"Climate Risks and Adaptation in Asian Coastal Megacities"

By

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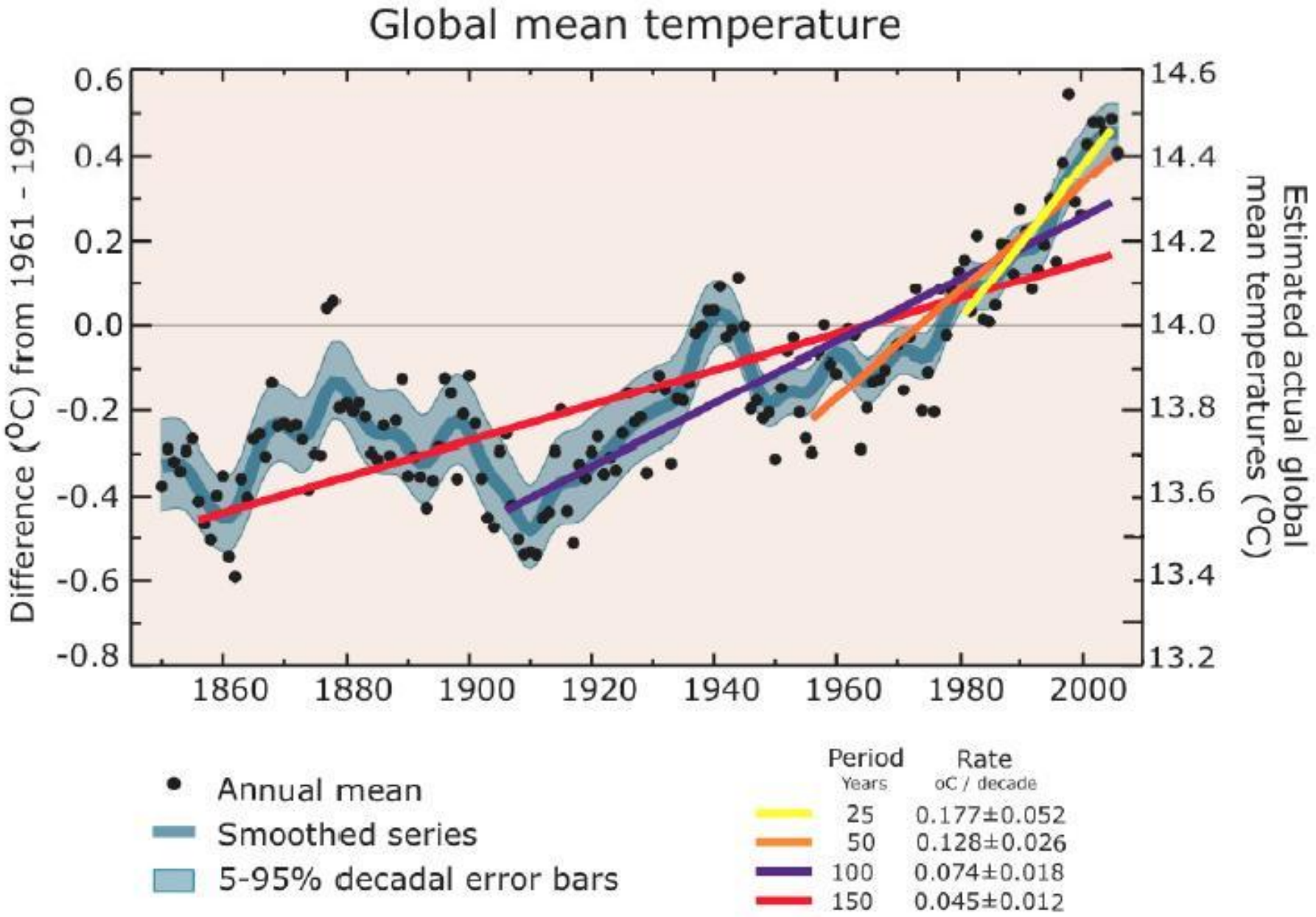
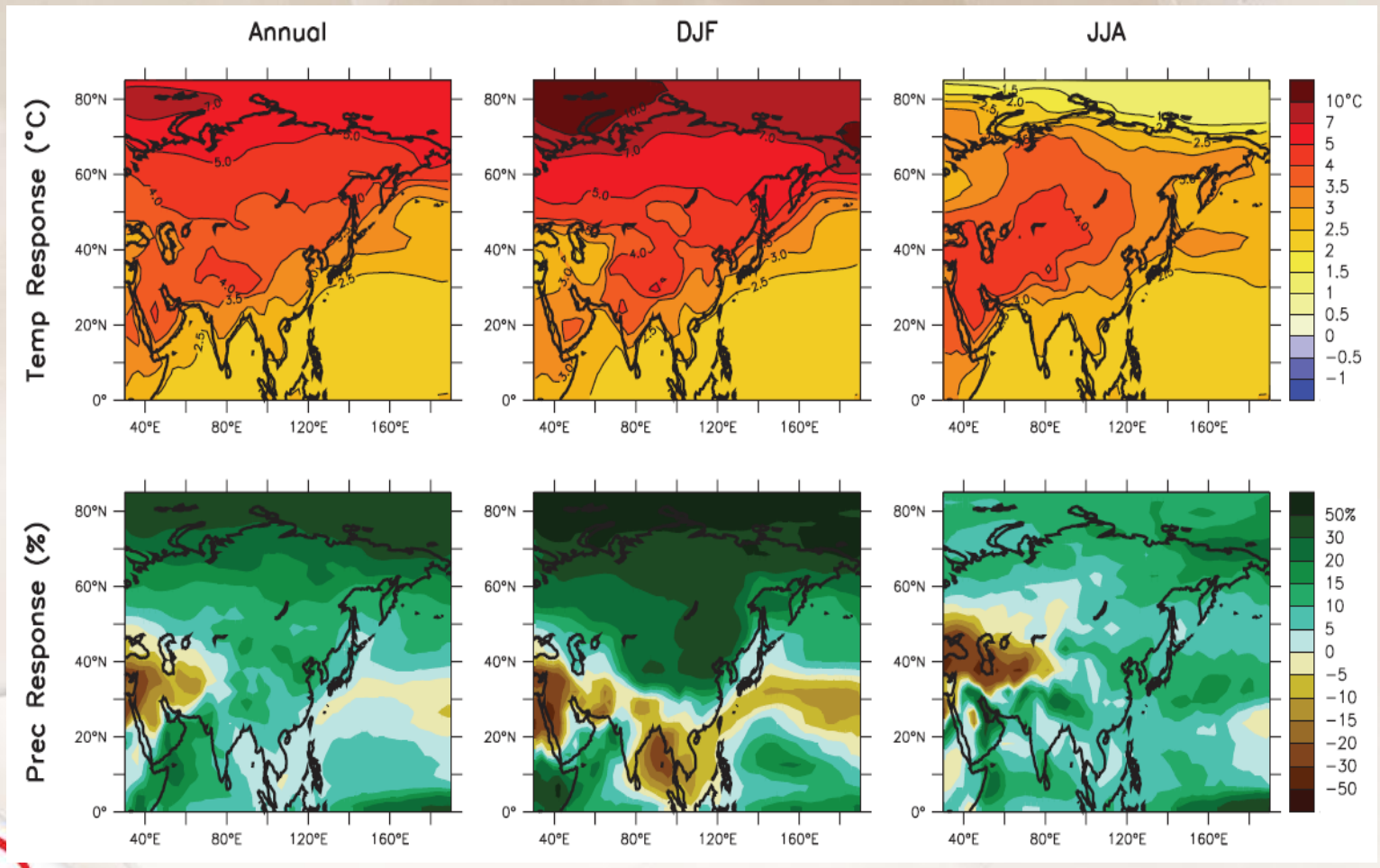


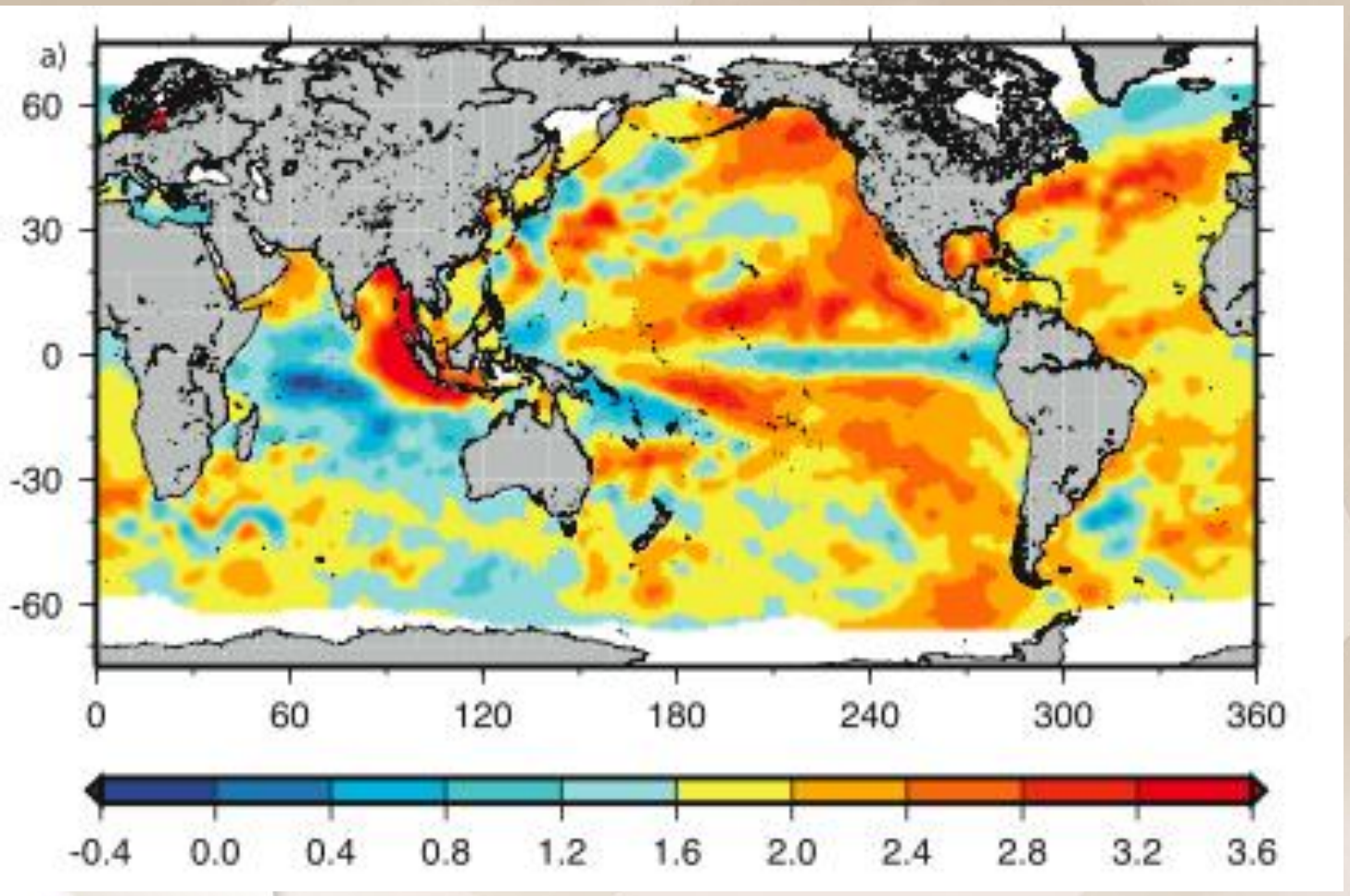
Source: IPCC, 2007

Asian regional changes in temperature (in terms of ◦C change) and precipitation (in terms of percentage change) projected for the last 2 decades of the 21st Century compared to the same period in the 20th Century. The projections are shown for annual changes, and for changes expected in December-January-February (DJF) and June-July-August (JJA)



Source: Christensen et al (2007).

Asian cities at risk to sea level rise

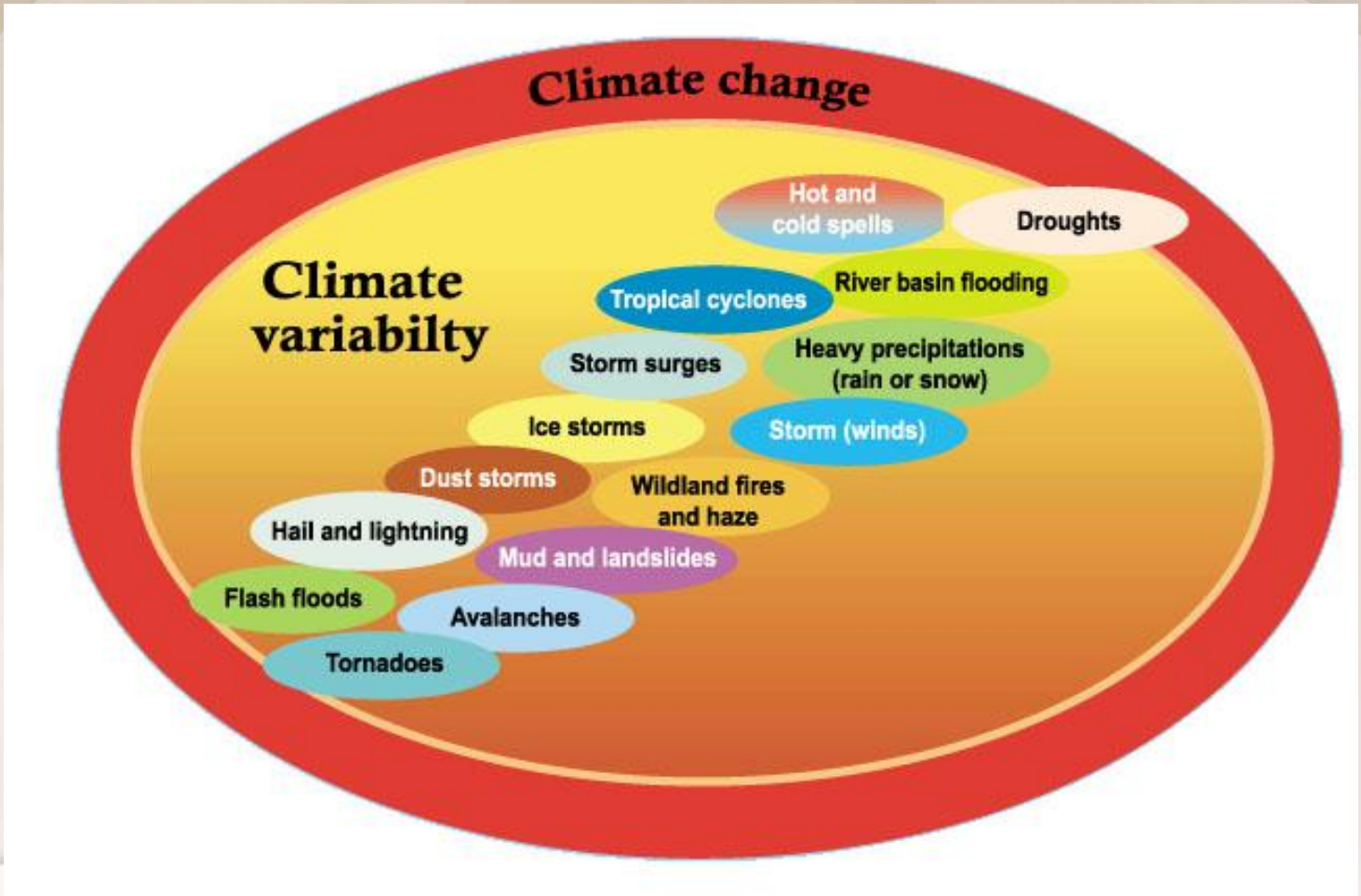


Sea Level Rise

Geographic distributions of long-term linear trends in mean sea level for 1955 to 2003.

Source: IPCC, 2007

Climate Change, Variability and extremes



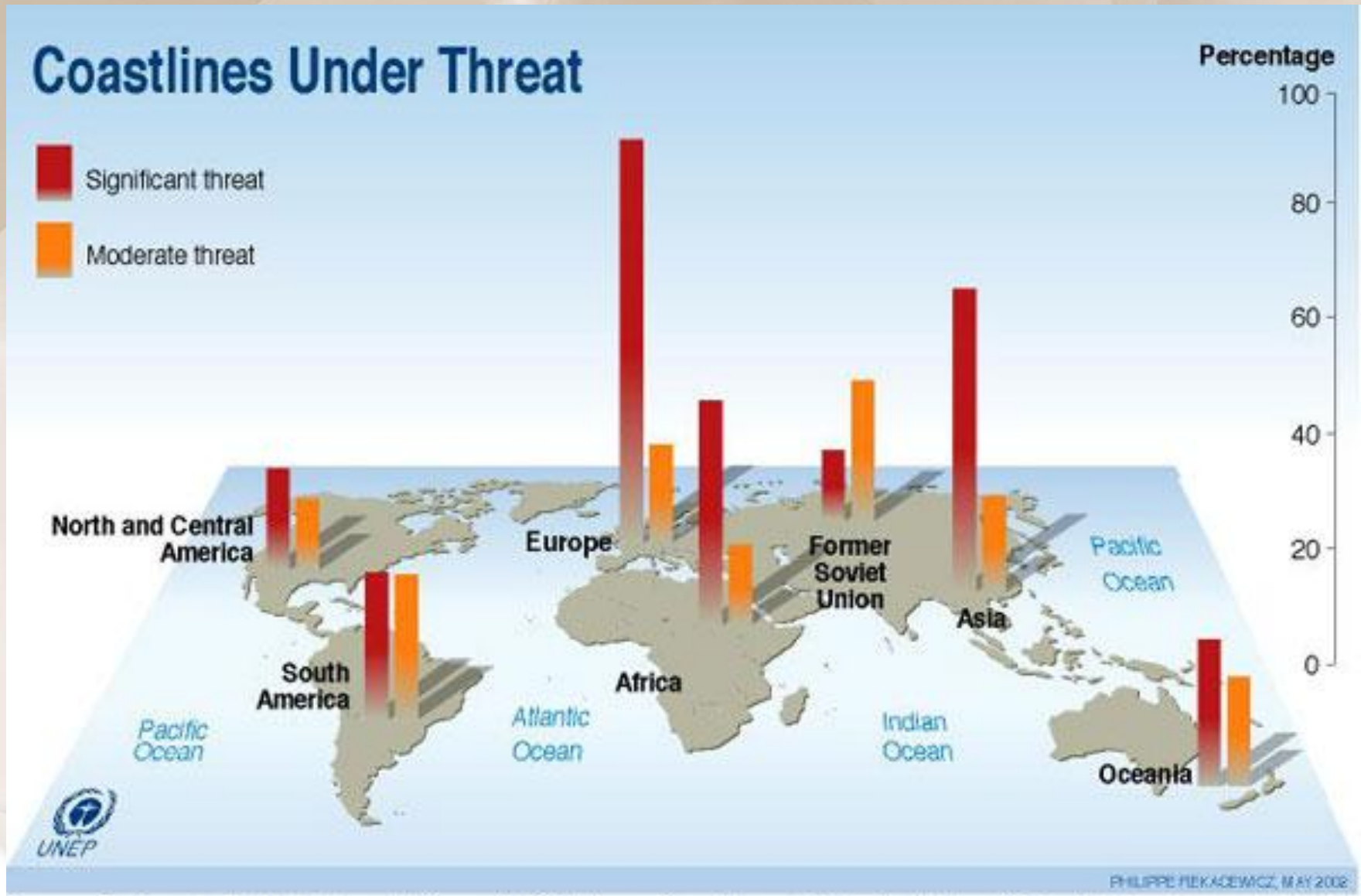
Hazards in the Coastal Zone

Episodic

- cyclone, storm surge, flooding, landslides.
- tsunami, earthquake (non-climatic)

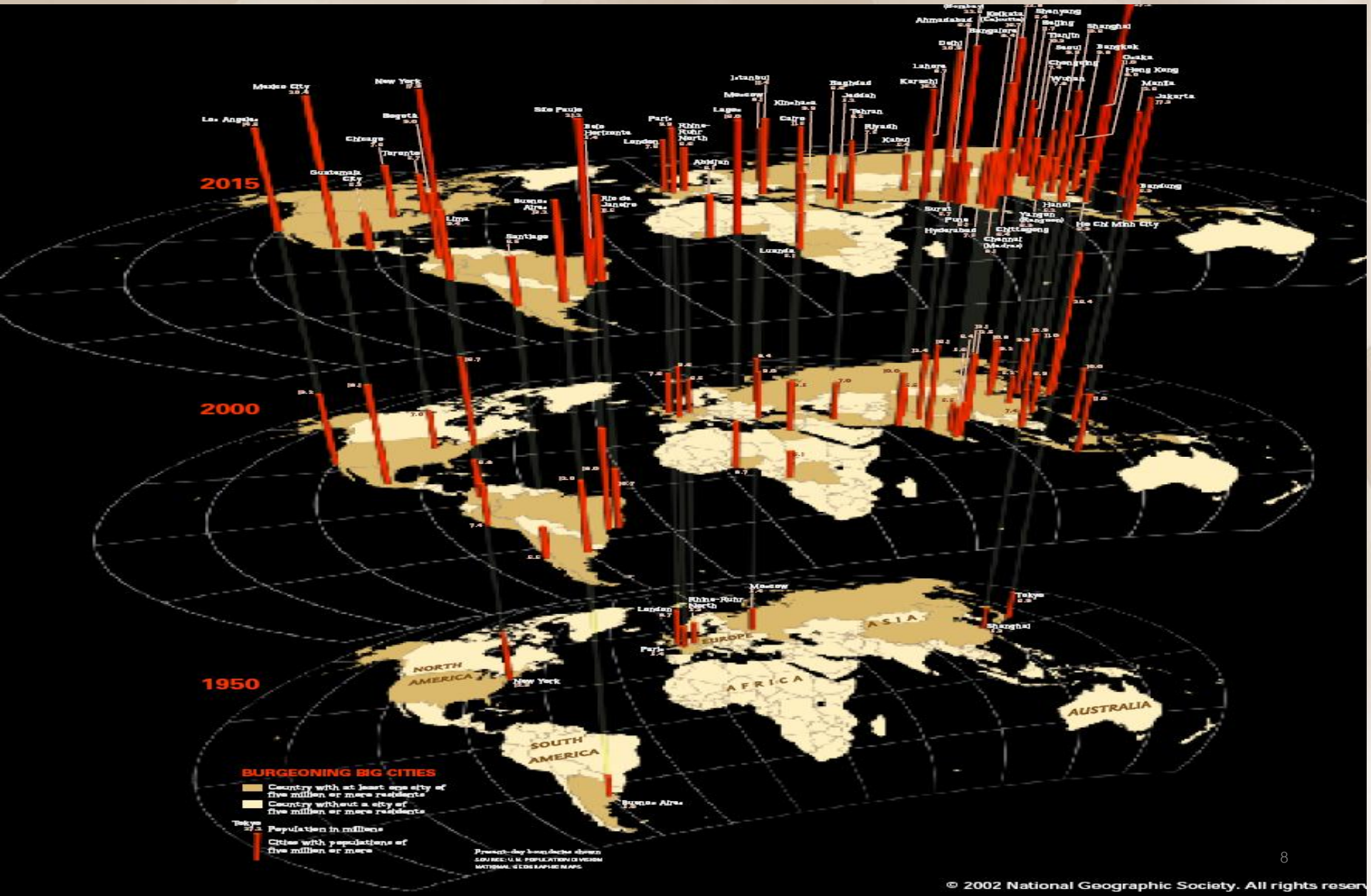
Chronic

- shoreline erosion, sea level rise, seasonal flood, climate variability, coastal resource degradation, pollution



Source: D. Bryant, E. Rodenburg, T. Cox and D. Nielsen, *Coastlines at Risk: An Index of Potential Development-Related Threats to Coastal Ecosystems*, World Resources Institute, Washington DC, 1996.

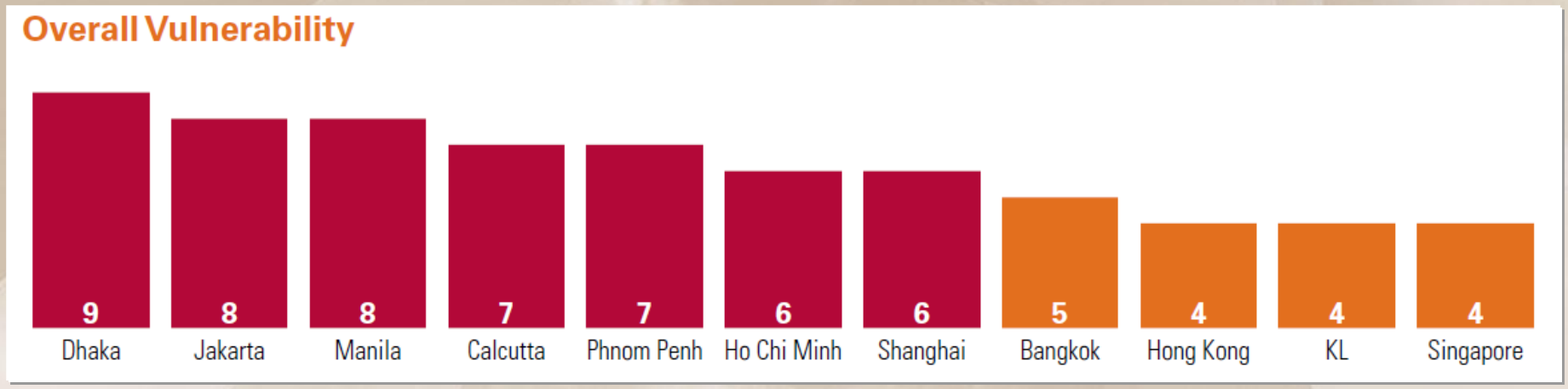
Exposed coastal cities are more vulnerable



Exposure is very high as Coastal populations are rapidly increasing

Coastal Megacities at Risk!

- **13 of the world's 20** largest cities are located on the coast, and **more than a third** of the world's people live within 150 km of a shoreline.
- **Low-lying coastal areas** represent 2% of the world's land area, but contain 13% of the urban population (McGranahan et al. 2007).
- Studies show that **much of the increase in exposure of population and assets to coastal flooding** is likely to be in cities in developing countries, especially in East and South Asia (Nicholls et al. 2008).



Source: WWF, 2009

- By 2070, **9 out of the top 10 cities** in terms of population exposure are expected to be in Asian developing countries (Nicholls et al. 2008).
- In flood-prone cities such as Ho Chi Minh City, Manila, Jakarta, Bangkok are vulnerable to future **sea level rise** and **increased frequency and intensity of extreme weather events**

So, what should we do?

- **Integration** of Climate Change Adaptation (CCA), Disaster Risk Reduction (DRR) and Development needs to be fostered immediately
- **Better management** of urban environment and infrastructure will help manage potential climate-related impacts.
- **Climate-related risks should be considered** as an integral part of city and regional planning focusing on urban environmental management.
- **Targeted and "city-specific solutions"** combining infrastructure investments, zoning, and ecosystem-based strategies are required.

So, what should we do?

- Enhancement and strengthening of **"Community Resilience" for the coastal zones** involving municipalities, local authorities, communities and other stakeholders are a great need.

- Strengthening of **"multi-hazard early warning and forecast systems"** for coastal hazards are needed.

- **Capacity building of "science-systems-societies"** in multiple domains need to be prioritized.

Thank you all