

Impact of Climate Change in Asia and the Pacific

IBON Foundation

Asia-Pacific Conference on Climate Change

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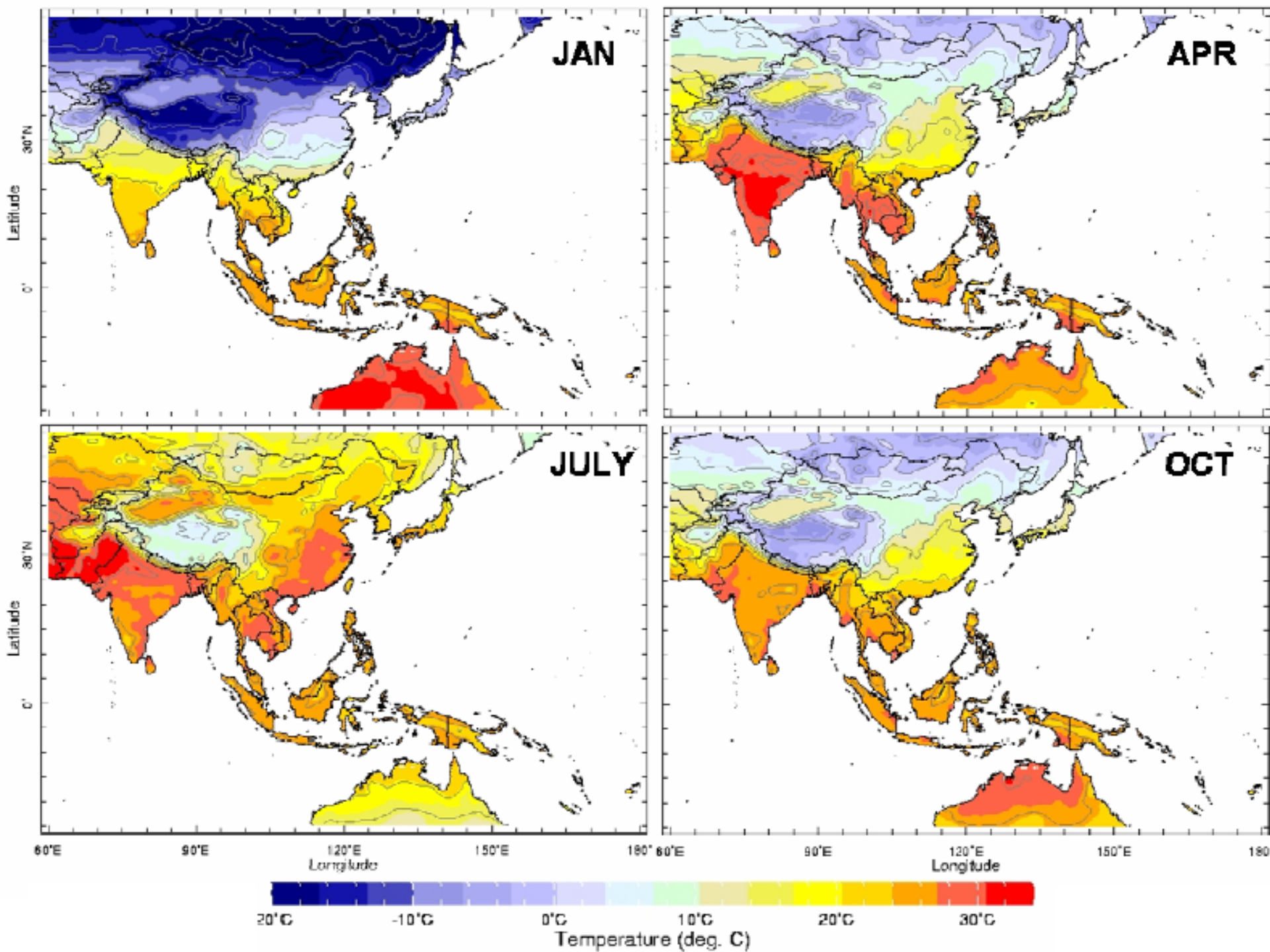
Bangkok, Thailand

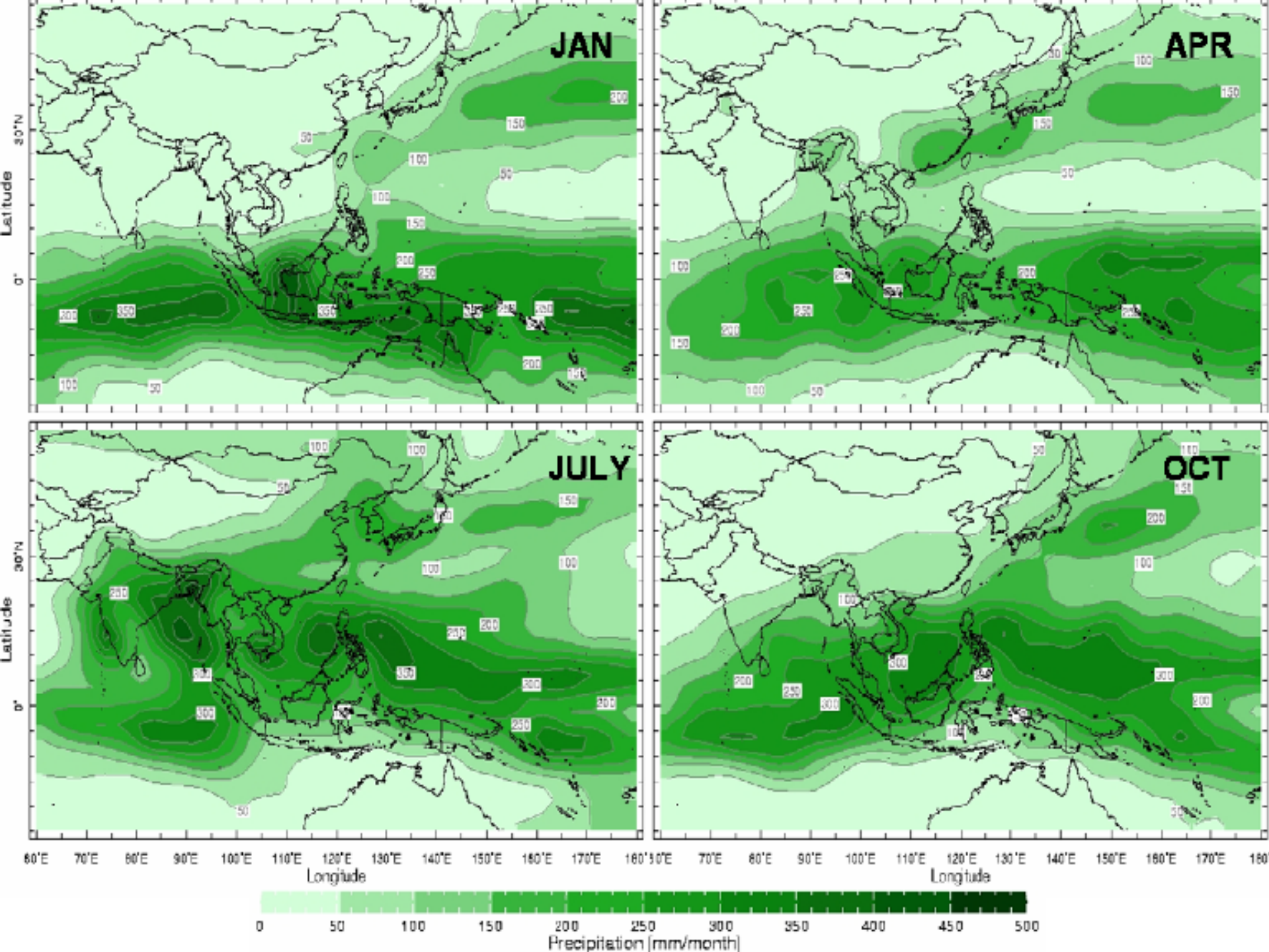
Outline

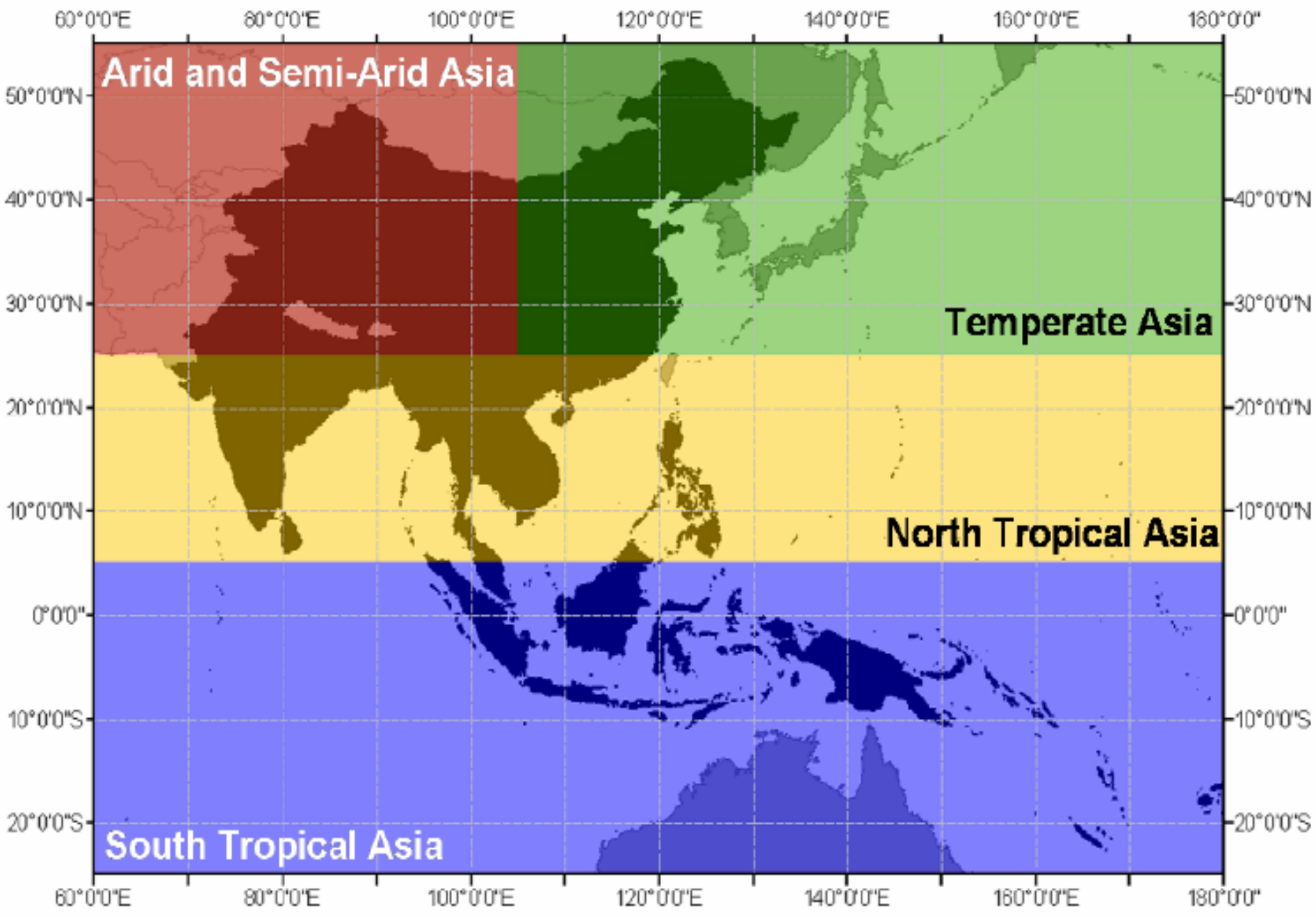
- ▶ Climate projections
 - geographic and climatological features
 - climate trends
 - climate hazards
 - grave consequences
- ▶ Adaptive capacity
 - definition
 - economy (including technology and infrastructure)
 - social vulnerability
 - governance
- ▶ Overall vulnerability
- ▶ What we must do

Climate Projections

- ▶ Geographic and climatological features
 - variability in temperatures
 - variability in seasonal precipitation (rainfall influenced by summer and winter monsoons)
 - climate sub-regions (arid and semi-arid; temperate; north tropical; south tropical)







Climate Projections

- ▶ Climate trends
 - warming
 - rainfall changes
 - sea-level rise
 - climate extremes and surprises

Table 3.2. Projected temperature changes for Asia/Pacific subregions^c

	2030 (°C)				
Subregion	Annual	DJF	MAM	JJA	SON
Arid and Semi-Arid Asia	1.2 (0.6–2.3)	1.3 (0.6–2.7)	1.2 (0.5–2.4)	1.2 (0.5–2.3)	1.2 (0.6–2.2)
Temperate Asia	0.9 (0.4–1.9)	1.0 (0.4–2.5)	0.8 (0.3–1.3)	0.8 (0.4–1.7)	0.9 (0.4–1.8)
North Tropical Asia	0.8 (0.4–1.3)	0.8 (0.4–1.4)	0.8 (0.4–1.4)	0.8 (0.4–1.4)	0.8 (0.4–1.3)
South Tropical Asia	0.8 (0.4–1.3)	0.8 (0.4–1.3)	0.8 (0.4–1.4)	0.8 (0.4–1.3)	0.8 (0.4–1.3)
	2070 (°C)				
Arid and Semi-Arid Asia	3.2 (1.3–7.1)	3.4 (1.3–8.3)	3.2 (1.0–7.3)	3.1(1.1–7.1)	3.1 (1.2–6.8)
Temperate Asia	2.4 (0.9–5.7)	2.8 (0.9–7.7)	2.3 (0.8–5.5)	2.2(0.8–5.3)	2.4 (0.9–5.6)
North Tropical Asia	2.1 (0.9–4.0)	2.1(0.8–4.1)	2.1 (0.9–4.2)	2.0(0.8–4.1)	2.0 (0.8–4.0)
South Tropical Asia	2.1 (0.9–4.0)	2.0 (0.9–4.1)	2.1(0.9–4.2)	2.1(0.8–4.1)	2.1(0.8–4.1)

Table 3.3. Projected Rainfall Changes for Asia/Pacific Subregions^e

	2030 (%)				
Subregion	Annual	DJF	MAM	JJA	SON
Arid and Semi-Arid Asia	+2	+5	+2	0	+4
Temperate Asia	+1	+2	+1	+2	+1
North Tropical Asia	+2	-1	0	+3	+2
South Tropical Asia	+1	+2	+2	+1	0
	2070 (%)				
Temperate Asia	+7	+13	+5	+1	+10
North Tropical Asia	+4	+6	+4	+6	+2
South Tropical Asia	+4	-3	-1	+7	+6
Arid and Semi-Arid Asia	+4	+4	+5	+2	0

Table 3.4. Recent Trends in Sea-Level Rise in Pacific Island Nations⁸⁵

Nation	Year of Gauge Installation	Trend (mm/year)
Cook Islands	1993	+2.5
Fiji	1992	+2.5
Federated States of Micronesia	2001	+21.4
Kiribati	1992	+5.7
Marshall Islands	1993	+5.2
Nauru	1993	+7.1
Papua New Guinea	1994	+8.1
Samoa	1993	+6.9
Solomon Islands	1994	+6.8
Tonga	1993	+8.0
Tuvalu	1993	+6.4
Vanuatu	1993	+3.1

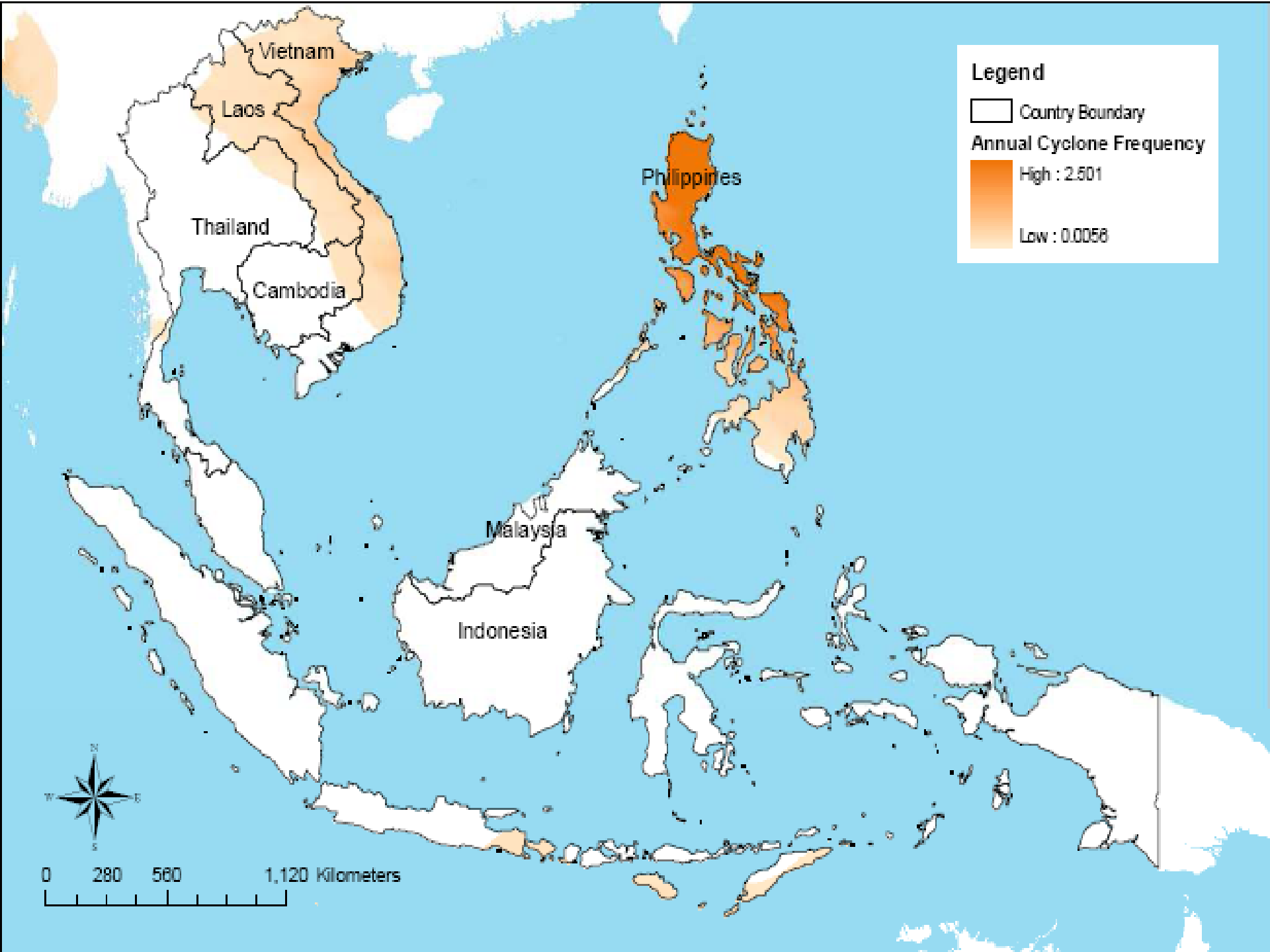
Climate Projections

- ▶ Climate extremes and surprises
 - wild fires in grasslands and rangelands
 - mudslides, mudflows and avalanches
 - droughts
 - severe flooding
 - tropical cyclones
 - forest fires
 - heat waves, heavy downpours, torrential rains

Climate Projections

► Climate hazards

- frequency of tropical cyclones, floods, landslides, droughts and sea-level rise
- human and ecological sensitivity (population density, protected areas, livelihood)



Legend

Country Boundary

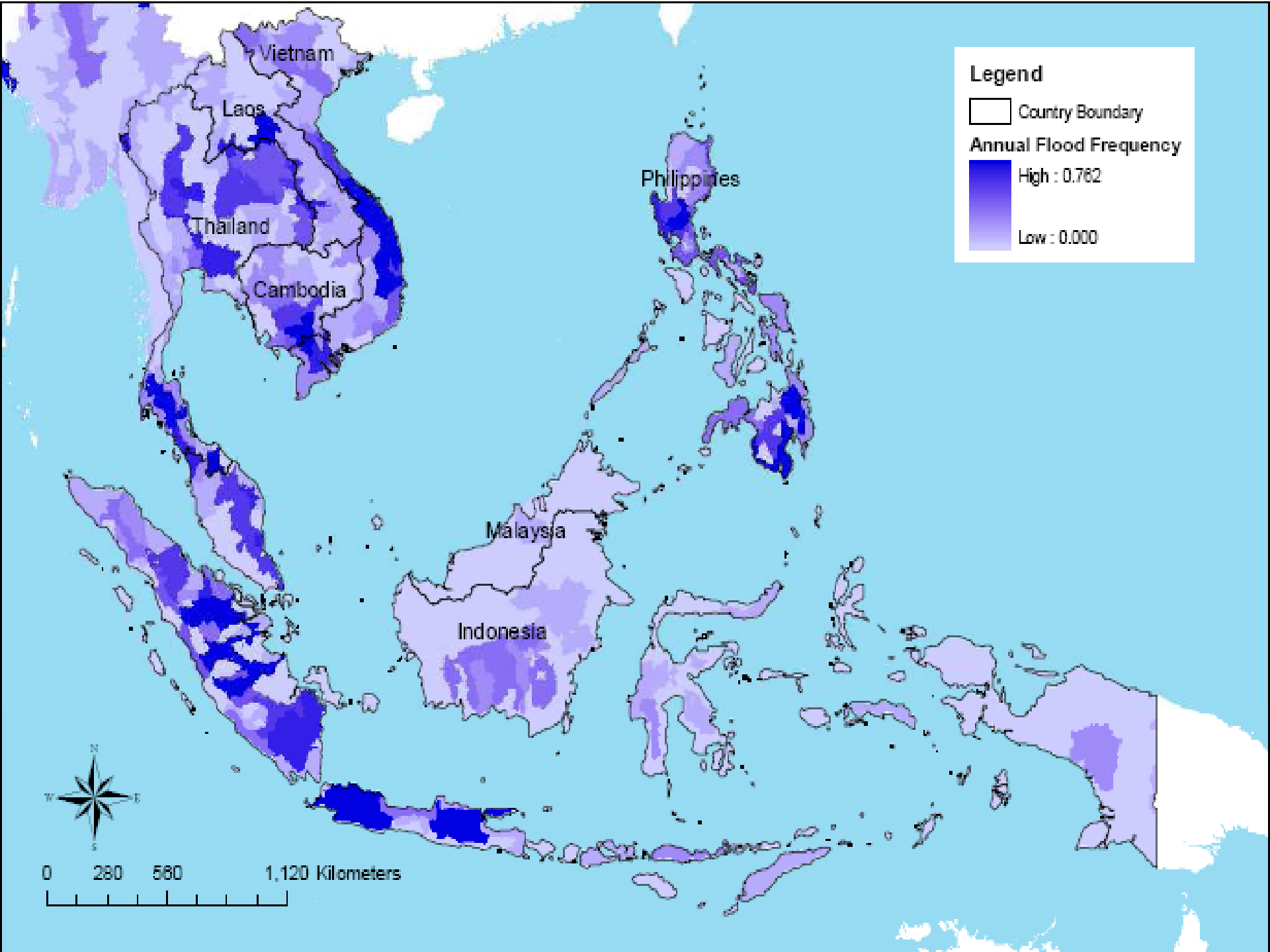
Annual Cyclone Frequency

High : 2.501

Low : 0.0058



0 280 560 1,120 Kilometers



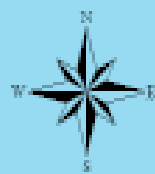
Legend

Country Boundary

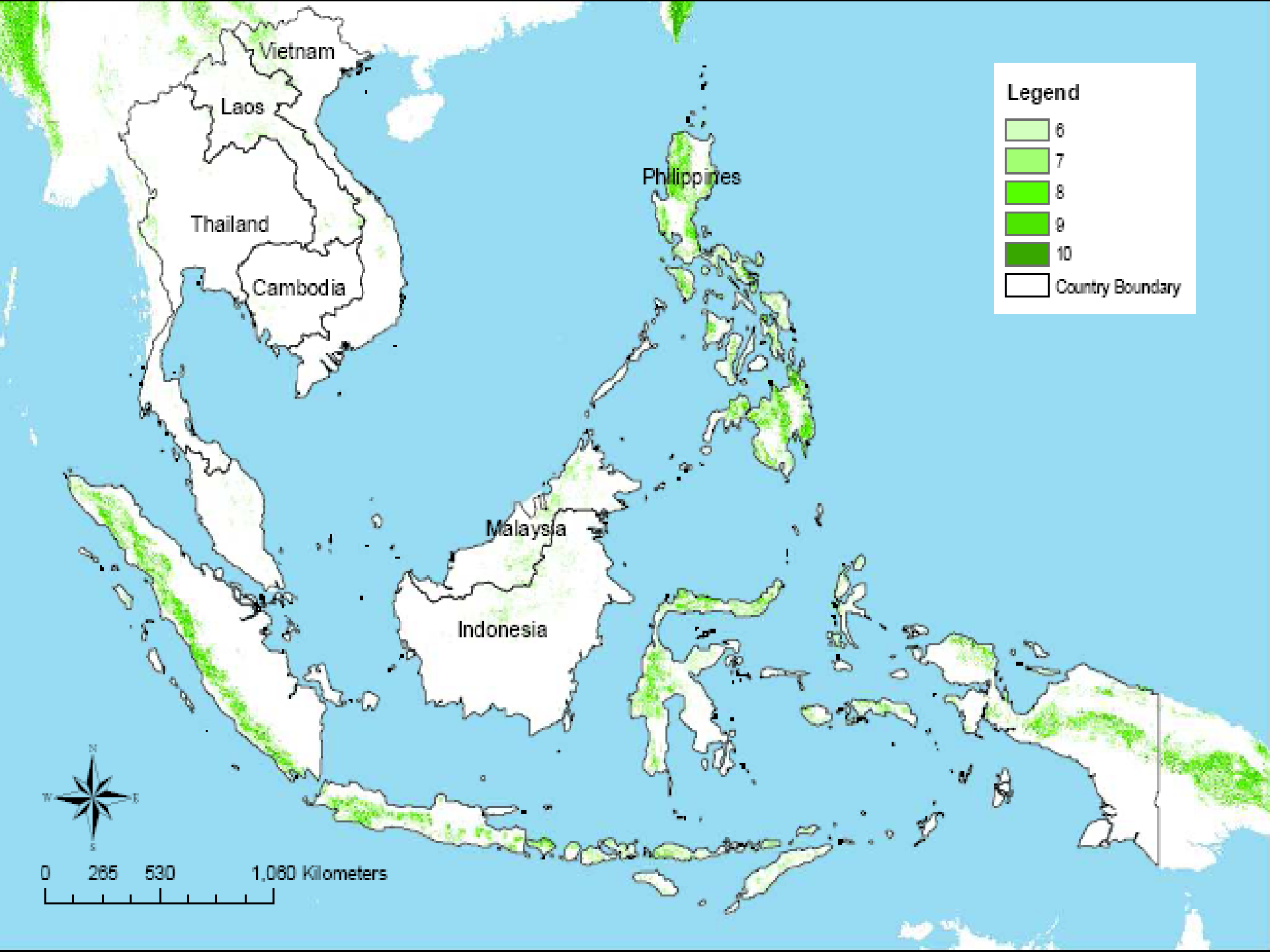
Annual Flood Frequency

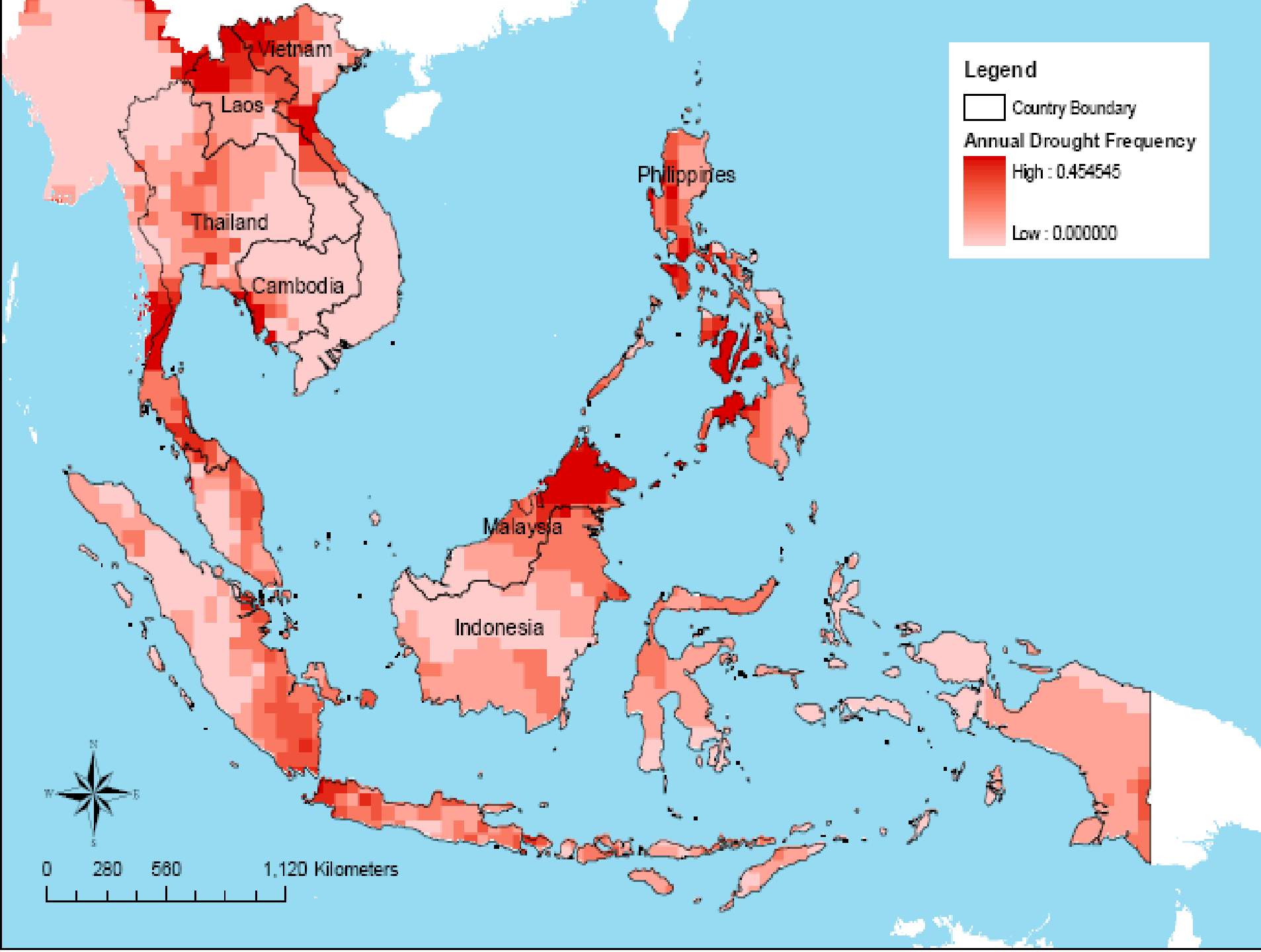
High : 0.762

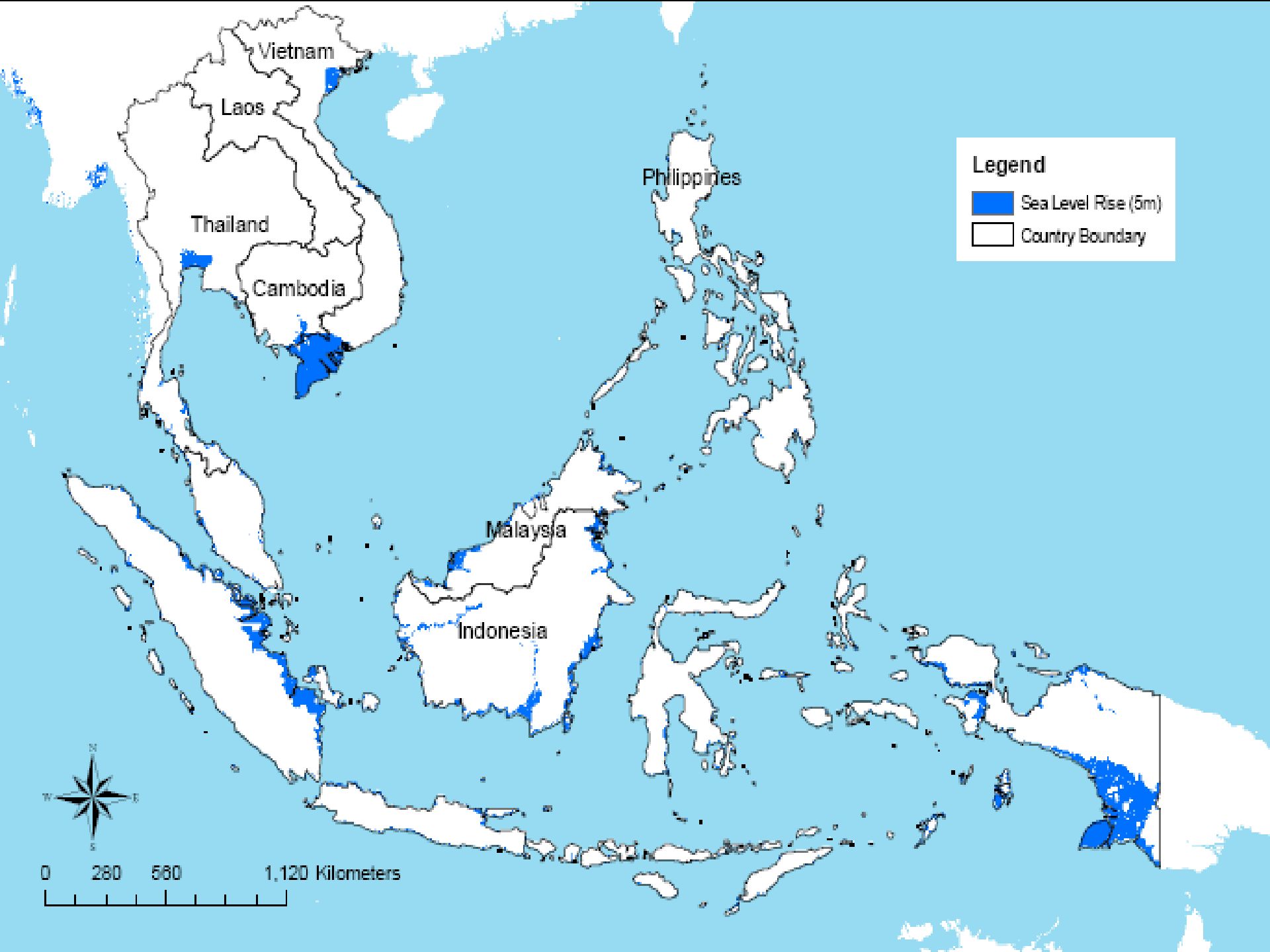
Low : 0.000

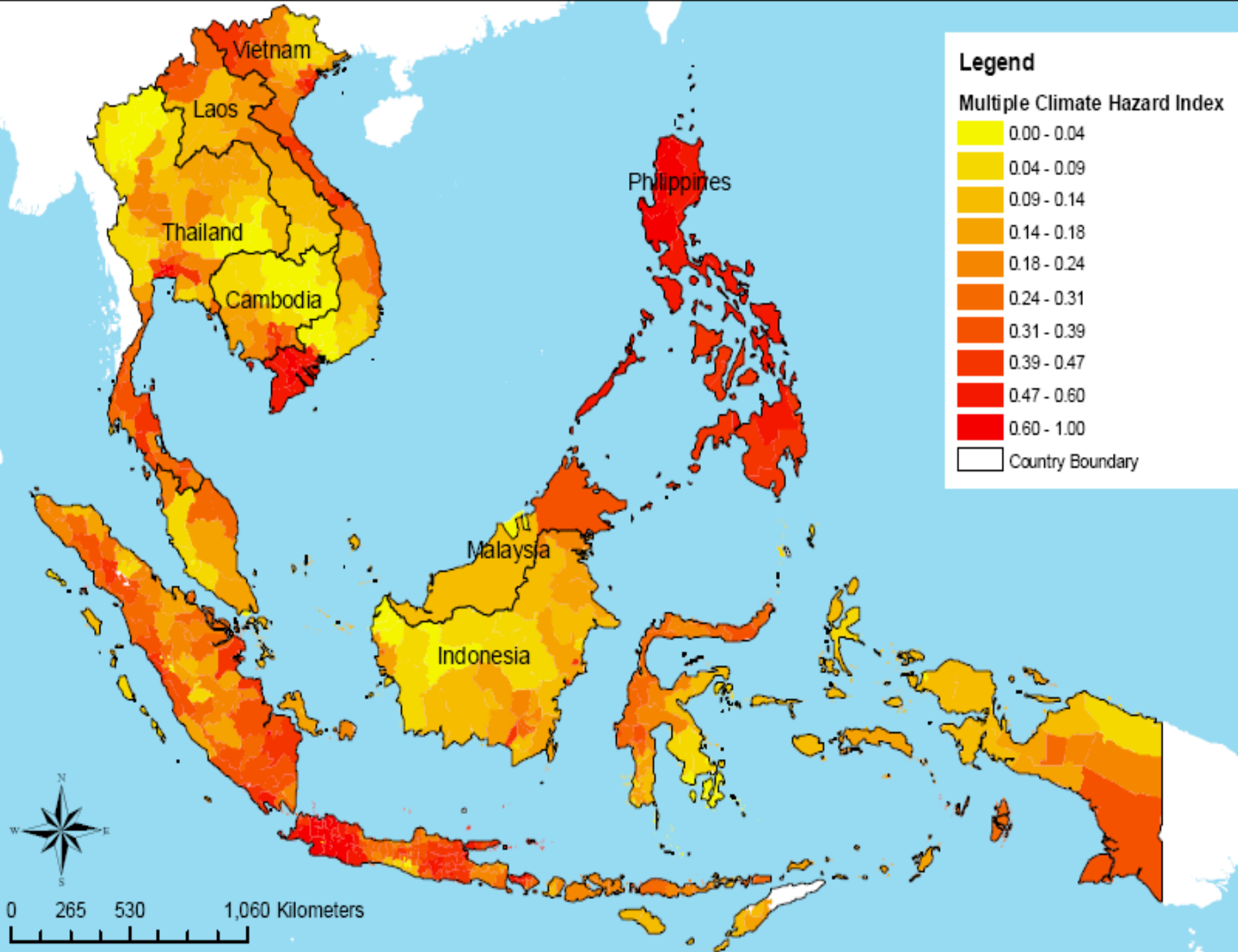


0 280 560 1,120 Kilometers

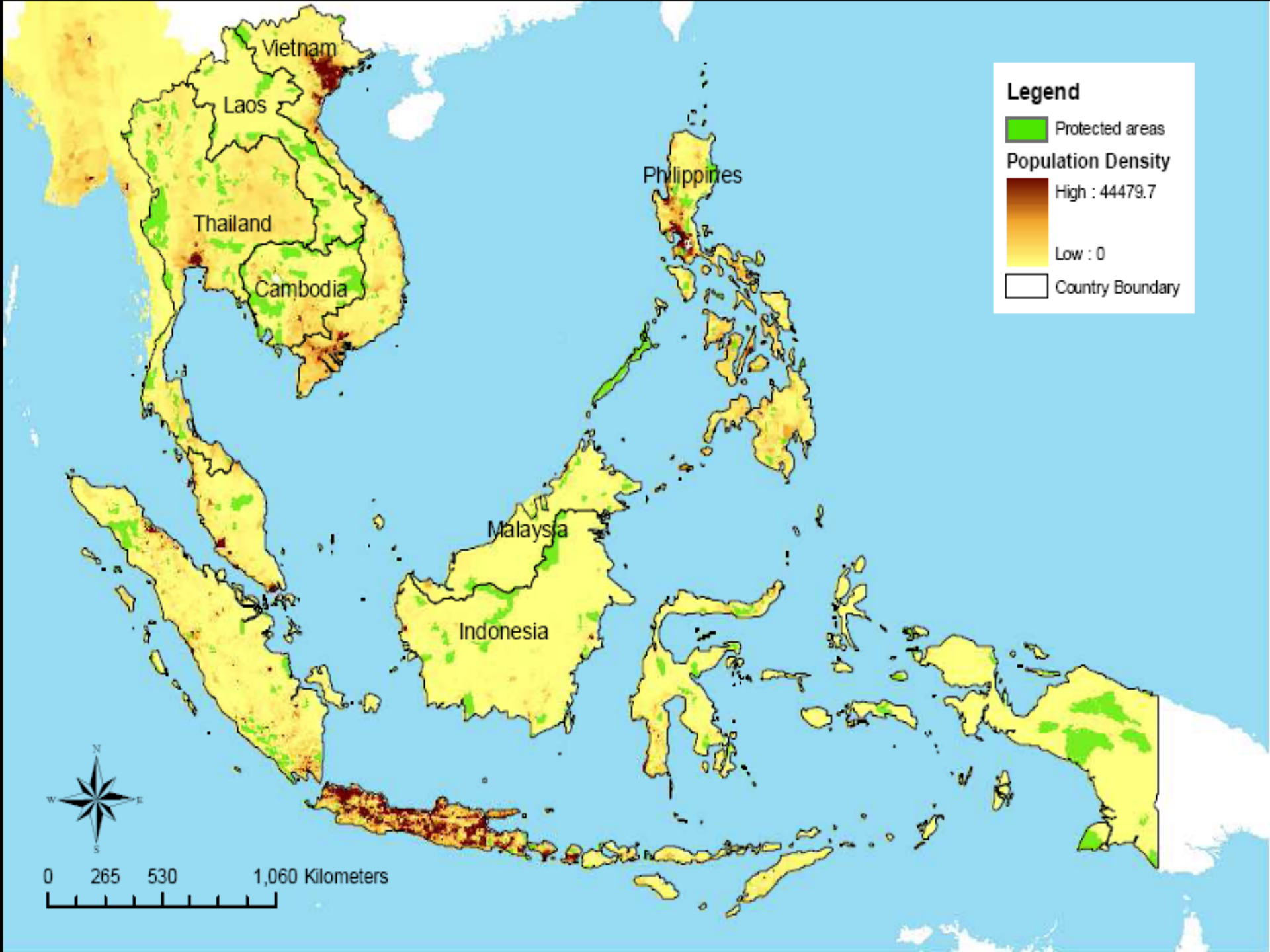








Climate hazard hotspots	Dominant hazards
Northwestern Vietnam	Droughts
Eastern coastal areas of Vietnam	Cyclones, droughts
Mekong region of Vietnam	Sea level rise
Bangkok and its surrounding area in Thailand	Sea level rise, floods
Southern regions of Thailand	Droughts, floods
The Philippines	Cyclones, landslides, floods, droughts
Sabah state in Malaysia	Droughts
Western and eastern area of Java Island, Indonesia	Droughts, floods, landslides, sea level rise



- ▶ Human sensitivity of course is best measured by how many people actually depend on the natural ecologies for their livelihood. In Asia/Pacific, dependence on agriculture ranges from 15% (China) to 57% (Myanmar) of the gross domestic product. Around 60 to 80 percent of the population are engaged in small-scale agriculture. Rural population ranges from 35% (Malaysia) to 81% (Cambodia). There are also high percentages of coastal populations and forest people. Over half of Asia's population resides in coastal locations and in low-lying islands.

- ▶ The FAO estimates that over 90 percent of the 15 million people working at coastal waters are small-scale fishers, excluding yet the tens of millions of the poor who fish inland rivers, lakes, ponds, and even rice paddies.
- ▶ The World Bank estimates that 90 percent of the world's 1.1 billion poor (as approximated by the World Bank) derive a portion of their income from forests while over 600 million keep livestock which is a critical cash asset for many.
- ▶ According to the UN Hunger Task Force, half of the world's hungry are smallholders, a fifth do not have their own land, a tenth are agro-pastoralists, fisherfolk and forest users, while only a fifth live in urban areas

Climate Projections

- ▶ Grave consequences
 - coastal inundation and erosion
 - loss of ecosystems and biodiversity
 - disease and heat-related mortality
 - water shortages
 - stress on agriculture and forestry
 - stress on aquaculture and fishery
 - stress on the economy
 - stress on human security

Table 1—Sectoral Vulnerability for Key Sectors for the Subcontinental Regions of Asia

Subregions	Food and fiber	Bio-diversity	Water resource	Coastal ecosystem	Human health	Settlements	Land degradation
North Asia	+1/H	-2/M	+1/M	-1/M	-1/M	-1/M	-1/M
Central Asia and West Asia	-2/H	-1/M	-2/VH	-1/L	-2/M	-1/M	-2/H
Tibetan Plateau	+1/L	-2/M	-1/M	Not applicable	Information not available	Information not available	-1/L
East Asia	-2/VH	-2/H	-2/H	-2/H	-1/H	-1/H	-2/H
South Asia	-2/H	-2/H	-2/H	-2/H	-2/M	-1/M	-2/H
Southeast Asia	-2/H	-2/H	-1/H	-2/H	-2/H	-1/M	-2/H

Source: Intergovernmental Panel on Climate Change, "Climate Change 2007: Impacts, Adaptation and Vulnerability," Contribution of Working Group II to the Fourth Assessment Report, M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden, and C. E. Hanson, eds. (Cambridge University Press, Cambridge, UK, 2007).

Notes: Key to vulnerability: -2 indicates highly vulnerable; -1, moderately vulnerable; and +1, moderately resilient. Key to level of confidence: VH indicates very high; H, High; M, medium; and L, low.

Table 4.5. Vulnerability of Asian Sectors Related to Agriculture to Climate Change¹³⁸

Regions	Food and Fibre	Water Resources	Coastal Ecosystems
Arid and semi-arid Asia			
Central Asia	Highly vulnerable	Highly vulnerable	Moderately vulnerable
Tibetan Plateau	Slightly or not vulnerable	Moderately vulnerable	Not applicable
Temperate Asia	Highly vulnerable	Highly vulnerable	Highly vulnerable
Tropical Asia and Small Island States			
South Asia	Highly vulnerable	Highly vulnerable	Highly vulnerable
Southeast Asia	Highly vulnerable	Highly vulnerable	Highly vulnerable

Adaptive Capacity

► Definition

- Specifically, *adaptation* refers to actions, policies, and measures that increase the *coping capacity* and *resilience* of systems to climate variability and climate change. The extent to which adaptation can be implemented to increase coping capacity and resilience is referred to as *adaptive capacity*.

Adaptive Capacity

► Definition

- Variability in adaptive capacity is a function of different capabilities within nations and communities with respect to financial resources, technology, expertise, and economic diversification that are often called upon to implement adaptation actions.

Adaptive Capacity

► Definition

- "It is not that the risk is unknown, not that the methods for coping do not exist...rather inability to cope is due to lack of—or systematic alienation from—resources needed to guard against these events." (Ribot, et. al. *Climate Variability, Climate Change and Social Vulnerability in the Semi-Arid Tropics*)

Adaptive Capacity

▶ Economy

- stagnant growth severely exploited, degraded and depleted natural resources and capital due to long-term colonization and globalization.
- rapid economic growth propelled only by liberalization
- transition to market economy
- shrinking agriculture and industry
- dependence on exports

Adaptive Capacity

▶ Economy

- problematic trade deficits
- increasing aid dependence
- increasing role of official development assistance (ODA)
- increasing debt burden
- over-reliance on foreign direct investment (FDI)

Adaptive Capacity

▶ Economy

- declining revenue, increasing privatization of key industries and social sectors
- speculation and financial instability
- corruption

Adaptive Capacity

- ▶ Social vulnerability
 - high unemployment rates
 - low quality of available jobs
 - forced and child labor
 - bulk of labor force population is in the rural areas
 - continued and increasing landlessness
 - high rural-to-urban and cross-border migration

Adaptive Capacity

▶ Social vulnerability

- no living wages
- poverty incidence remains high
- hunger remains prevalent
- widening and deepening income inequality
- majority of the poor are in the rural areas
- women as the most disadvantaged
- gender inequality

Adaptive Capacity

- ▶ Social vulnerability
 - marginalization from resources, markets and services
 - lack or diminishing social services
 - internal displacement (physical, economic and affected by armed conflict including eviction and dislocation due to 'development projects')
 - threatened environment due to overexploitation
 - logging, mining, hydropower dams and other natural resources extraction and plunder

Adaptive Capacity

- ▶ Social vulnerability
 - internal trafficking of persons (forced prostitution in and out of the country)
 - human rights violations and political repression (political prisoners, summary executions, enforced disappearances, lack of freedom of assembly and expression)

Adaptive Capacity

► Governance

- generally governed by elite-democracy governments and some by constitutional monarchy and military junta
- characterized by lack of transparency and accountability and in some cases, large-scale corruption
- Resources, especially land, water, natural resources and capital, continue to be concentrated in the hands of few elite families.
- no social investment in building knowledge, technology and infrastructure, much less in adapting to climate change.

Adaptive Capacity

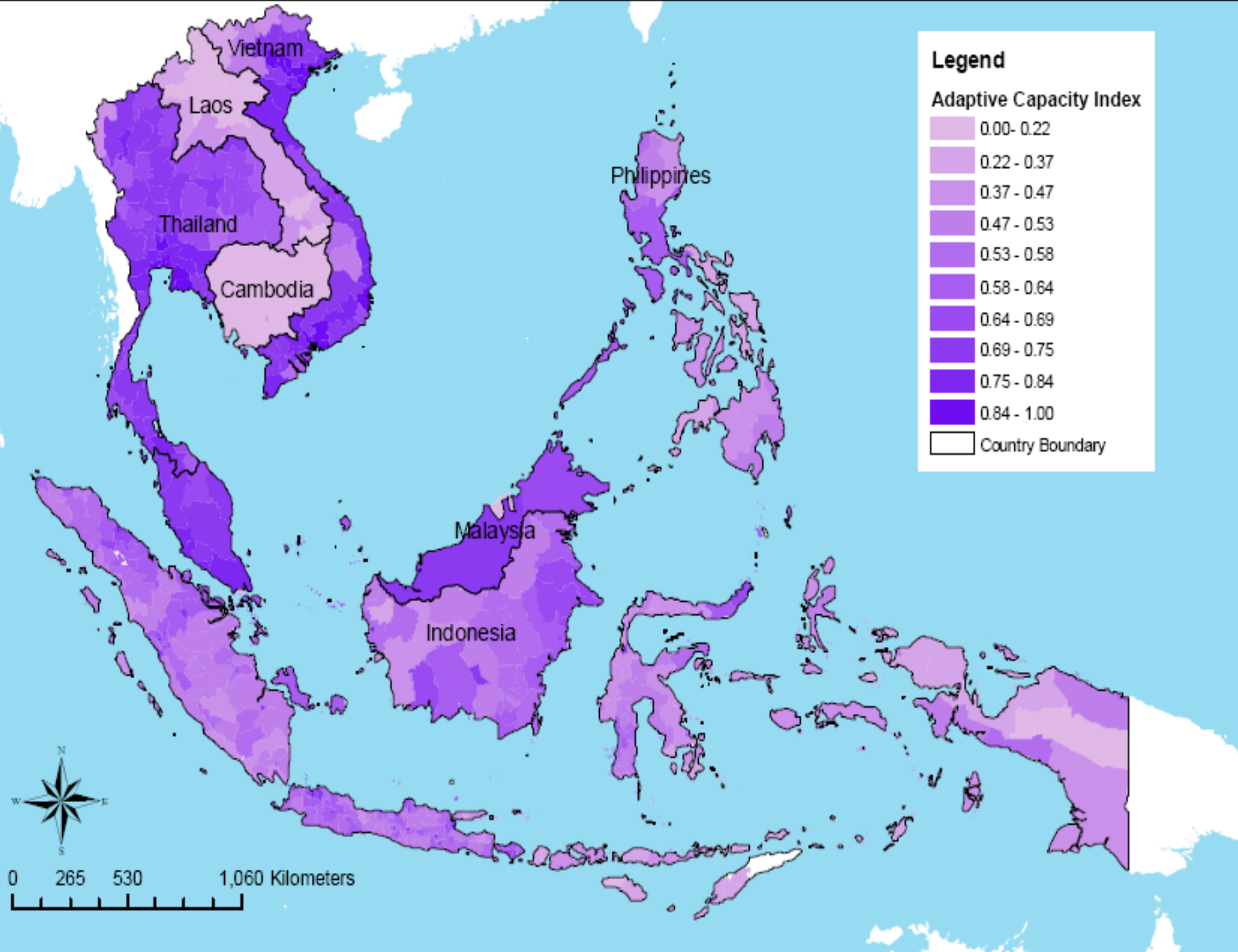
► Governance

- implemented globalization across-the-board
- Governments have taken the hands-off style of government with regard to public utilities and social services and relegated the provision of these to foreign corporations (TNCs).
- Planning, designing and implementing development projects, including adaptation to climate change, therefore have been privatized or become dependent on foreign debt.
- Governments have also opened up the environment to foreign plunder and exposed communities and nations to environmental crisis.

Adaptive Capacity

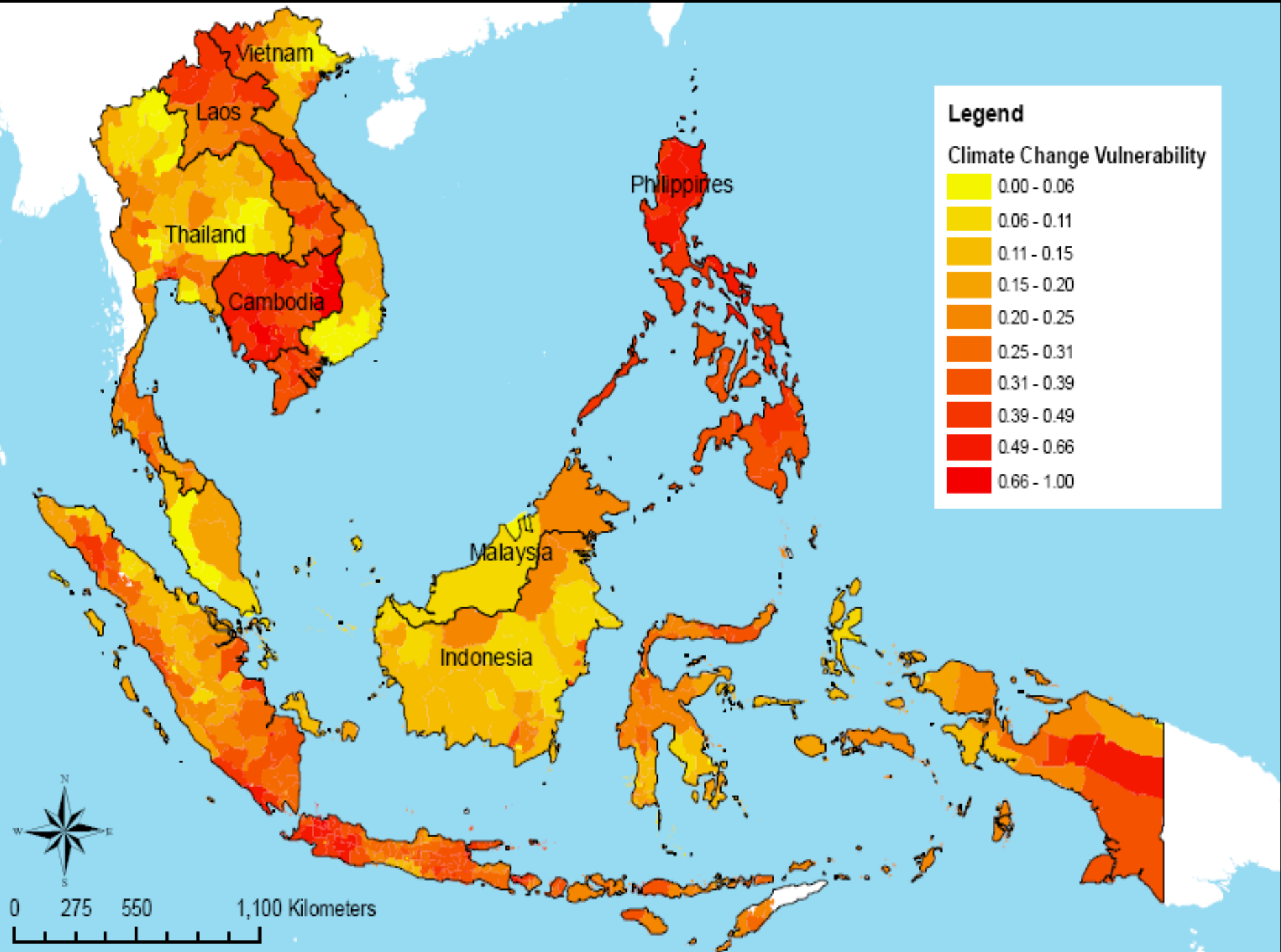
► Governance

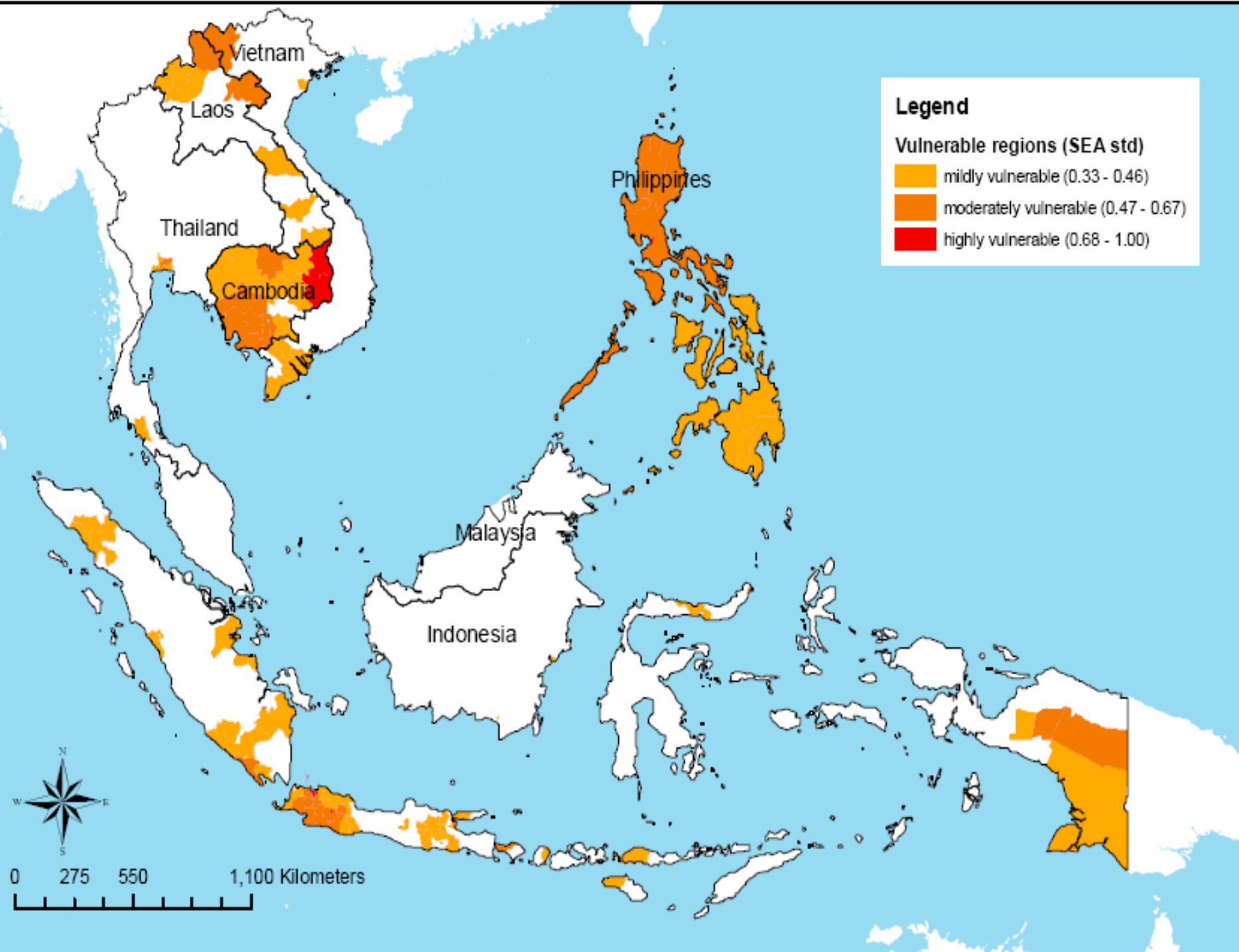
- As such, governments have defaulted on actively raising income levels, production subsidies, price controls, education and technical skills, food distribution, health care, and disaster preparedness.
- They have neglected the most economically and climate-vulnerable sectors such as the poorest sections of the peasantry, namely small-scale farmers, small-scale fishers, indigenous peoples, mountain and forest people, upland farmers, pastoralists, including the urban poor.

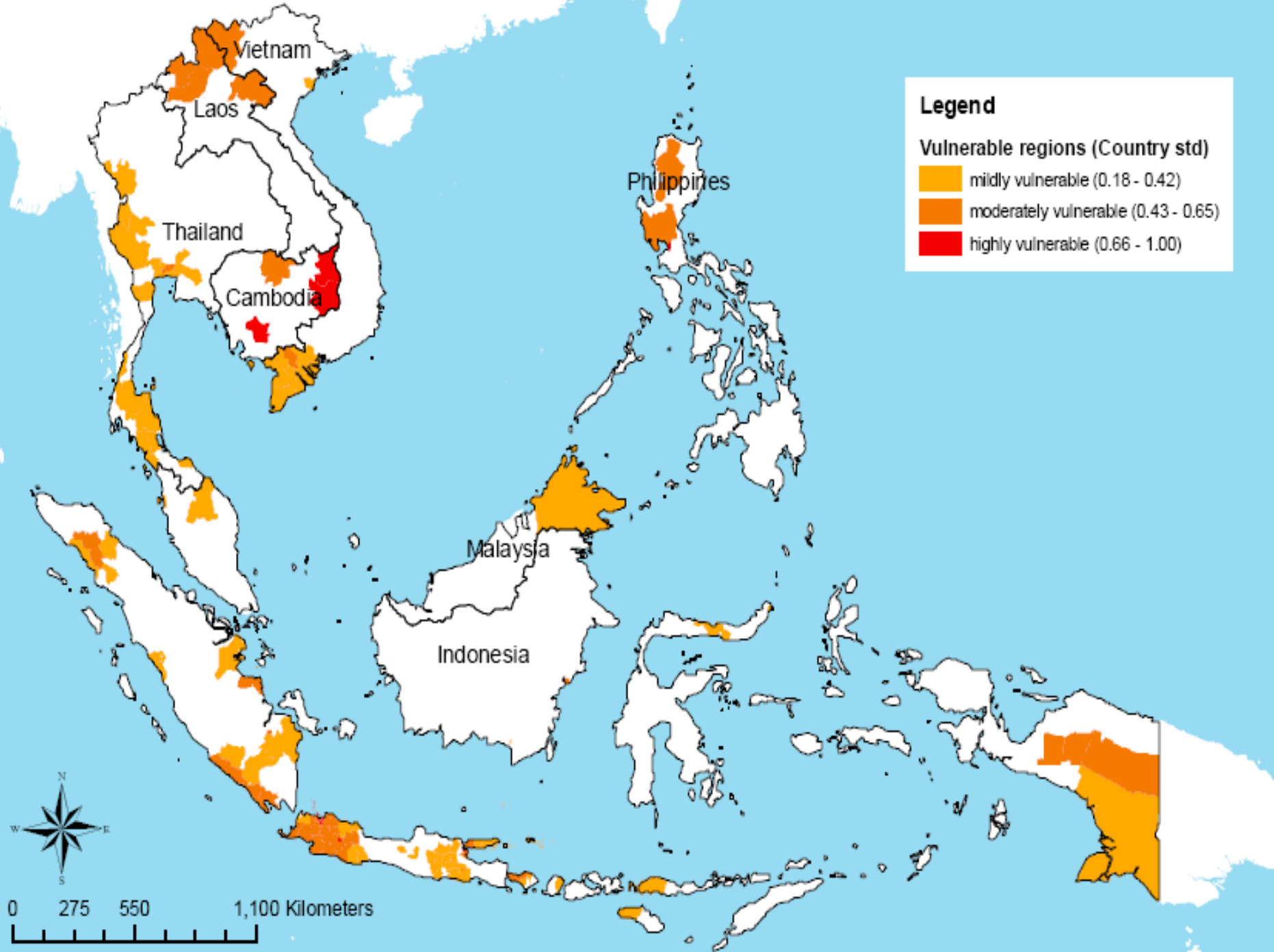


Overall Vulnerability

- ▶ The most vulnerable areas in Southeast Asia include: all the regions of the Philippines, the Mekong River Delta region of Vietnam; almost all the regions of Cambodia; North and East Lao PDR; the Bangkok region of Thailand; and the west and south of Sumatra, and western and eastern Java in Indonesia.
- ▶ The most vulnerable regions within countries are the states of Kelantan and Sabah in Malaysia, the National Capital Region, Southern Tagalog, Cagayan Valley, Central Luzon, the Cordillera Administrative Region, and Bicol Province in the Philippines.







What we must do

► Basic principles

- Human rights
- Social Justice and historical responsibility
- Respect for the environment & commitment to sustainable development
- People's sovereignty & stewardship



What we must do

1. Massive grassroots education campaign on the root causes, consequences and genuine & just solutions to climate change
2. Press our governments to come up with comprehensive plans to transform our economies away from dependence on fossil fuels to renewables
3. Oppose market-based, false solutions that merely abet profit-oriented production & trade and detracts from fundamental social & economic transformations



What we must do

4. Demand shift of public resources away from military spending, debt payments and fossil fuel subsidies towards essential social services and adaptation support for vulnerable communities
5. Demand drastic legally binding reductions in GHG emissions according to the principle of CDR&RC
6. Demand liability payments/compensation from those principally responsible for destroying the climate and ecology, and violating human rights



Maraming salamat!

