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Projecting and communicating future tropical cyclone risks to inform resilience building in the Philippines

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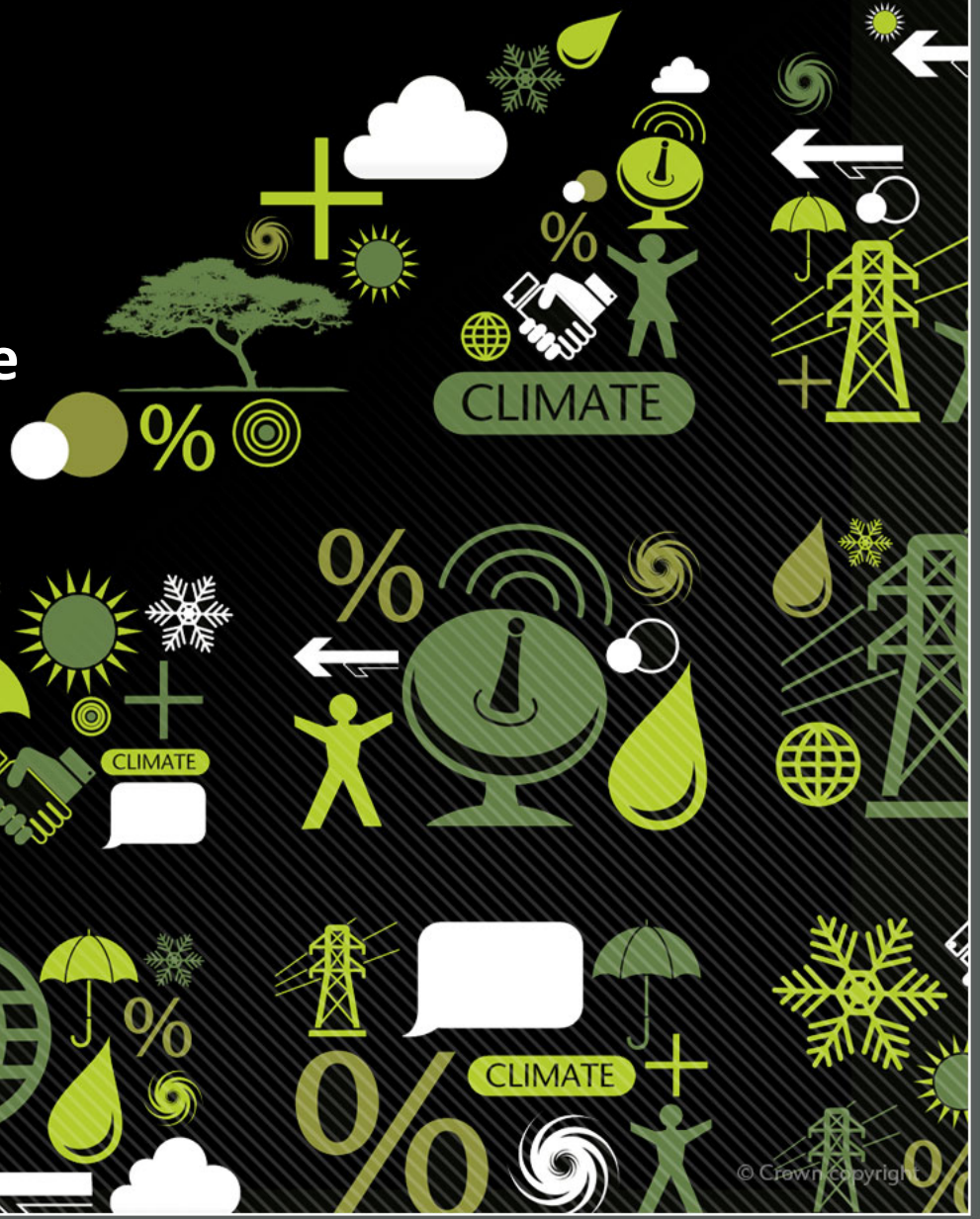
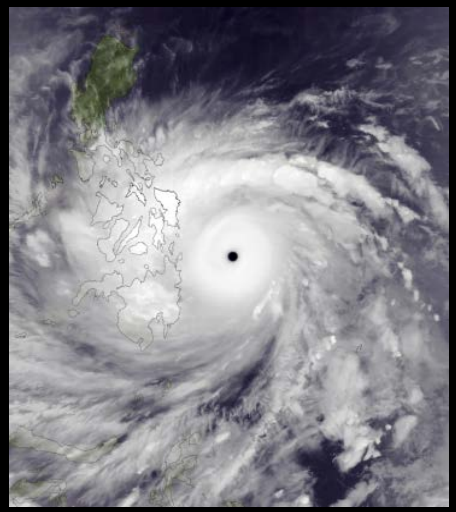


“Building capacity to improve resilience to weather and climate extremes in the Philippines”



In response to Typhoon Haiyan (locally named Yolanda) in November 2013 the UK Department for International Development (DFID) pledged support for the recovery and reconstruction effort.

From January 2015 to December 2016 DFID funded the Met Office to work in partnership with the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA).

Project Aim:

To help strengthen PAGASA’s technical capabilities as well as provide state-of-the-art information to guide decisions and build resilience to future climate-related risks.

Top left, satellite image of Typhoon Haiyan (NASA) and bottom, photos of damage and response to Typhoon Lando (Koppu) October 2015

Tropical cyclone activity in the Philippines

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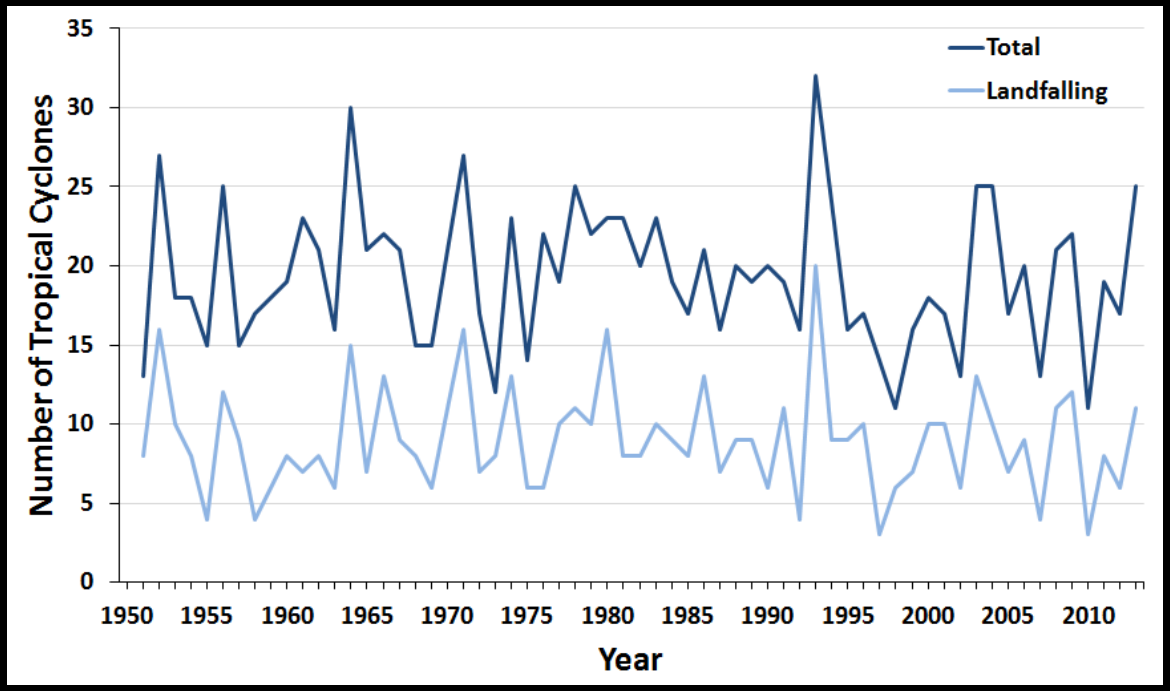
Activity reaches a maximum between July and October and a minimum between January and April. There has been a weak upward trend in tropical cyclone activity in the region since the 1970s but no significant trend since the start of the 20th century.



Number of total (dark blue) and landfalling (light blue) tropical cyclones each year in the Philippines region

Adapted from Cinco et al. (2016) Observed trends and impacts of tropical cyclones in the Philippines, Int. J. Climatol.

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Engagement with PAGASA

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Summary of results

Simulation	1	2	3	4	5
RCM	HadGEM3-RA	HadGEM3-RA	HadGEM3-RA	PRECIS	RegCM4
GCM	HadGEM2-ES	CNRM-CM5	MRI-CGM3	HadGEM2-ES	HadGEM2-ES
Fr. tot	**-21%**	**-15%**	-1%	-5%	**-13%**
Fr. > 33m/s	**-25%**	-5%	**+30%**	+2%	0%
Intensity	=	**+**	+	**+**	+

Frequency

Decrease in overall TC frequency (significant for 3/5 models) with mixed results for intense TCs

Intensity

Slight increase in TC intensity but significant only for 2 simulations

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Information brief

	Climate Model Simulations				
	1	2	3	4	5
Change in tropical cyclone frequency	↓	↓	–	–	↓
Change in tropical cyclone intensity	–	↑	↑	↑	↑

Projected changes to tropical cyclones affecting the Philippines by the mid-21st century assuming large increases in greenhouse gas concentrations. Black arrows indicate clear changes, grey arrows indicate possible changes, and a dash indicates no change.

Key findings

- The total number of tropical cyclones in the Philippines region is likely to remain the same or decrease by the mid-21st century
- Results show some evidence of an increase in the intensity of tropical cyclones in the Philippines region by the mid-21st century
- There will continue to be high year-to-year variability in the number and intensity of tropical cyclones

Questions for discussion

1. How can knowledge brokers help in “laymanising” uncertain and complicated climate information whilst preserving scientific credibility?

2. How should we communicate climate information and research findings at broad spatial scales to ensure local relevance?

3. How much time and resource should be built in to climate service projects to enable effective knowledge brokering?

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Thanks for listening.

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Project webpage:
http://www.metoffice.gov.uk/research/applied/applied-climate/philippines