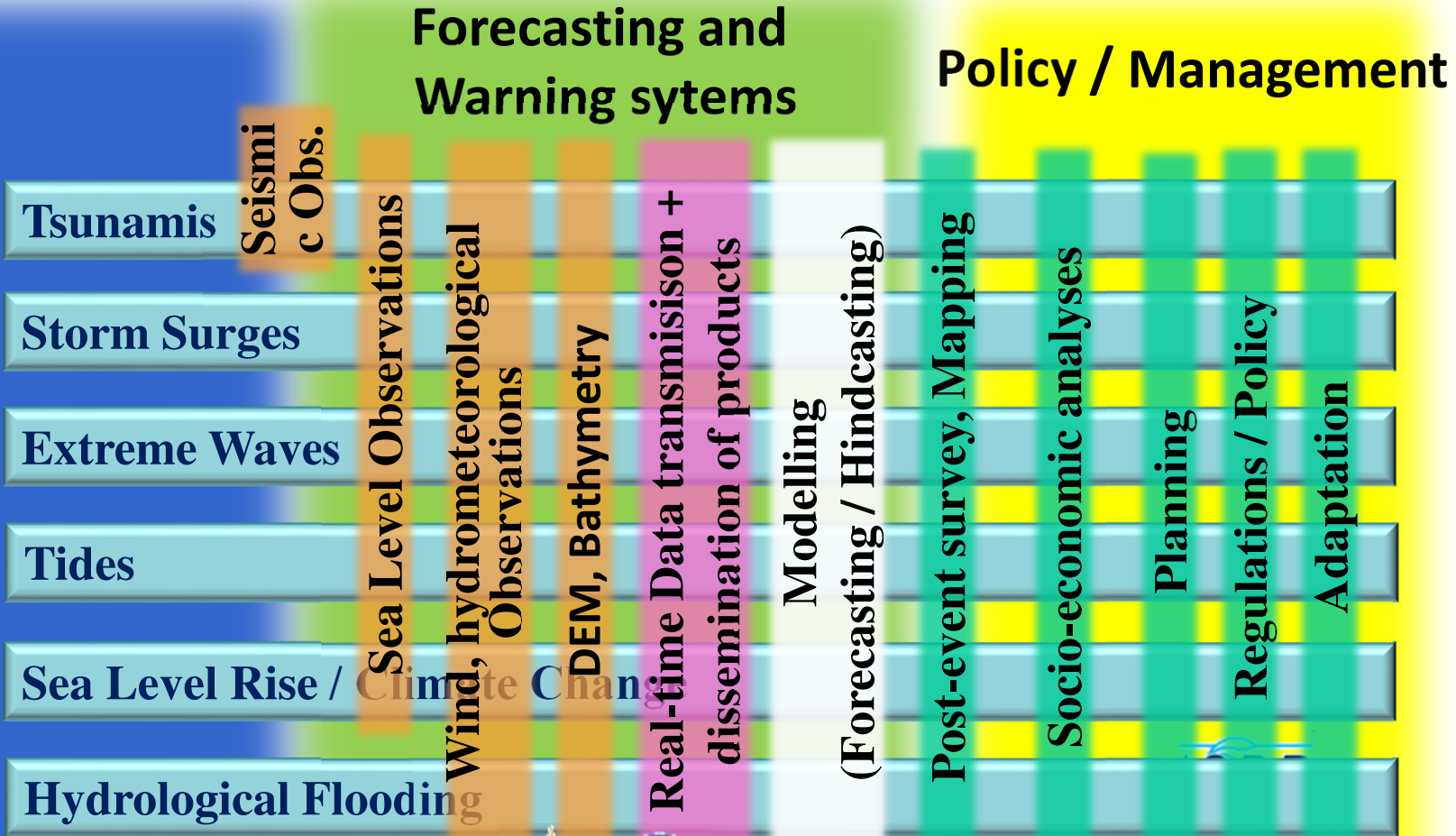


Disasters are more likely when Hazards and exposed population overlap with Vulnerability.



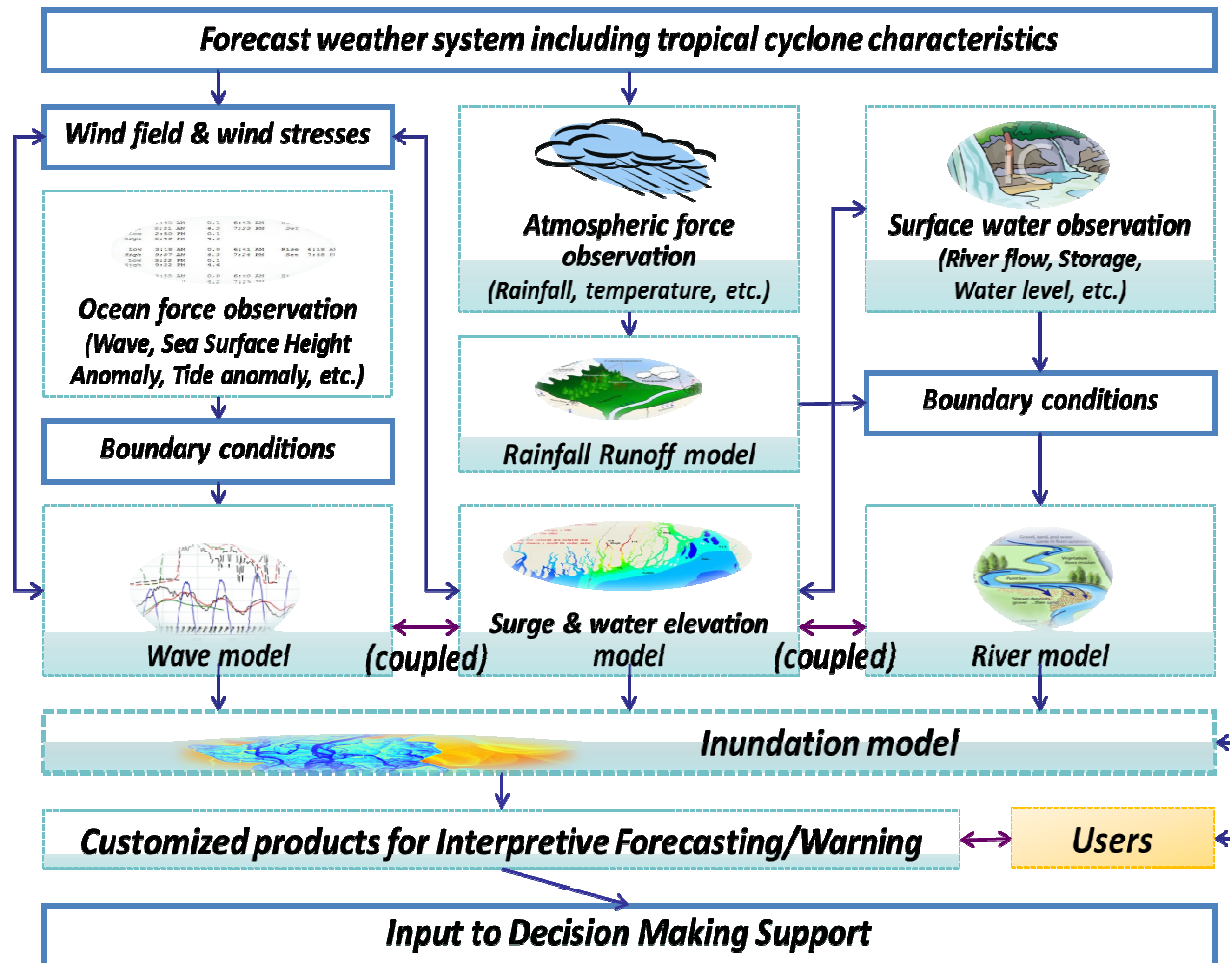
End-to-end Coastal Inundation Management

Coastal Flooding



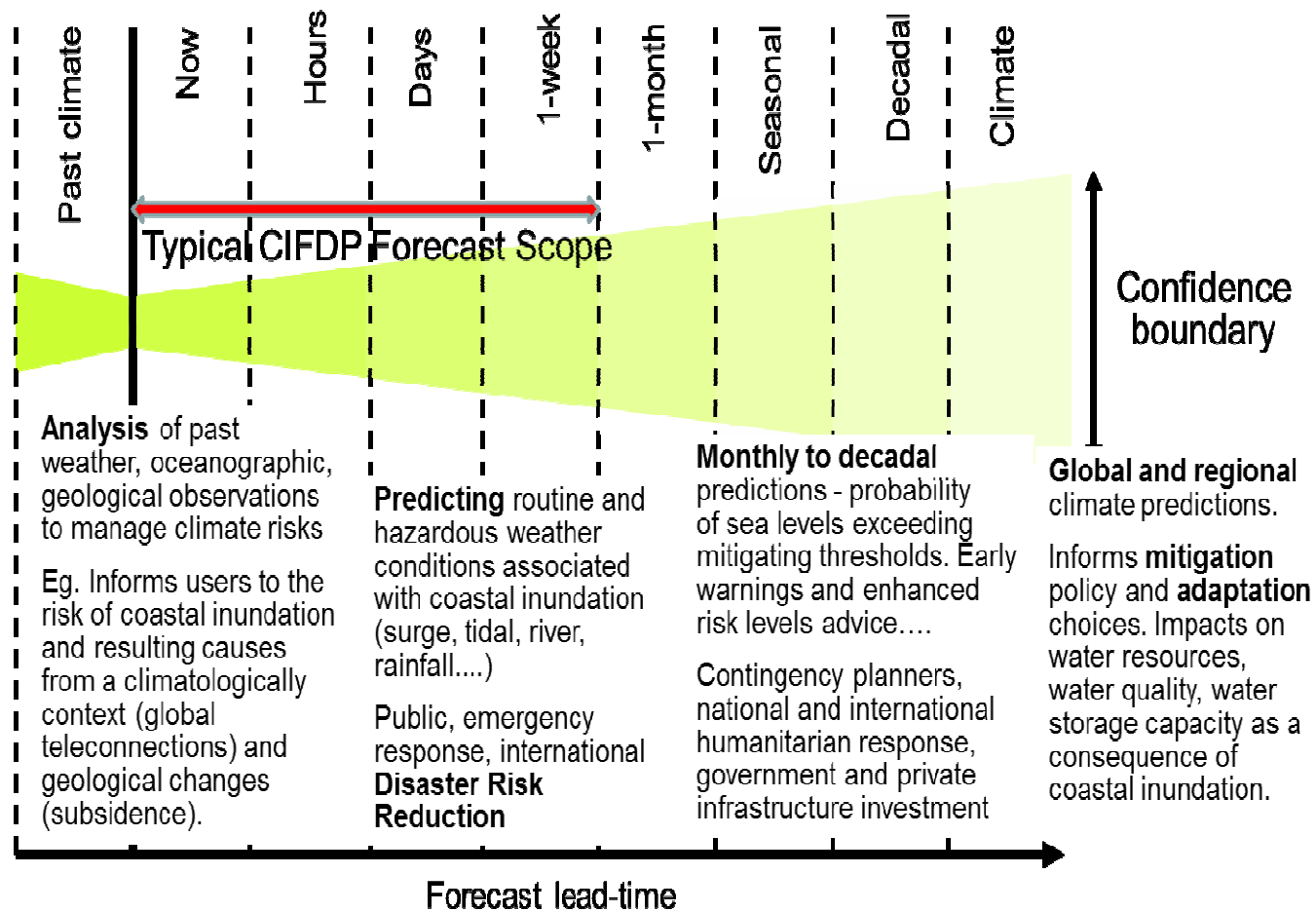


Conceptual diagram of CIFDP forecast systems





Typical forecast scope in the implementation of CIFDP





Global Centres

- Ensemble products
- High Resolution inundation Models
- Global Guidance

Regional Centres

- High Resolution Models
- Regional Guidance

National Meteorological Services

- Warnings
- Tailored advice to specific user-groups

Farmers and fishermen

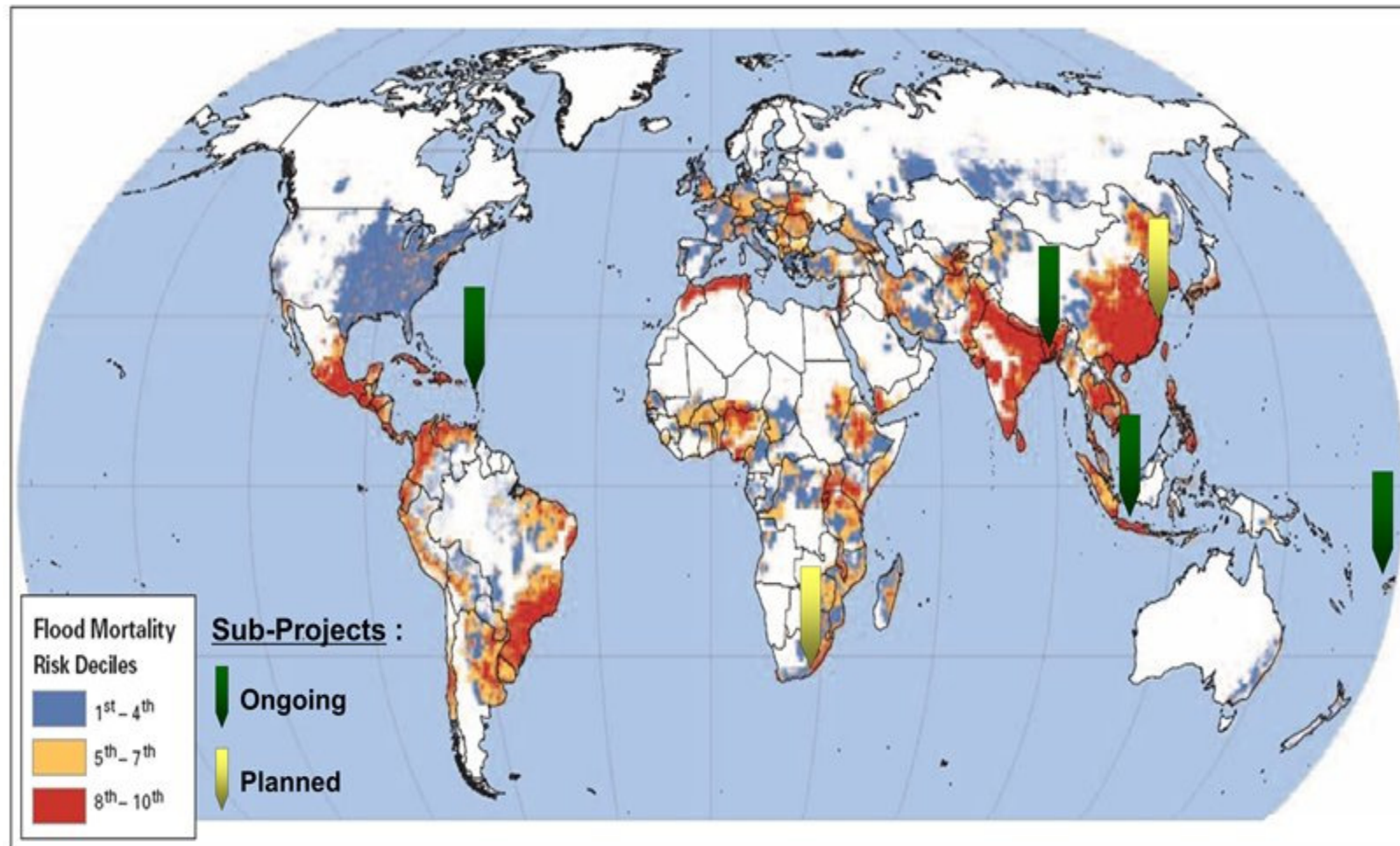
Public

Emergency Responders



CIFDP Implementation

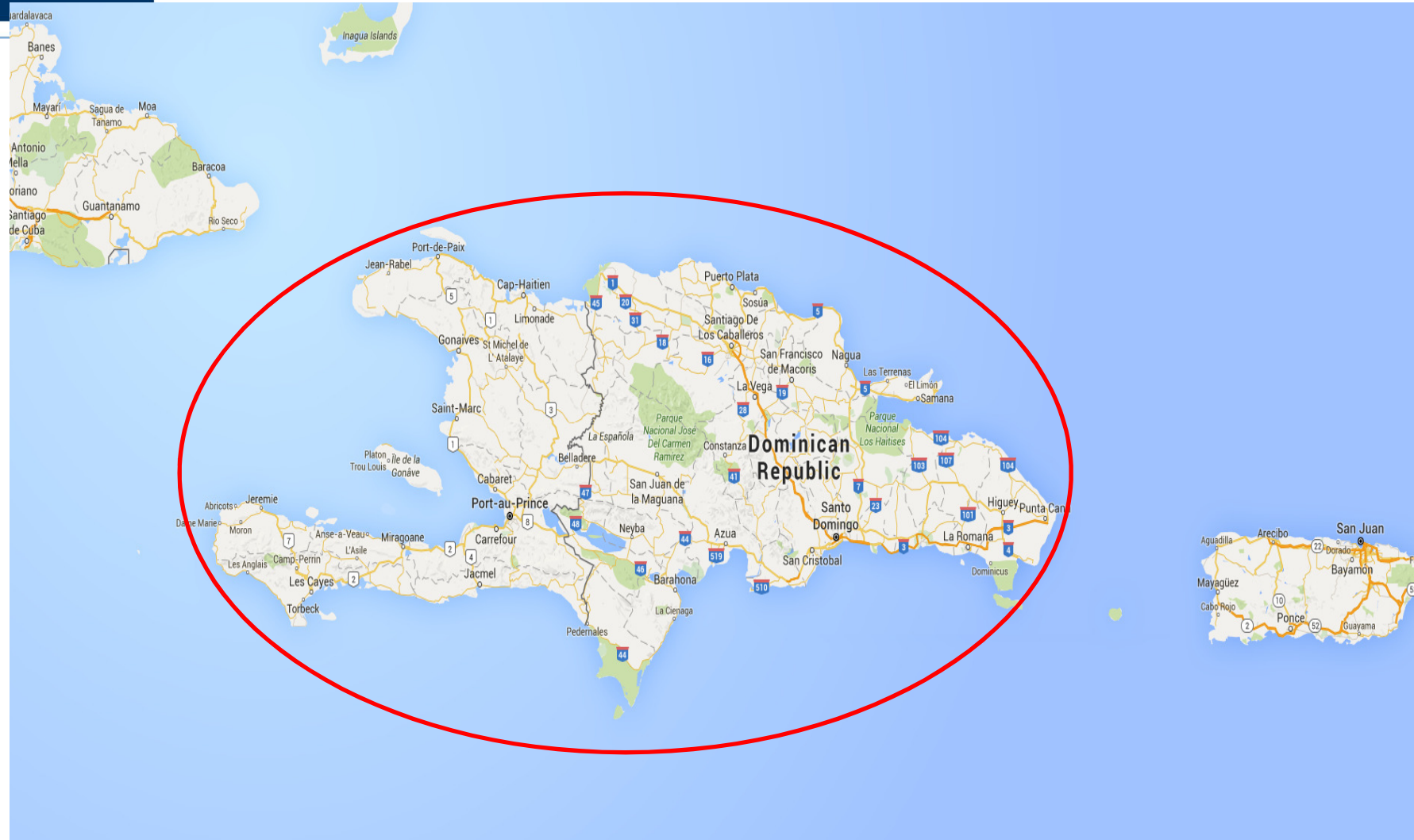
<http://www.jcomm.info/CIFD>



Natural Disaster Hotspots: A Global Risk Analysis. World Bank, 2005



CIFDP- C





Proposal to Fund Translation of Existing COMET Modules to Spanish

**Tropical Cyclone
Forecast Uncertainty**
(published FY15)

4.5K

Introduction to
Tropical Cyclone
Storm Surge

4.5K

Storm Surge and
Datums

4.5K

Storm Surge Forecasting
(published FY15)

4.5K

Shallow Water Waves

4.5K

**Nearshore
wave modeling**

4.5K

 hurricanes.gov/surge

 @NHC_Surge

and French !!!



Impact- Based Forecasting

Background – why do good forecasts result in a poor response

Tropical Cyclone **Haiyan (Yolanda)**, which struck the Philippines as a Category 5 storm on November 7 2013, as of 14 January 2014:

- ❑ 6,201 dead, 28,626 injured and 1,785 missing.
- ❑ More than sixteen million affected and more than US\$827 million estimated for the damage of infrastructure and agriculture (NDRRMC 2014).

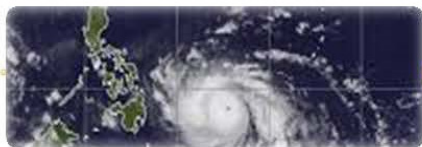
1. Accurate warnings were issued by the meteorological agency – PAGASA – for heavy rain and winds in time.

2. The government deployed planes and helicopters to the regions most likely to be affected.

Many of the deaths were caused by the storm surge that resulted from the wind, which reached a maximum ten-minute sustained velocity of 275 km per hour.

- ❑ Accurate warnings issued
- ❑ Good indication of storm surge

Not enough knowledge of storm surge impacts



ter



Impact- Based Forecasting

Holistic approach to impact and risk based forecasts

“...bridging the Valley of Death...through effective translation and application of science from multi-hazards to impacts”



The End

??



Courtesy of Don Resio



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