



# TYPHOON HAIYAN

## Lesson Learned

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## What does OFDA do?

- Responds to all types of natural disasters
- Provides assistance when lives are threatened by accidental or human-caused catastrophes
- Coordinates U.S. Government response to international disasters
- Promotes preparedness and mitigation activities



# Haiyan Storm facts

Haiyan was the strongest category 5 storm to make landfall

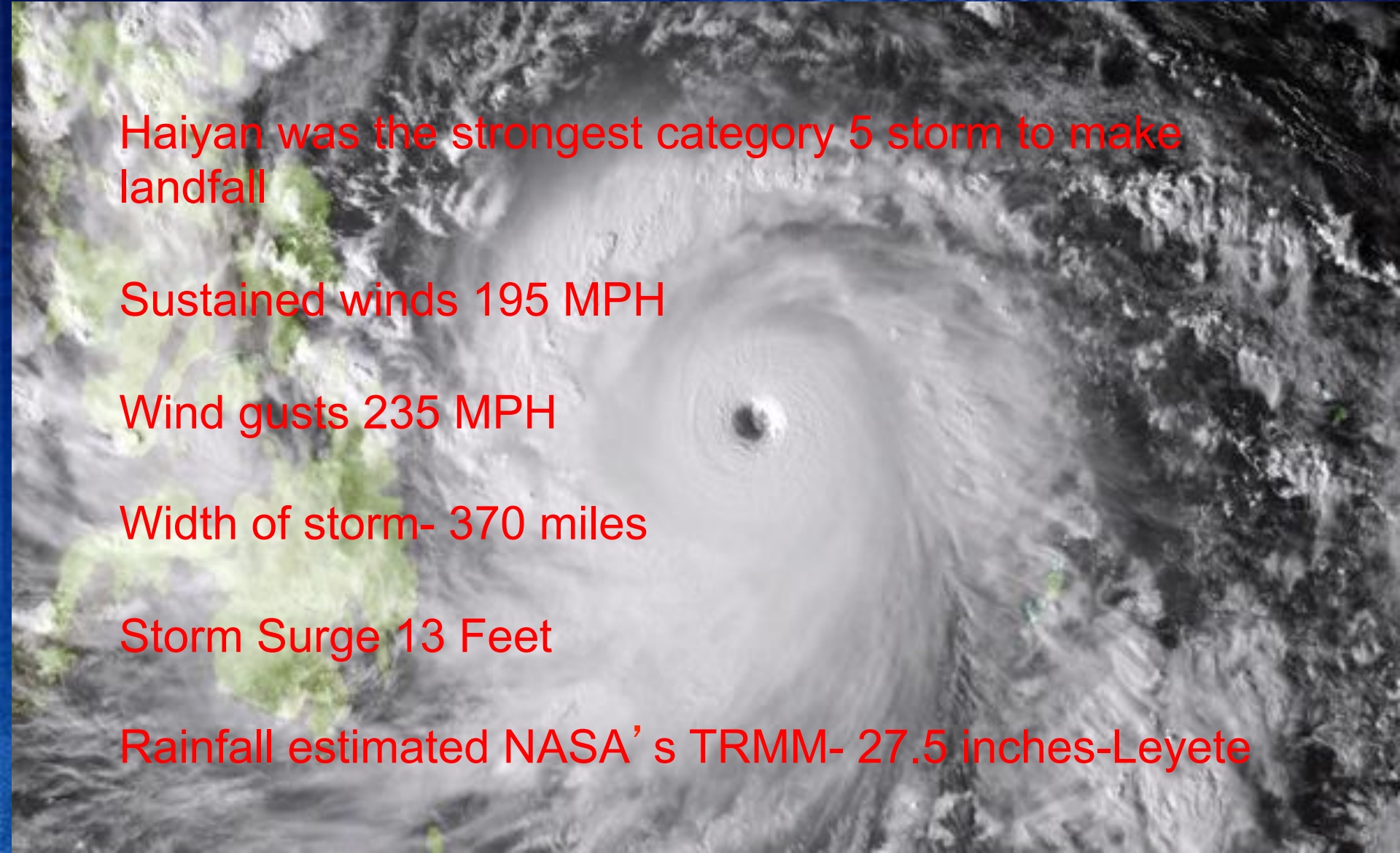
Sustained winds 195 MPH

Wind gusts 235 MPH

Width of storm- 370 miles

Storm Surge 13 Feet

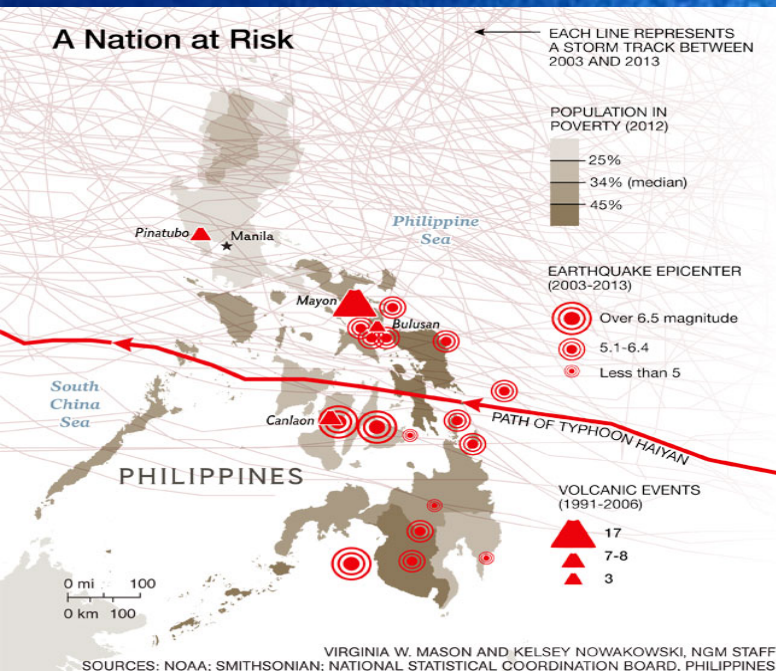
Rainfall estimated NASA's TRMM- 27.5 inches-Leyete





# Haiyan Impact

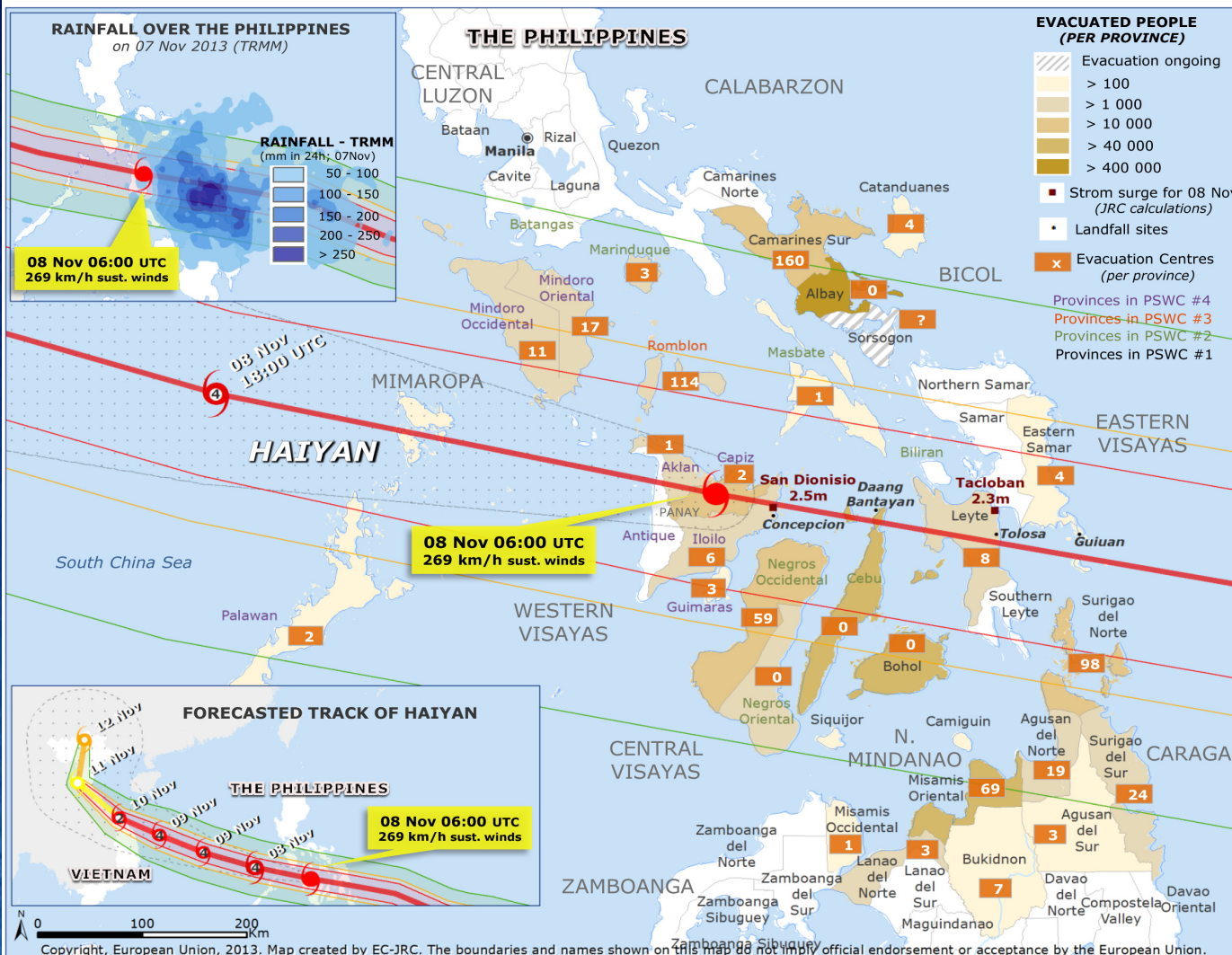
- 4 Million people affected- 40% of population
- 4 Million people displaced
- 70-80% Area destroyed in Storms path
- 4460 Deaths– 1186 missing –BBC Est. 10,000
- 500,000 homes damaged





# HAIYAN PATH

## 08 Nov 2013: Philippines, Vietnam – Tropical Cyclone HAIYAN



### SITUATION

- After having attained a max. sust. wind speed of 314 km/h (GDACS, JTWC) at 18:00 UTC on 07 Nov, one of the highest ever measured, HAIYAN made landfall in Guiuan, eastern Samar at 20:40 UTC on the same day. During the following 7 hours it made successive landfalls in Leyte, Cebu and Panay islands. At 06:00 UTC on 08 Nov, while still over Panay it had a max. sust. wind speed of 269 km/h (equiv. Cat. 5 in the Saffir-Simpson scale). According to PAGASA, at 12:00 UTC on 08 Nov its centre was approaching Busuanga island.
- In the next few hours HAIYAN is expected to emerge in the South China Sea and move W, slightly weakened. It could approach Vietnam, still with Typhoon force, early on 10 Nov.
- Very strong, potentially destructive winds have been affecting the Visayas since the evening of 07 November (UTC). Public Storm Warning Signals (PSWC) #4 (for winds of more than 185 km/h in at least 12h) have been successively issued by PAGASA for almost all provinces of central Philippines since the early afternoon of 07 November. Heavy rainfall (250mm in 24h recorded in Surigao) is also affecting these regions, posing a risk of flash floods and landslides. Storm surge of ca. 2.5m is indicated by JRC calculations for some places in the Visayas, notably NE Panay island.
- A total of 748 500 people were pre-emptively evacuated in 31 provinces in southern Luzon, Visayas, northern Mindanao, including earthquake-affected population in Cebu and Bohol.
- Damage extent is still largely unknown, due to major disruptions in communications. As of 10:00 UTC on 08 Nov, NDRRMC reports 3 people killed and 7 injured in the Visayas and Mindanao, as well as numerous flights cancelled and power outages in these areas. Local and international media report severe wind damage in Leyte, Samar and Cebu. At 13:51 UTC PNA reported 20 people killed by storm surge south of Tacloban. OCHA, quoting NGOs and local media, reports storm surge and flash floods in Eastern Samar province and Tacloban city in Leyte. Floods were also reported in Bohol.



# Hayian Devastation





# Disaster Vulnerability

- Island surrounded by warm ocean waters
- High coastal vulnerability
- Deforestation
- Ring of fire
- Weak infrastructure –People died in shelters





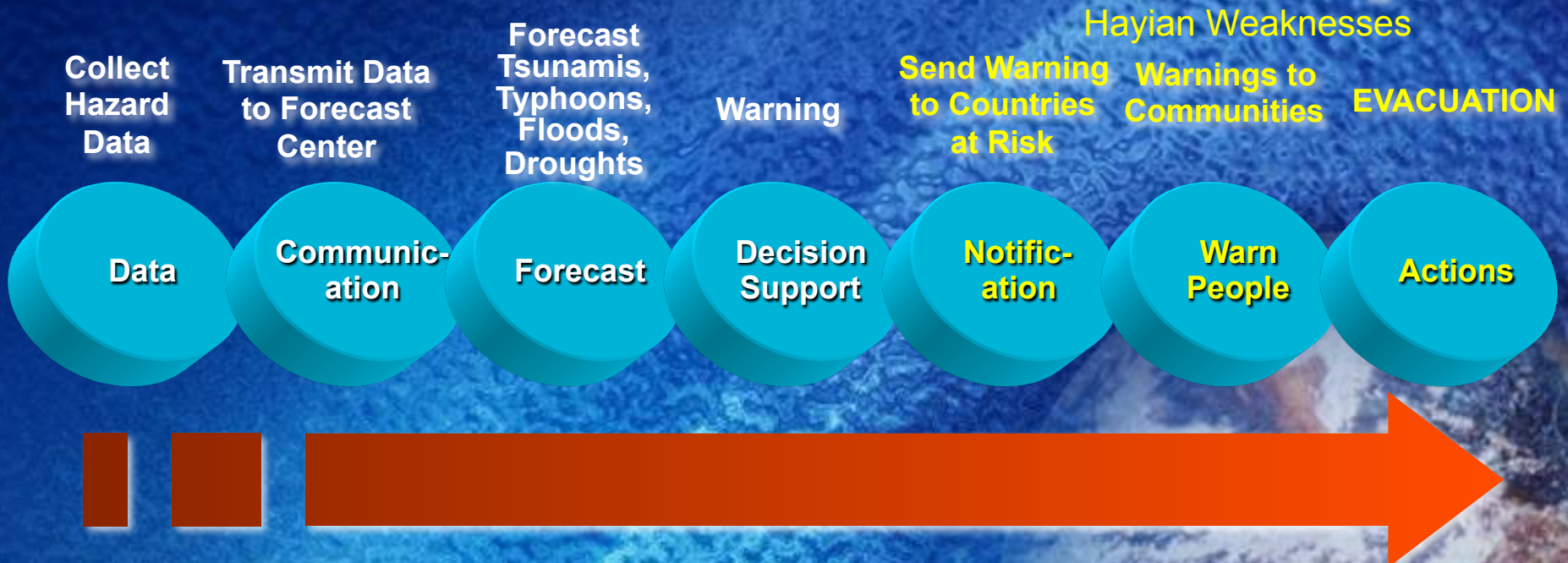
# A Lesson Learned

- PAGASA- (Philippines NMS) forecast storm track/landfall
- Storm surge of 7meters forecast but no one understood magnitude of impact- Yet public did not know what this meant to them ?
  - Need to improve lead time, accuracy and specificity for storm surges for developing countries
  - Need to improve dissemination of surge warnings to coastal communities
  - Need to improve communication of surge impact
  - Need to improve preparedness
- Sea level increase will increase surge threats in future
- River flooding and flash flooding need same improvements as storm surge forecast to save lives and property
- Need to Strengthen NMH' s for developing countries
- Develop End to End Warning and Response Systems



# E2E Early Warnings

## End to End All Hazards Forecast and Warning







# Thank You

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