UNITED NATIONS
ESCAP
Economic and Social Commission for Asia and the Pacific

Assessing losses from disasters Asia and the Pacific: methods and techniques

Thematic Session 1: Risk informed development planning and the global frameworks
30 August 2017

Message

Why disaster management so important? More so in Asia and the Pacific..

It's both humanitarian and development challenge

World turning riskier..

Asia and Pacific is the world's most disaster-prone region

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A person living in the region is 4 times at risk than those in Africa and 25 times than in Europe or North America.

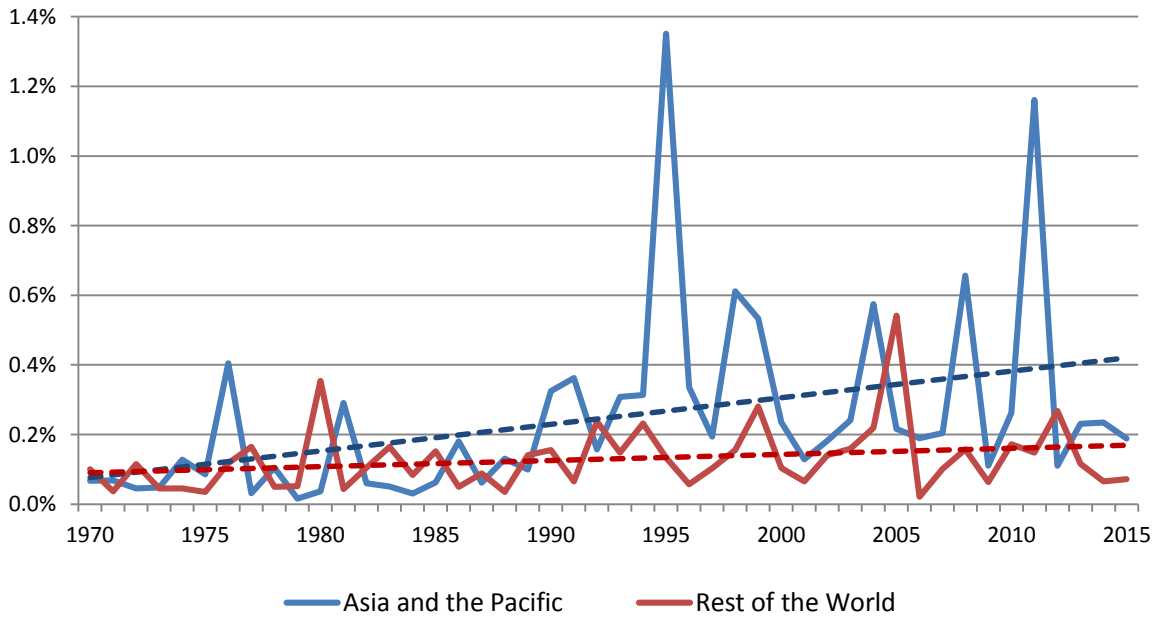
Economic Damage is rising!

- **Asia-Pacific - Damage from disasters increased from $52 billion in the 1970s to over $523 billion in the last decade.**
- **Based on present trends, by 2030, annual losses in the region could average US$160 billion a year.**
- **Least developed countries and small island economies are disproportionally affected**
- **Damage and loss, 2015**

Nepal earthquakes: 33% of GDP

Cyclone Pam in Vanuatu: 64% of GDP

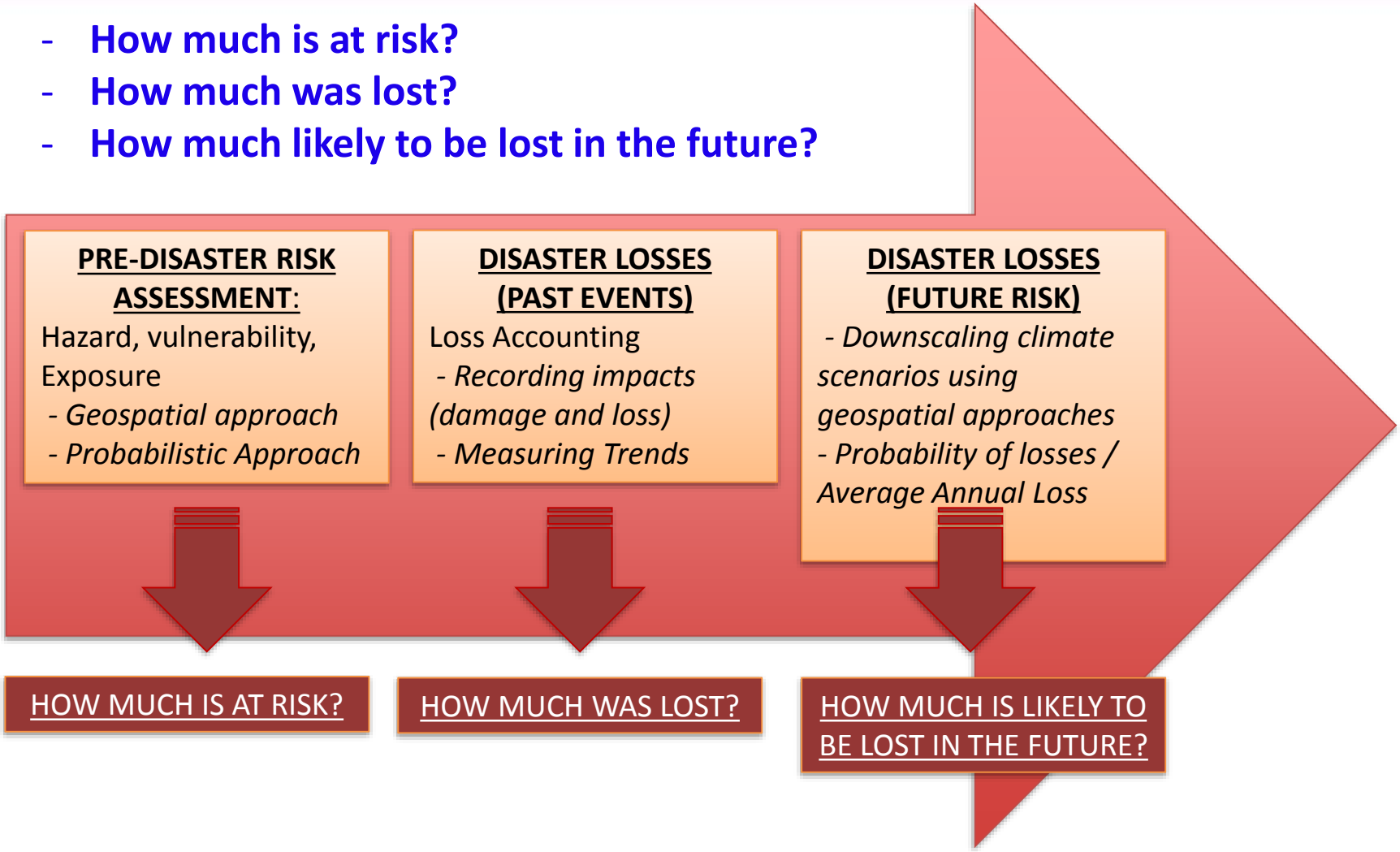
Estimated damage, as % of GDP, is rising in the Asia-Pacific region



Assessing damage and loss

Three key questions

- **How much is at risk?**
- **How much was lost?**
- **How much likely to be lost in the future?**

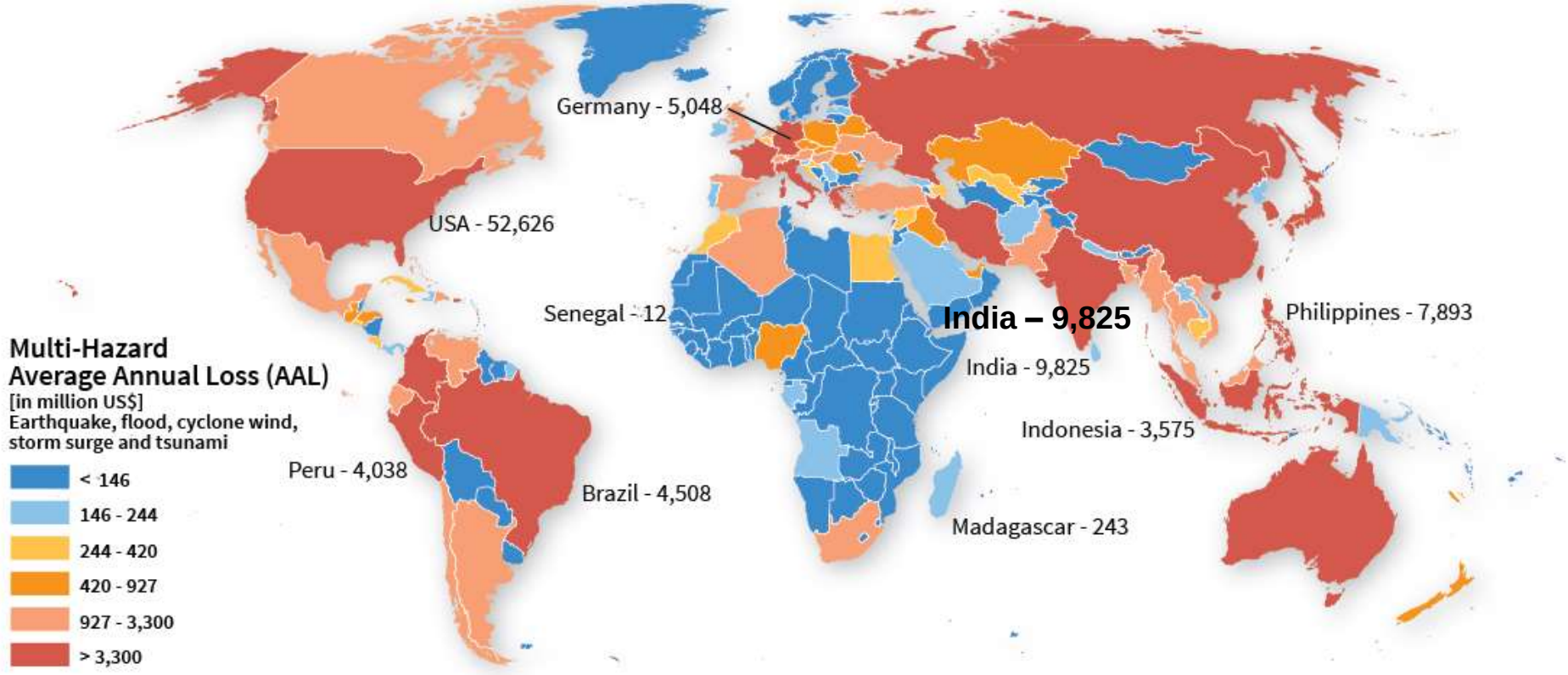


1 Key Message

The impact of disaster is often under-estimated.

Accounting losses for building resilience requires analytical solutions using probabilistic approaches rather than only using historical data

A risky world



Expected future disaster losses annualized over the long term

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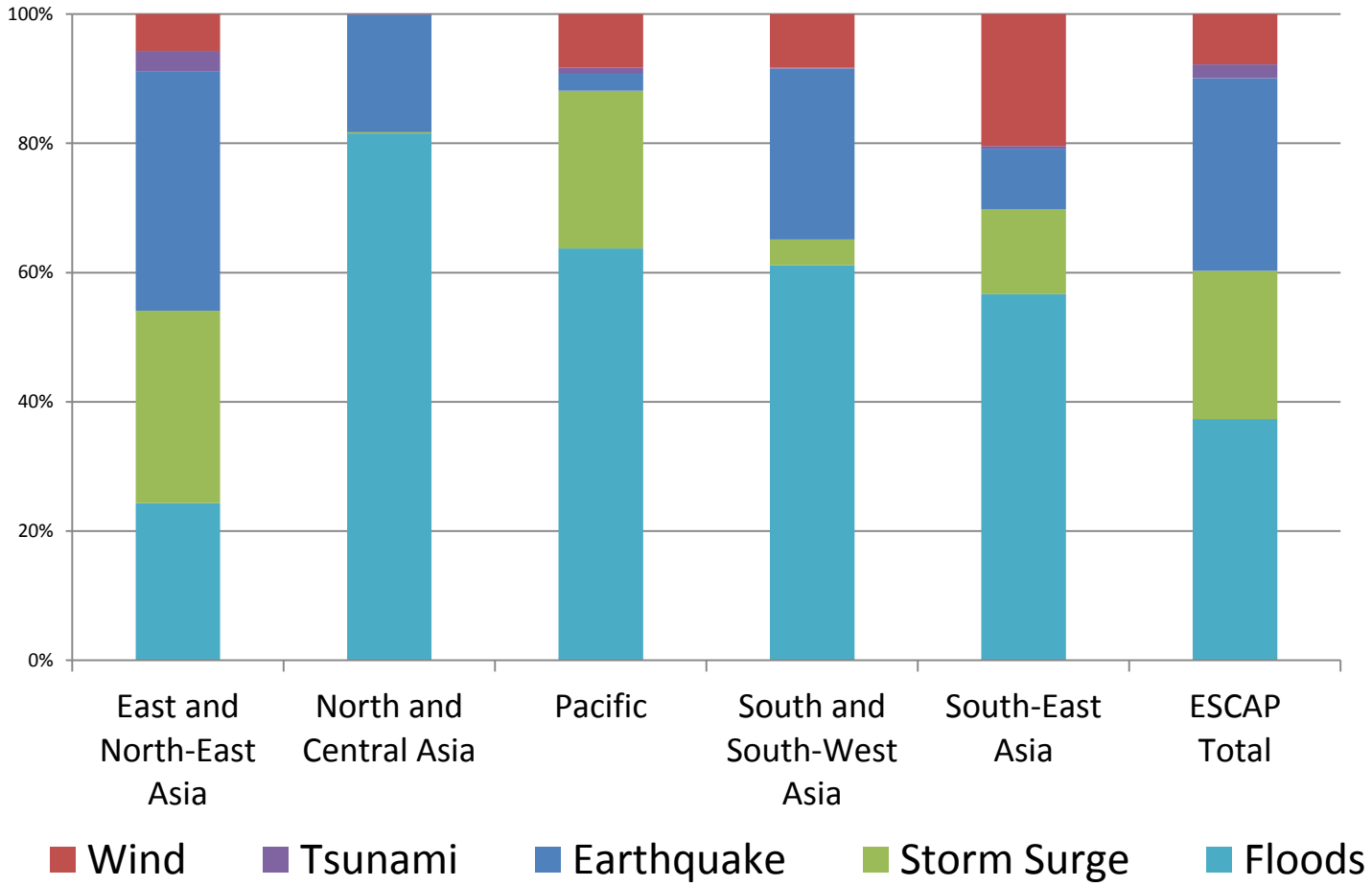
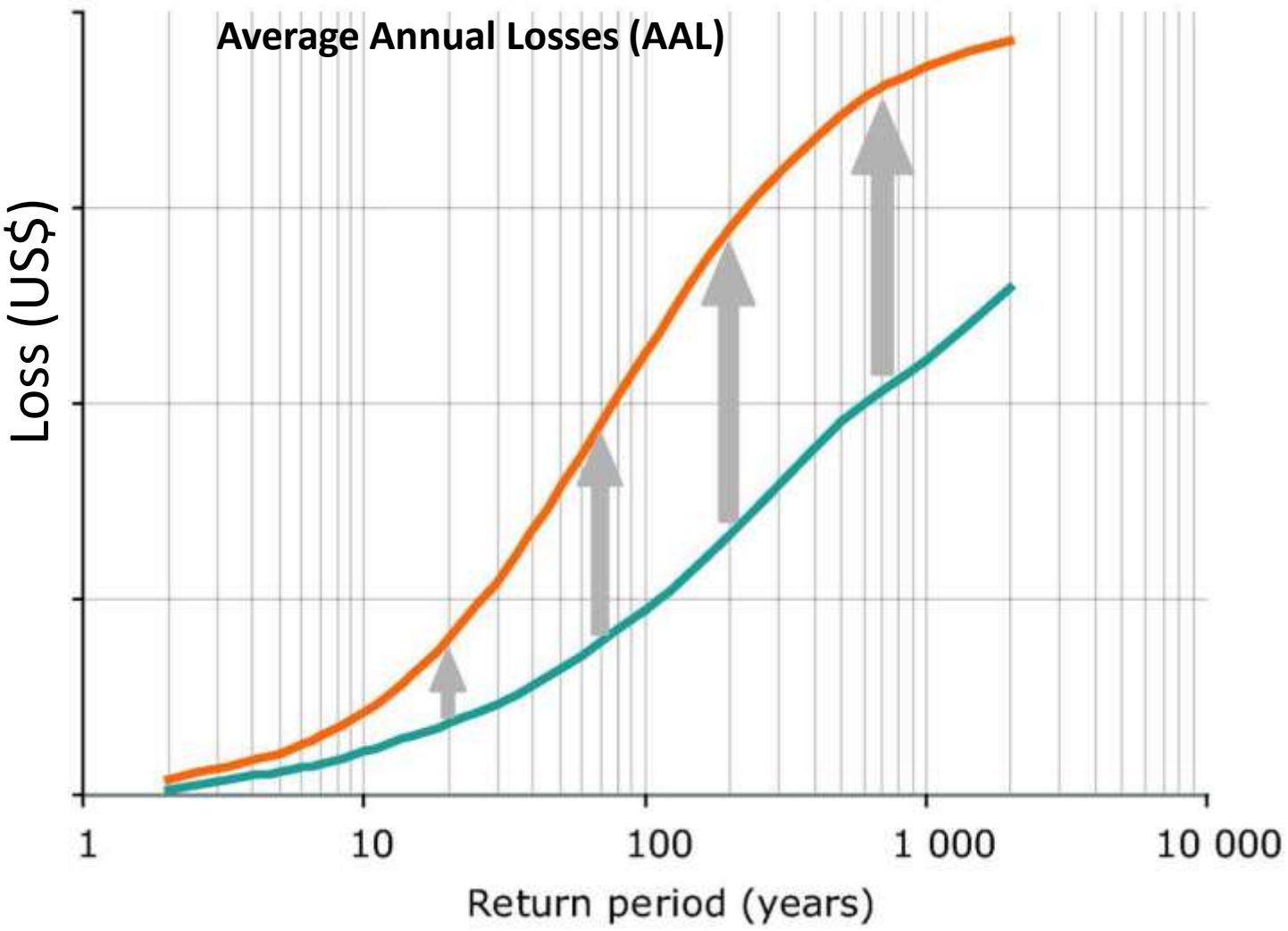
2030 Average Annual Losses by Disasters in ESCAP subregions

Floods, Earthquake and Cyclones – the most severe future disasters
Floods in all sub-regions, while earthquake in East and North East Asia



Average Annual Loss (AAL):

Probable Maximum Loss (PML)



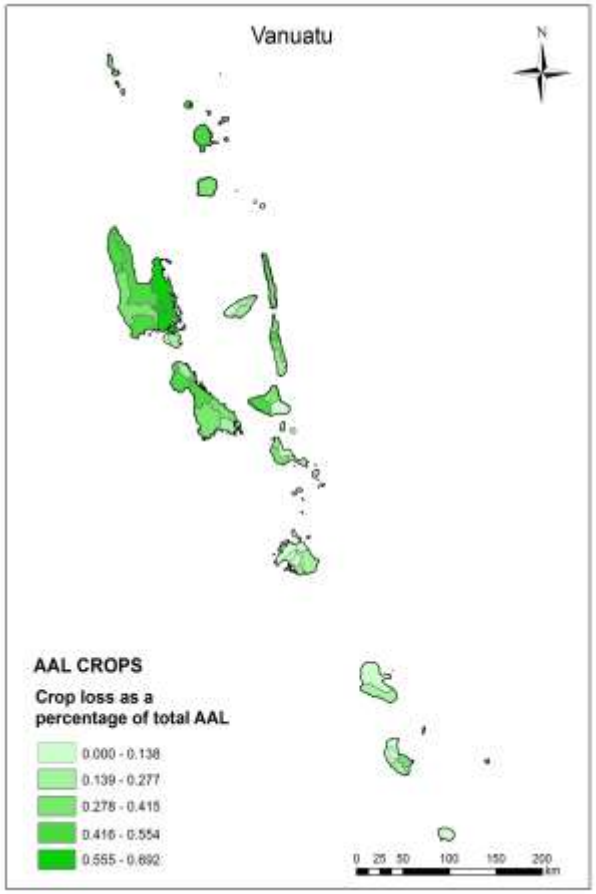
Source: http://www.eea.europa.eu/data-and-maps/figures/example-of-the-adjustment-of-lossdistribution-as-a-consequence-of-changing-risk

2 Key Message

Probabilistic modeling coupled with satellite images, statistical/ geo-spatial and climate modeling can be used to understand the risks not only at the macroeconomic level, but also risks to livelihoods

A Case Study from Vanuatu

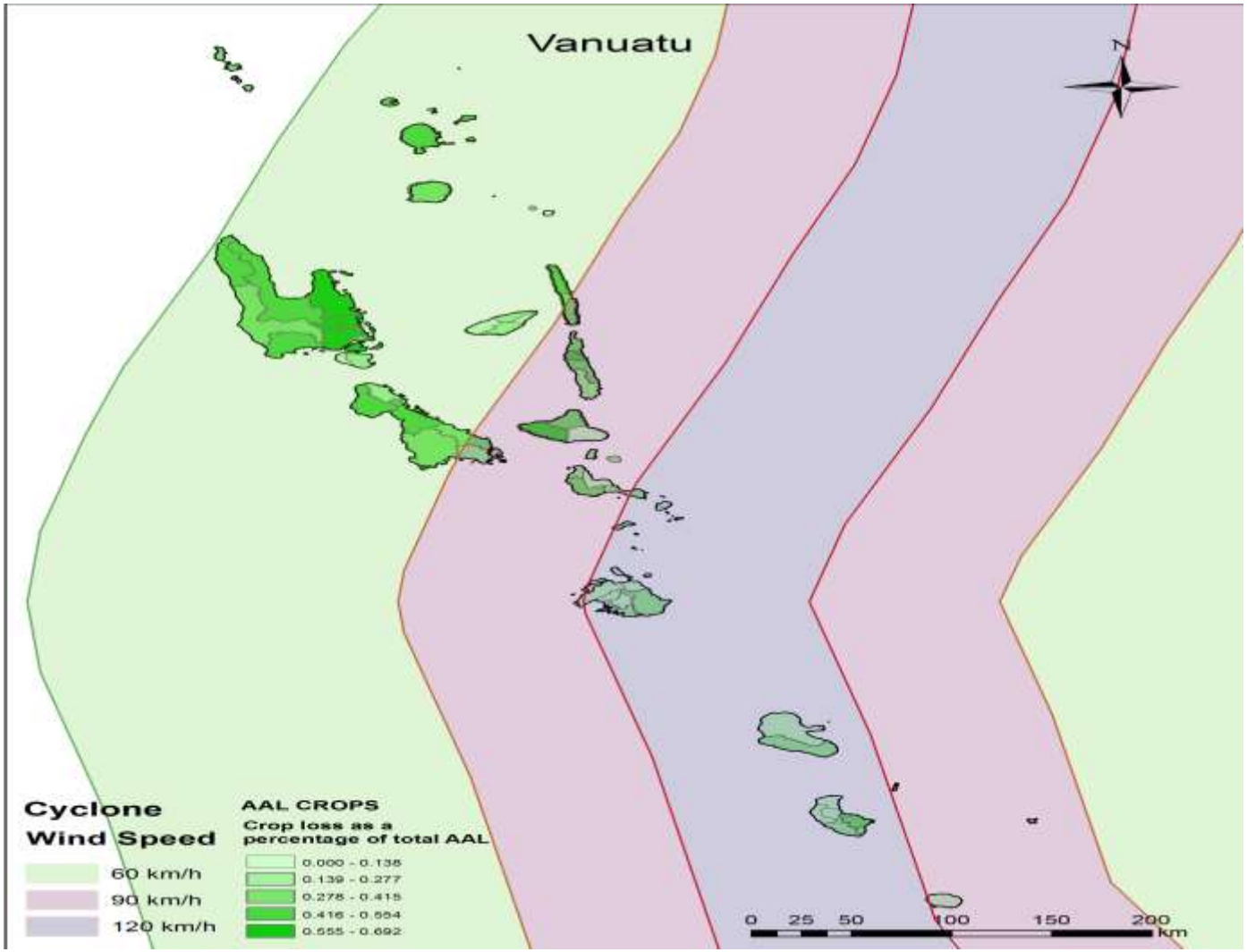
AAL in Pacific SIDS in agriculture sector



- Agriculture is the backbone of the Pacific Island economies.
- It is the main source of livelihood for the population as well as a major export earner.
- The proportion of crop loss as a percentage of total AAL is significant as in the Pacific SIDS.

AAL data downloaded from the Pacific Catastrophe Risk Assessment and Financing Initiative (http://pcrafi.sopac.org/layers/), 2013

Climate variability and AAL in Pacific SIDS in agriculture sector



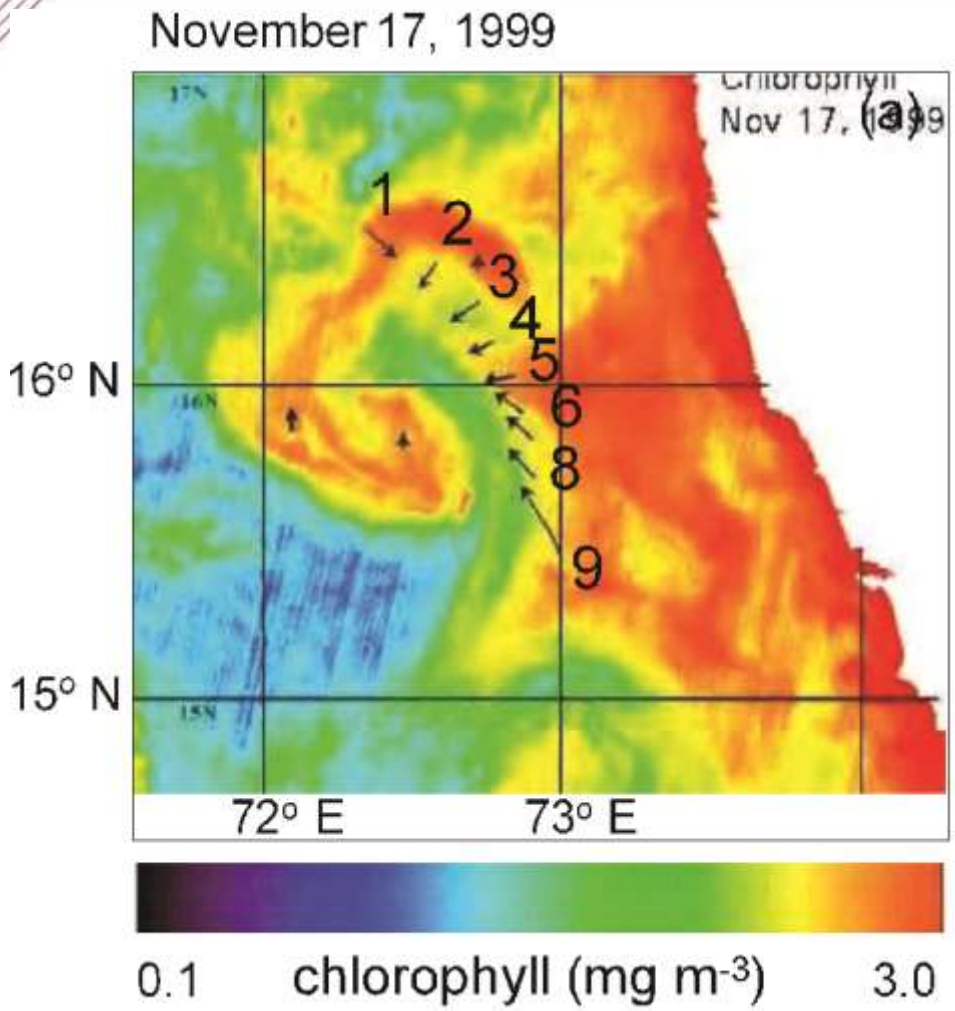
Source: GDACS data, 2015, http://www.gdacs.org/resources.aspx

3 Key Message

Assessing post-disaster damage and losses require methodologies like time-series analysis of pre-and post-geo-referenced data from thematic earth observation satellites.

A Case Study from 2015/2016 El Nino Impact

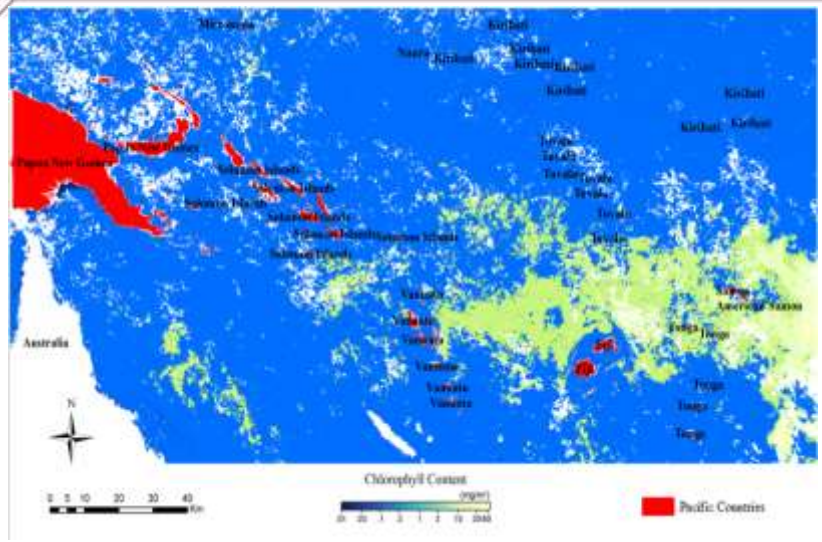
2015/2016 El Niño Impacts on fisheries



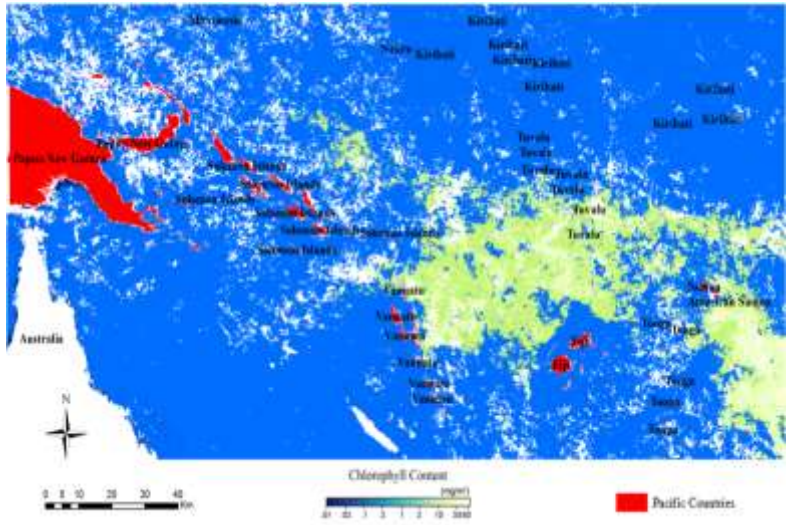
- Thermal remote sensing for chlorophyll identifying fishing grounds
- Higher catches reported for high chlorophyll areas (track 1-9)

Hokkaido, S.S, Chasso, E. et.al. (2009). Remote sensing applications to fish harvesting.

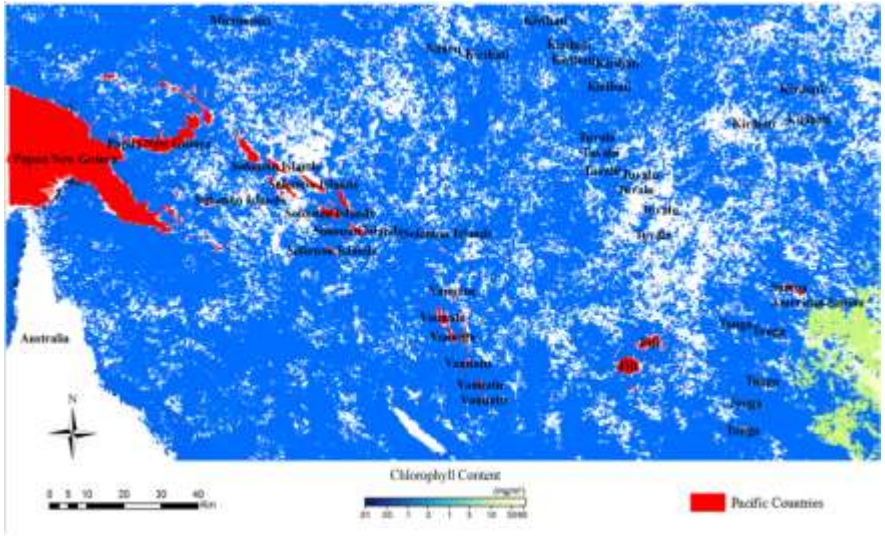
Determining regional risk for fisheries in Pacific Islands during an El Niño year



2005



2013



2015

NASA: http://neo.sci.gsfc.nasa.gov/view.php?datasetId=MY1DMM_CHLORA

NASA-SeaWIFS: http://oceancolor.gsfc.nasa.gov/SeaWiFS/BACKGROUND/SEAWIFS_BACKGROUND.html

Aqua-Modis: http://oceancolor.gsfc.nasa.gov/cms/data/aqua

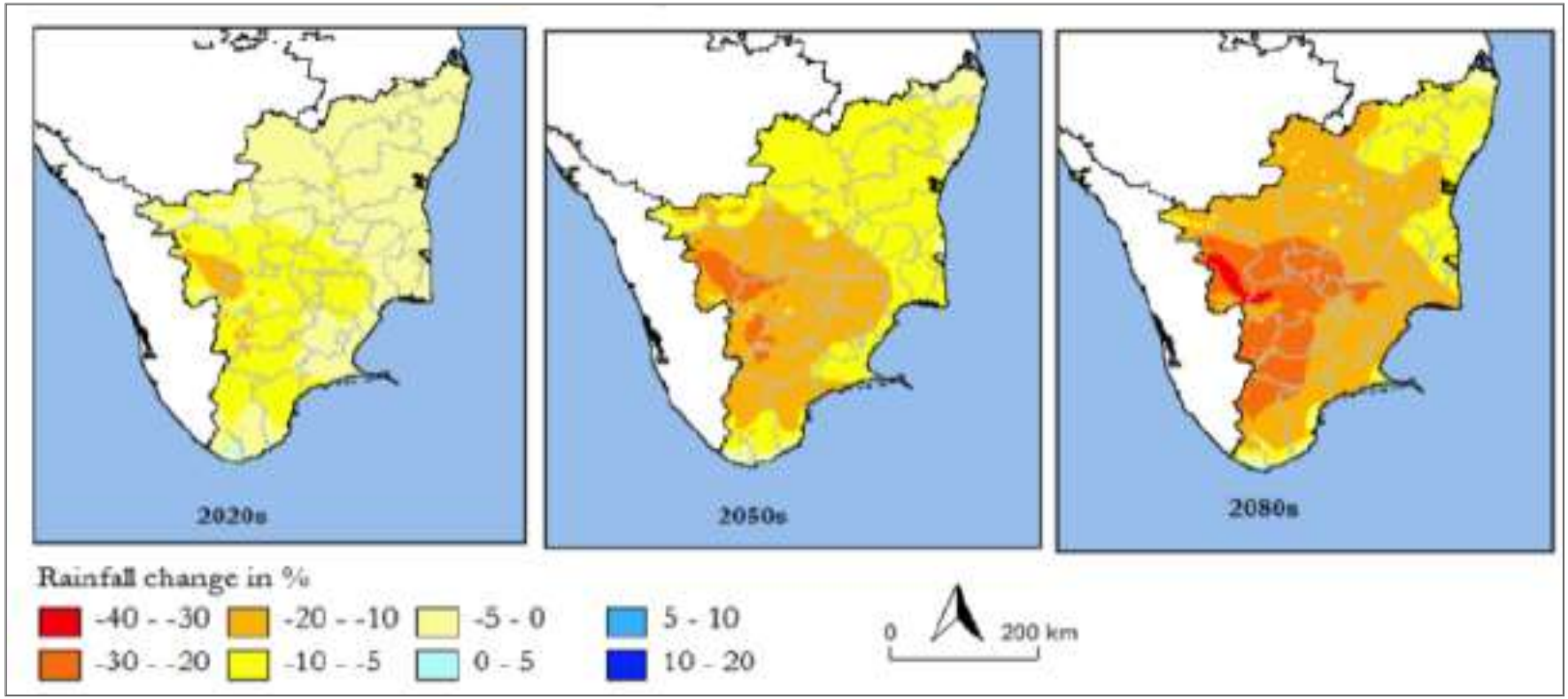
4 Key Message

Down-scaling of climate models at appropriate scale helps assess long-term sector losses

A Case Study from Tamil Nadu, India

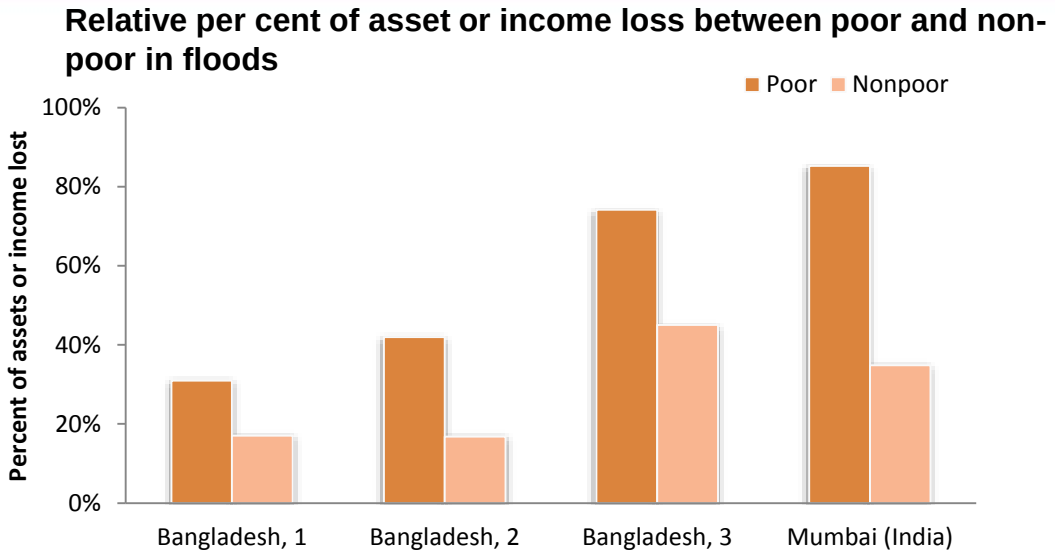
Understanding climate risk for resilient development planning

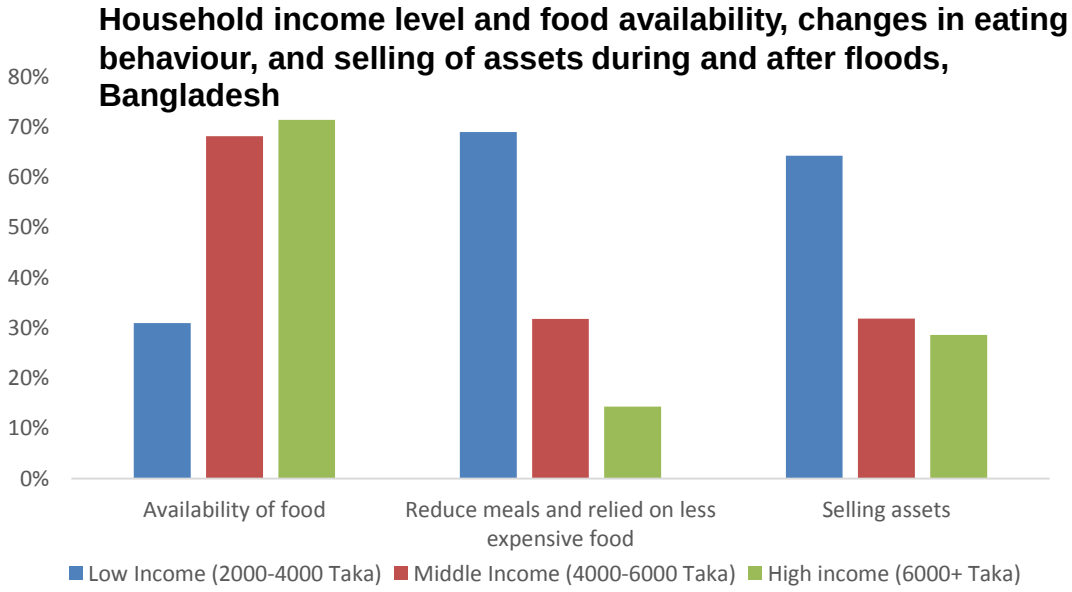
Tamil Nadu in India is exposed to cyclones, heavy rainfall, floods, droughts and landslides. Downscaled climate scenario based models were used to assess the potential risk in agriculture, and related industry and service sectors for risk -sensitive development planning and decision-making.



A final word

Disaster losses need to be extended to include multi-dimensional aspects of well-being and not just economic losses





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Thank you

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