

A scenic sunset over a river with palm trees and a boat. The sun is low on the horizon, casting a golden glow across the sky and reflecting on the water. Silhouettes of palm trees and a boat with a person are visible against the bright background.

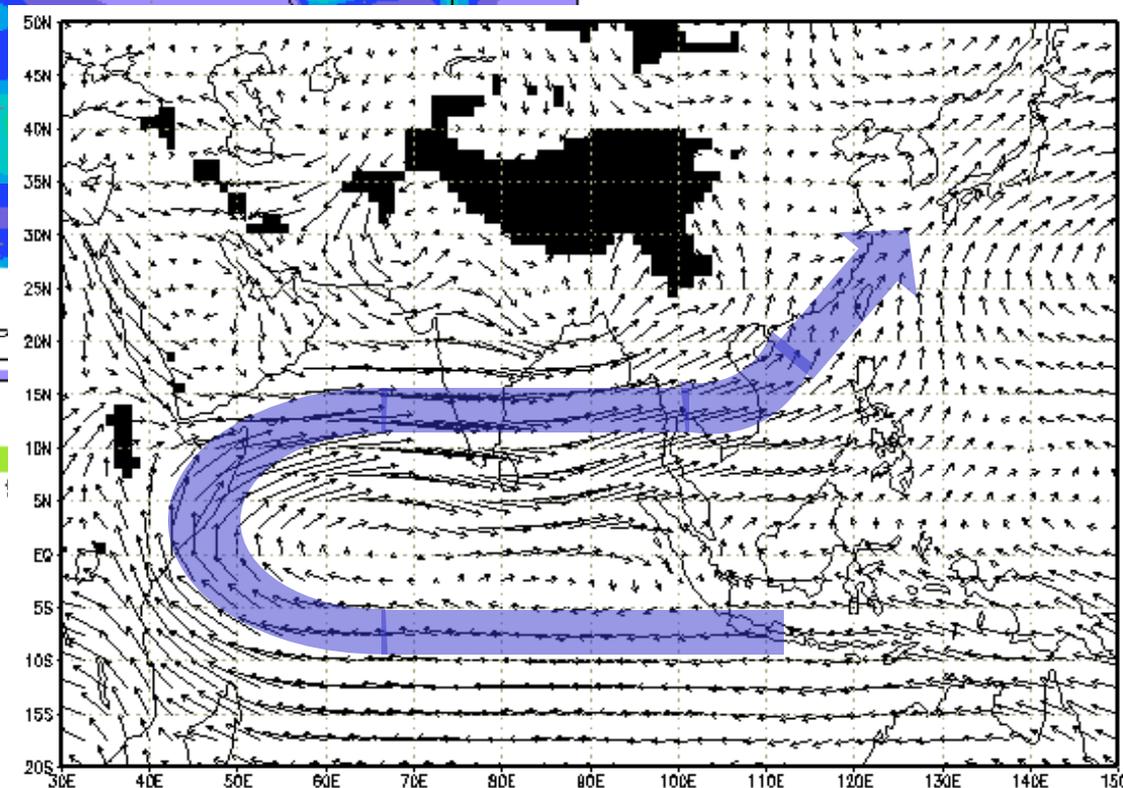
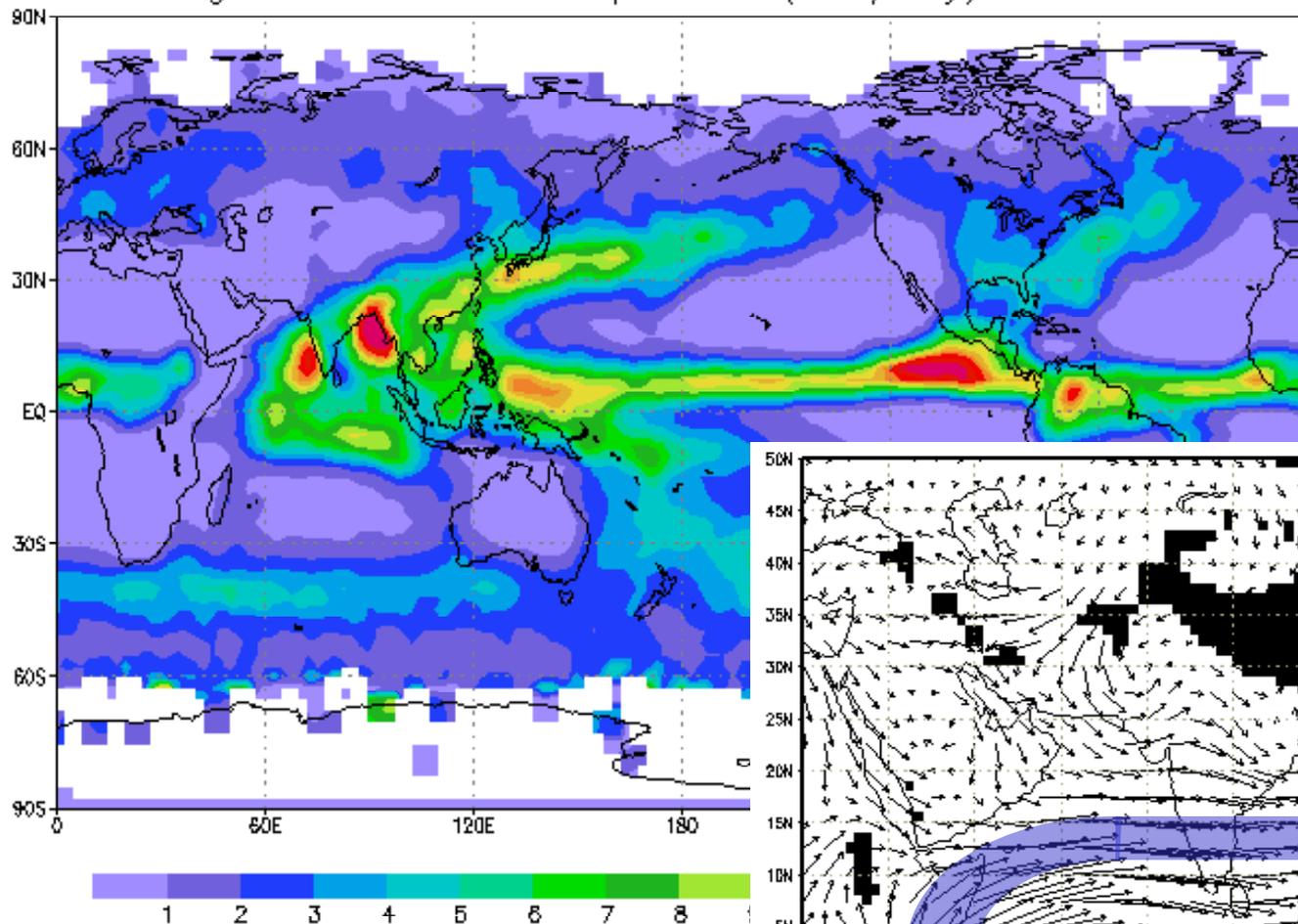
11th GEOSS Asia-Pacific Symposium
*Strengthening Regional Cooperation through AOGEOSS
for the SDGs, Paris Agreement and Sendai Framework*
Kyoto, Japan, 24 - 26 October 2018

AOGEOSS Case Study: Mekong River Project Introduction

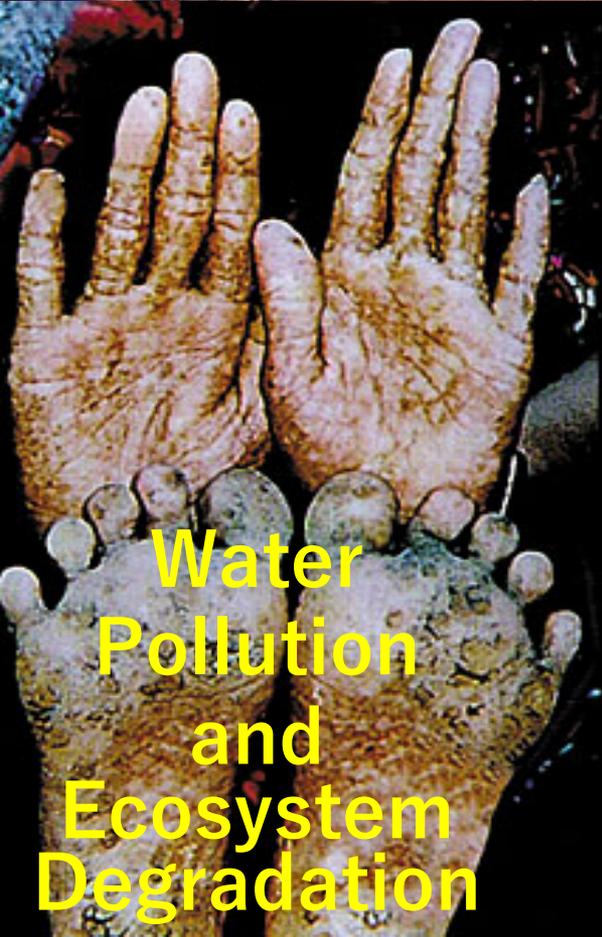
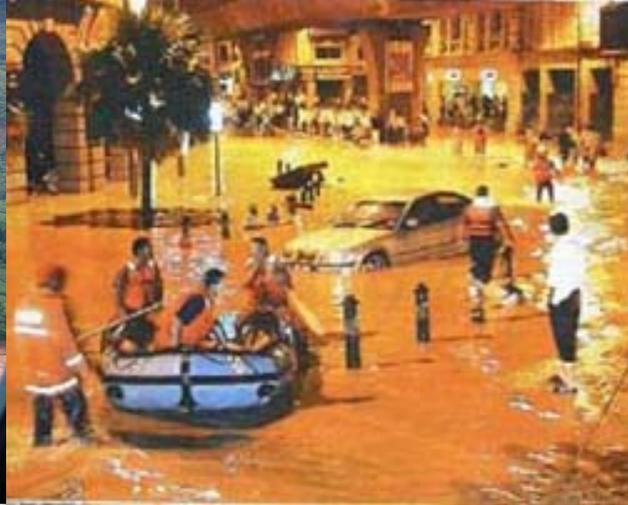
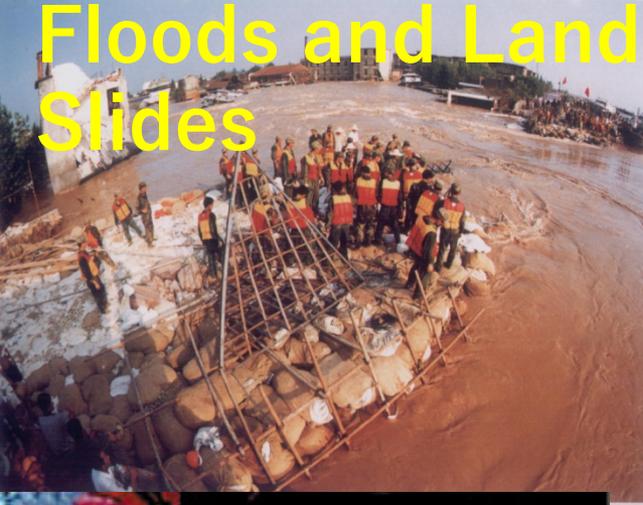
Toshio Koike

Director, International Centre for Water Hazard and Risk Management (ICHARM)
Council Member, Science Council of Japan (SCJ), Cabinet Office of Japan
Professor Emeritus, the University of Tokyo
Chair, Japan GEO

Average June GPCP Precipitation (mm/day) for 1988–96



Floods and Land Slides



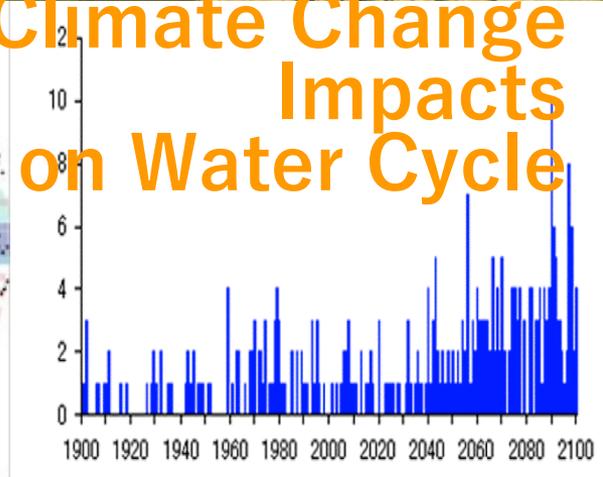
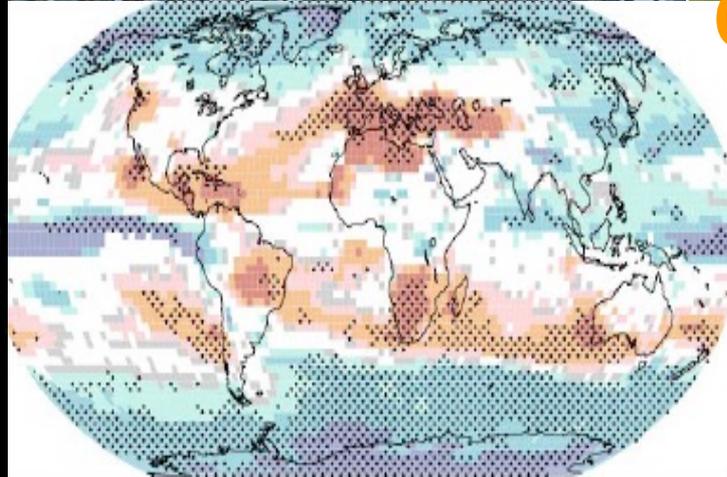
Water Pollution and Ecosystem Degradation



Drought and Water Scarcity



Climate Change Impacts on Water Cycle



Change of population exposure to inundation due to sea-level rise (current vs. in 2050)

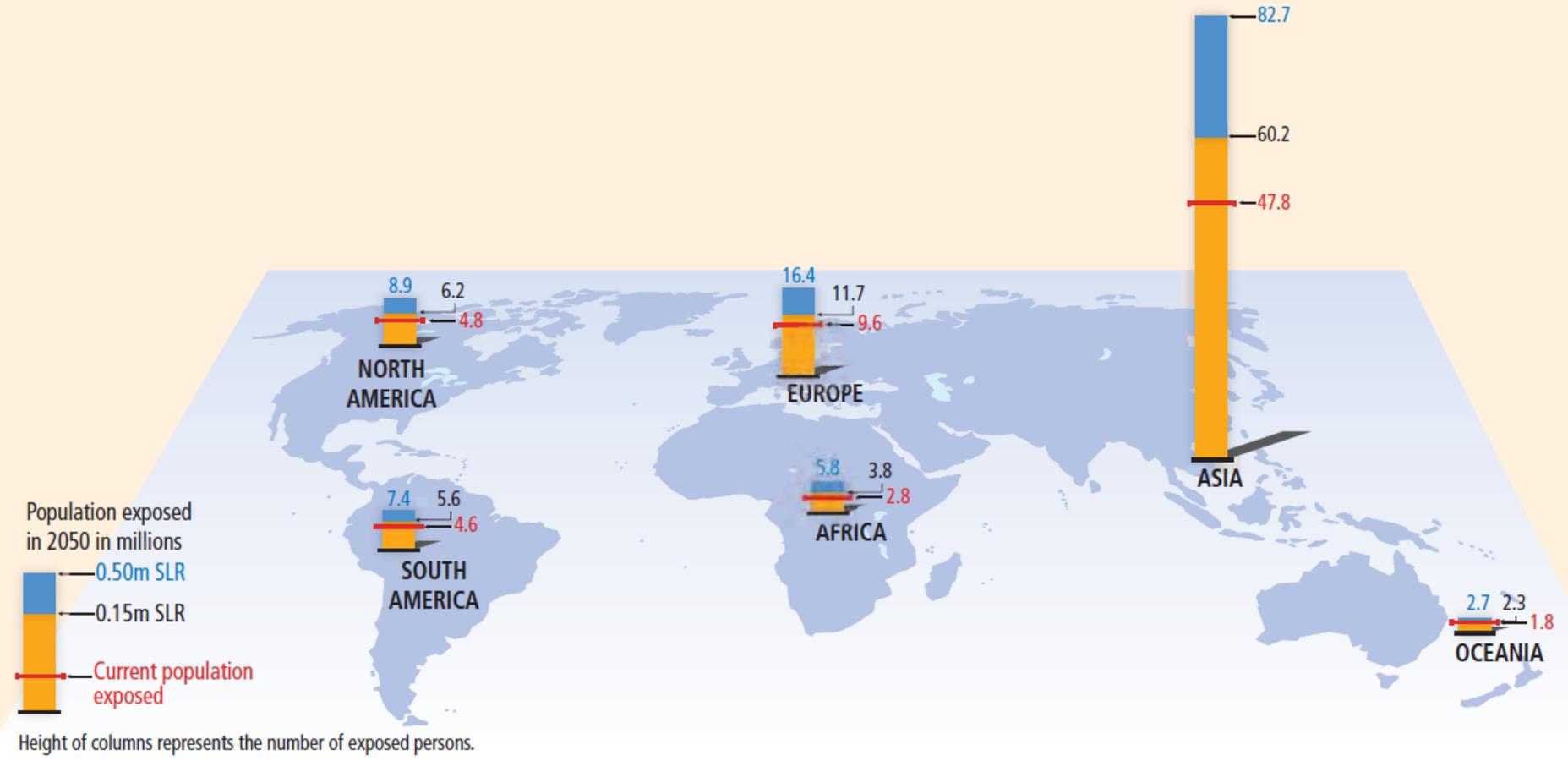
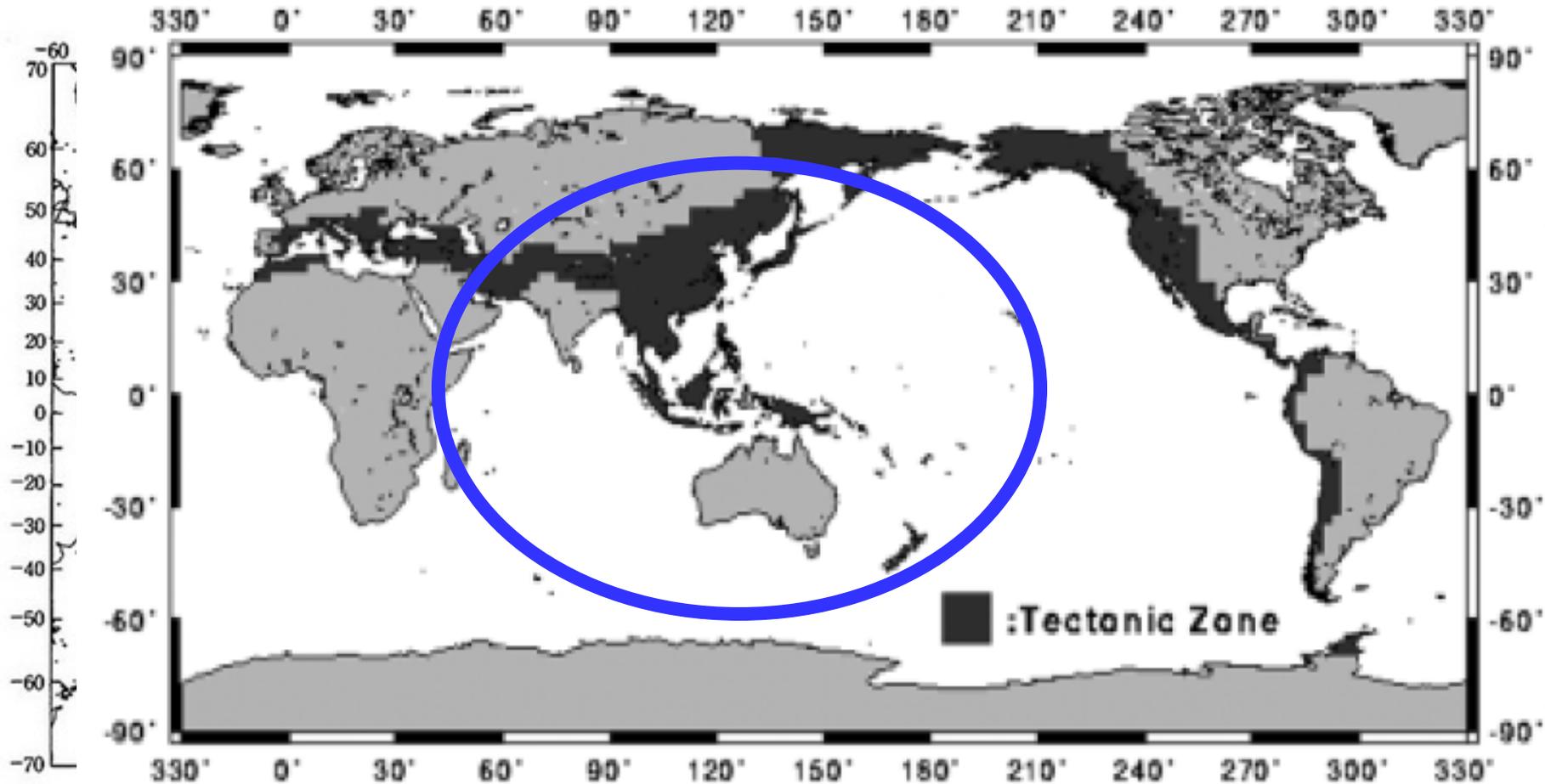


Figure 4-5 | For low-elevation coastal areas, current and future (2050) population exposure to inundation in the case of the 1-in-100-year extreme storm for sea level rise of 0.15 m and for sea level rise of 0.50 m due to the partial melting of the Greenland and West Antarctic Ice Sheets. Data from Lenton et al., 2009.

World distribution of earthquake and tectonic zone

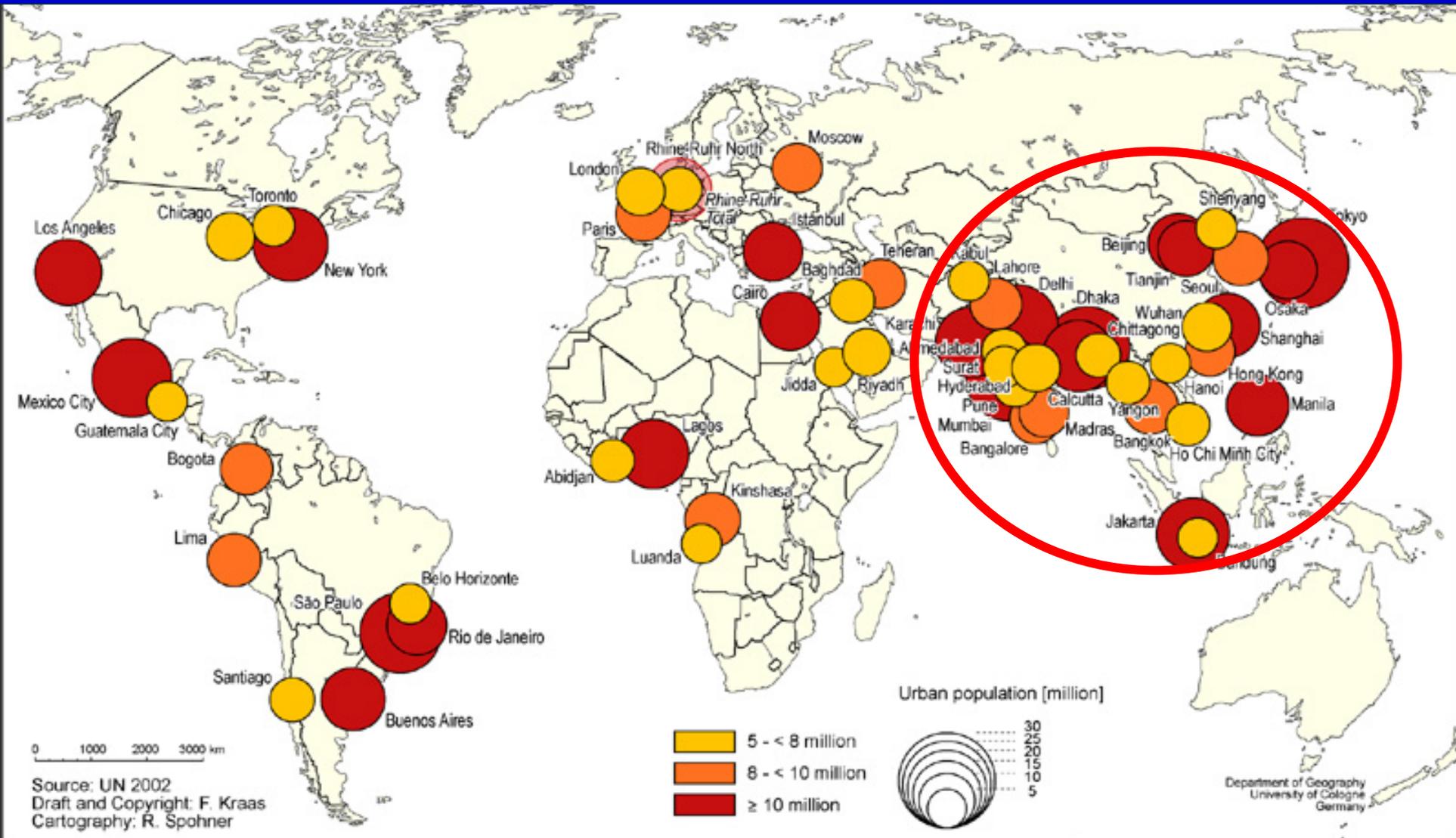
図2 変動帯の世界分布



出所：Strahler, A.H. And Strahler, A. N. (1992) *Modern Physical Geography*, John Wiley & Sons, Inc. より作成

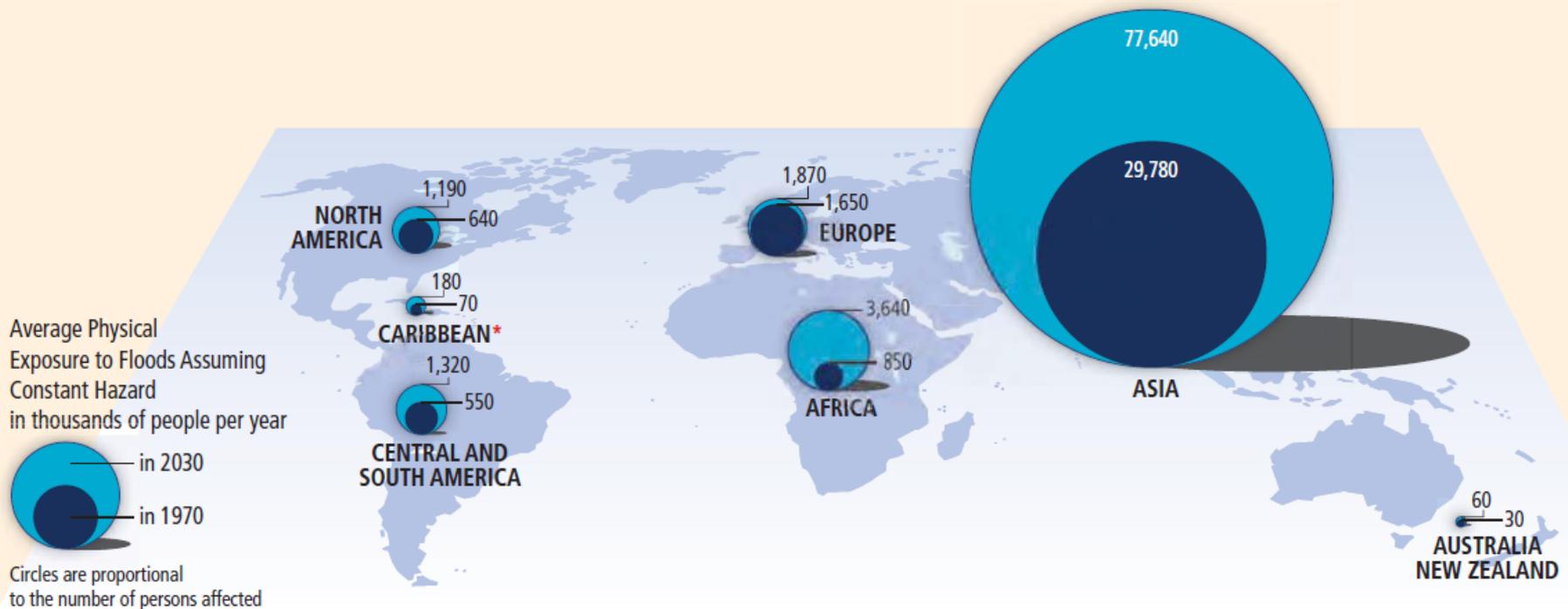
**Human impact on the environment
in the Asia/Pacific region
has become enormous
in the recent several decades**

Mega-cities in the world are concentrated in Asia



<http://www.megacities.uni-koeln.de/documentation/megacity/map/MC-2015-PGM.jpg>

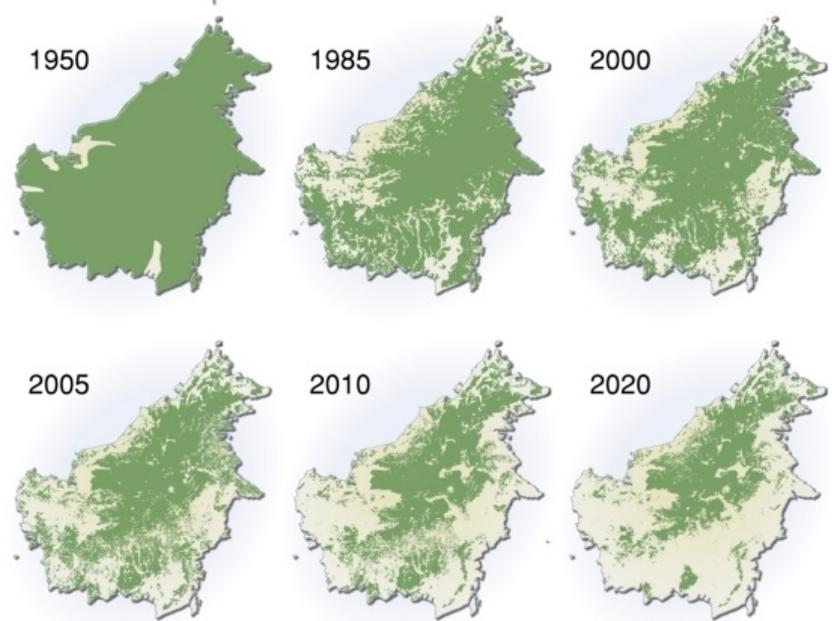
Change of population exposure to floods (in 1970 & 2030)



*Only catchments bigger than 1,000 km² were included in this analysis. Therefore, only the largest islands in the Caribbean are covered.

Figure 4-2 | Average physical exposure to floods assuming constant hazard (in thousands of people per year). Data from Peduzzi et al., 2011.

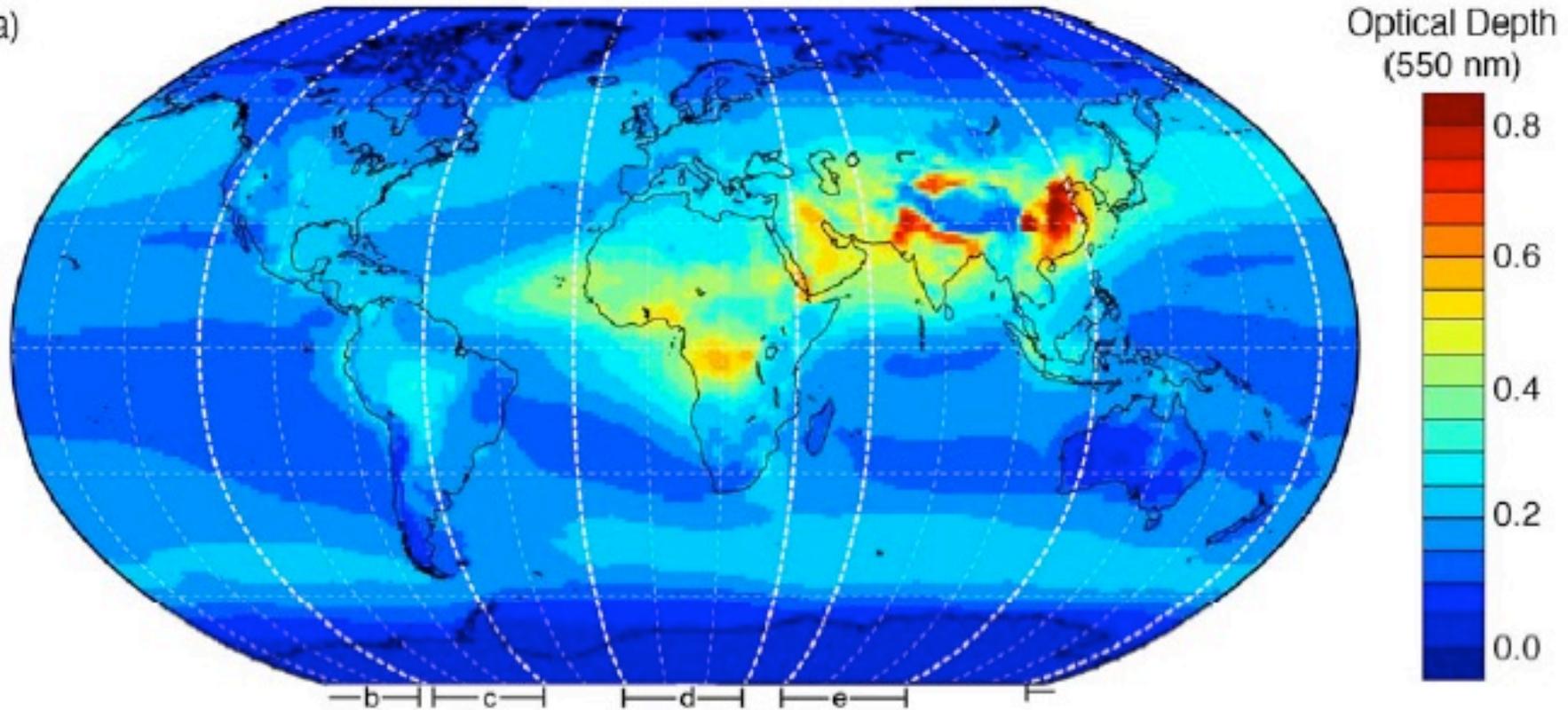
Rapid Forest loss in South East Asia



Asia is experiencing significant transformation of terrestrial and aquatic ecosystems. Most extensively, forest disruption and conversion continues in developing countries, particularly in the tropics in the late 20th century, causing big biodiversity loss and regional hydro-climate change.

Optical thickness by aerosols (2003-2010) (IPCC, 2013)

(a)



**Asia is one of the major emission areas
of Air and water pollutants**

Figure 7.14: a) Spatial distribution of the 550 nm aerosol optical depth (AOD, unitless) from the ECMWF Integrated Forecast System model with assimilation of MODIS aerosol optical depth (Benedetti et al., 2009; Morcrette et al., 2009) averaged over the period 2003–2010.

**Impact of GHG increase
on hydro-climate and water cycle
is becoming serious over the whole globe,
particularly in Asia-Pacific region**

Sustainable
Development

Management of Disaster & Environmental Risks

Preventing
Future Risk

Reducing
Current Risk

Building
Resilience

Human
Security

Science and Technology

Inter-linkage & Inter-disciplinary
Dialogue & Trans-disciplinary
End-to-end & Holistic Study

Development

Inherent Risk to
Development

Human-induced Issues

Population

Increase, Decrease, Aging

Economy

Poverty, Inequity, Globalization

Destabilized
Governance

Pollution

Land Use

Deforestation, Desertification

Disorganized
Urbanization

Security → Damage

Water

Food

Health

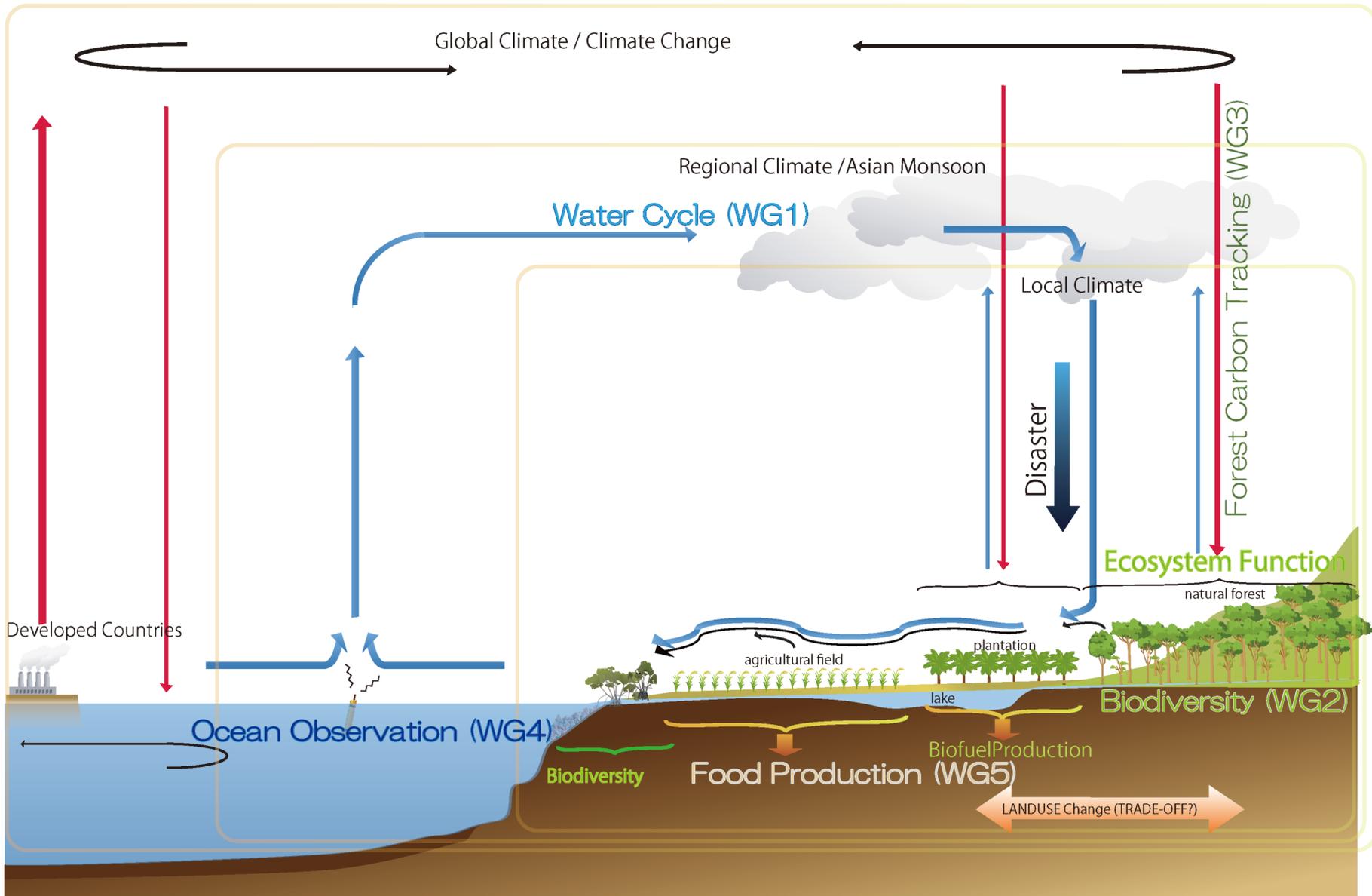
Energy

Biodiversity

Climate Change

Disaster

Hazard





*From Mountains to Islands
Asia and Oceania*