

The rapidly emerging crisis on our doorstep

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Dr Robert Glasser

Australia urgently needs to build the capability in Defence and other key agencies to recognise the strategic impacts of climate change and to position those organisations to respond. This is a rapidly changing field. Approaches that might have sufficed a decade ago will no longer meet the scale of problems likely to unfold in our region. Building on the policy suggestions contained in the report of the Royal Commission into National Natural Disaster Arrangements, now is the time to make sure Australia has the capacity to lead regional responses to the many natural disasters emerging from a warming climate.¹

One of the main outcomes from the recent historic first summit meeting of the leaders of the countries in the Quadrilateral Security Dialogue was the decision to establish a climate working group to strengthen climate actions in the region and elsewhere.² The Quad countries clearly have different approaches and priorities relating to climate, but their commitment to work together in this area is a welcome development. There's a growing realisation both in Australia and in our Quad partner countries that climate change will have an increasingly serious impact on regional security.



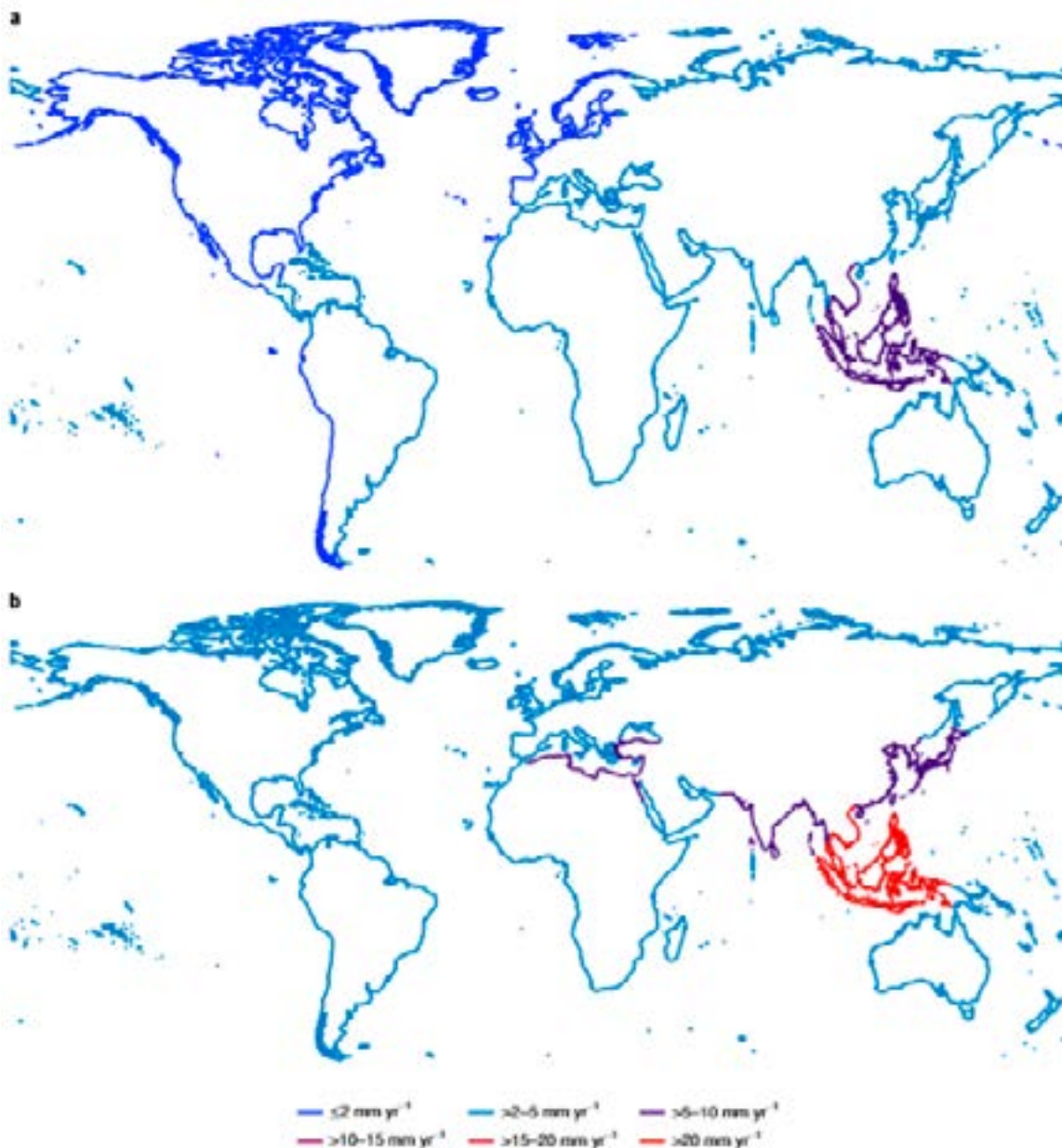
Flooding caused by Typhoon Ketsana, Cainta, the Philippines, 27 September 2009. Photo: EPA/Francis R. Malasig.

Maritime Southeast Asia (MSEA) is exceptionally affected by the hazards that climate change is amplifying. Those hazards will not only exacerbate the traditional regional security threats that currently dominate military and foreign policy planning in Canberra, such as the rise of China, terrorism and separatist movements, but also lead to new threats and the prospect of multiple, simultaneous crises, including food insecurity, population displacement and humanitarian disasters that will greatly test our national capacities, commitments and resilience. So these hazards have serious implications for regional economic development, political stability and security.

It isn't surprising that this emerging threat on our northern doorstep has been largely overlooked. Most analyses of climate impacts treat climate hazards as independent variables rather than considering the wider context in which they interact with each other and with human systems.³ For example, a study of the impact that rising temperatures will have on agricultural productivity will overlook the compounding impacts of other hazards (flooding, drought, fires, increases of pests, saltwater inundation, cyclones, migrations of people, and so on), which will be occurring simultaneously.

MSEA faces a dangerous constellation of simultaneous climate hazards. Sea-level there is rising four times faster than the global average, driven by climate change and other factors, such as groundwater extraction.⁴ MSEA has the world's highest average sea-level rise per kilometre of coastline and the largest coastal population affected by it (Figure 1). Indonesia is the world's fourth most populous country, and 60% of its population (165 million people) is in coastal areas. The same is true for over half of the Philippines' municipalities and 10 of its largest cities.

Figure 1: Average relative sea-level rise rate for 23 coastal regions; (a) length weighted and (b) population weighted



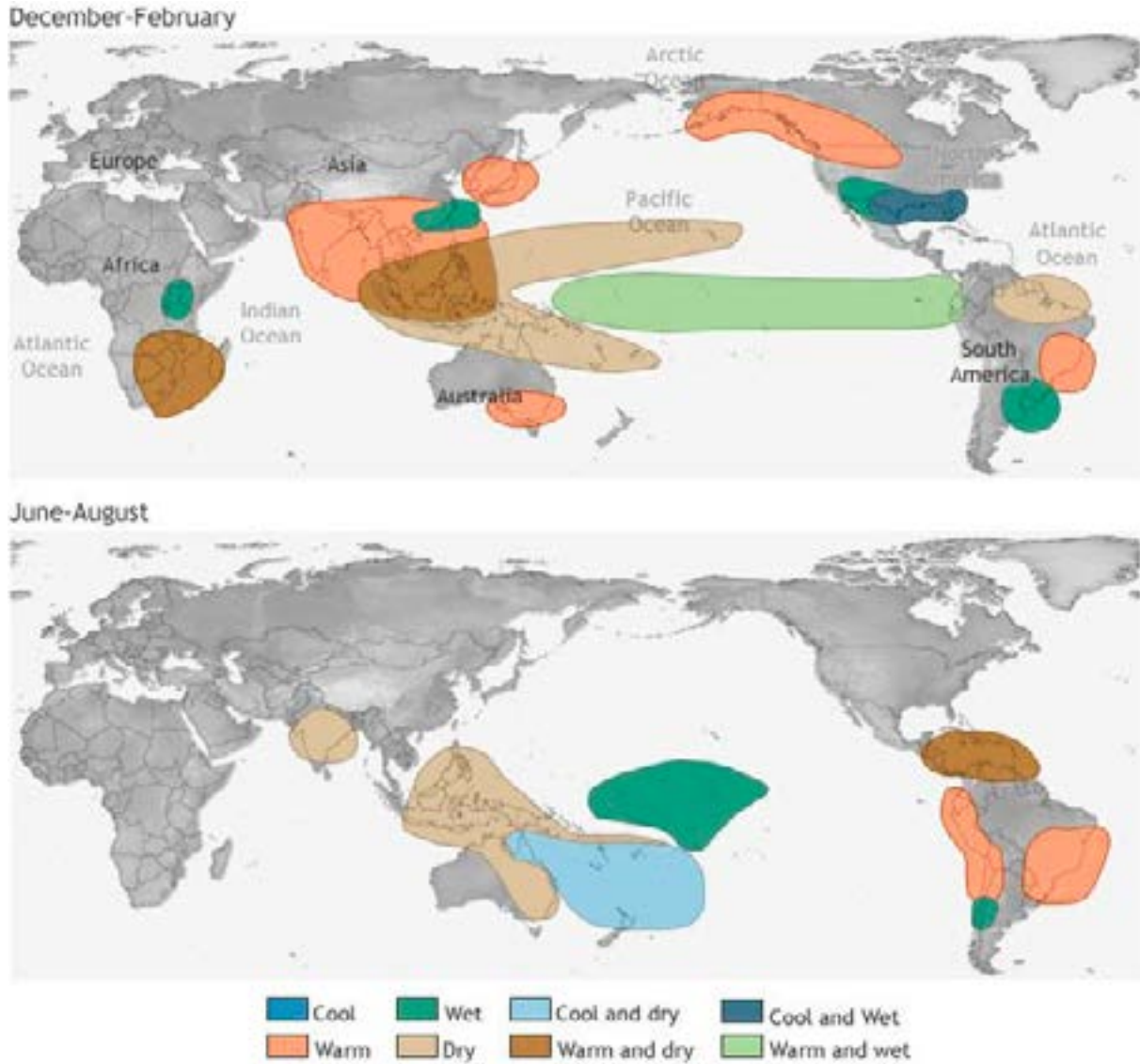
Source: RJ Nicholls, D Lincke, J Hinkel et al., 'A global analysis of subsidence, relative sea-level change and coastal flood exposure', *Nature Climate Change*, 2021, [online](#).

The impacts are already severe (the Indonesian Government recently announced that it's planning to relocate its capital from Jakarta to escape rising floodwaters), but the acceleration of the risk is astounding. In only a matter of decades, what has historically been a 1-in-100-year extreme flood will become an *annual* event across much of the region.⁵ MSEA is also a hotspot for cyclones,⁶ which strike the Philippines more often than any other country.⁷ The warming climate is making cyclones more powerful and, together with sea-level rise, is rapidly amplifying storm surges and flooding.

MSEA's location, between the Pacific and Indian oceans, uniquely exposes it to the naturally occurring ENSO (El Niño – Southern Oscillation) weather pattern, which swings between La Niña and El Niño events (Figures 2 and 3).⁸ ENSO is globally the most significant cause of extreme weather. It has major impacts on food security, the availability of water, and disease.

The region generally experiences extreme heat and dryness during El Niño and extreme rainfall during La Niña. In 2015, for example, an El Niño contributed to drought, food insecurity and record fires in Indonesia. The fires burned 2.6 million hectares (an area four and half times the size of Bali). Tens of millions of Indonesians suffered health effects, and the cost to the Indonesian economy from the fires alone was over US\$16 billion.⁹

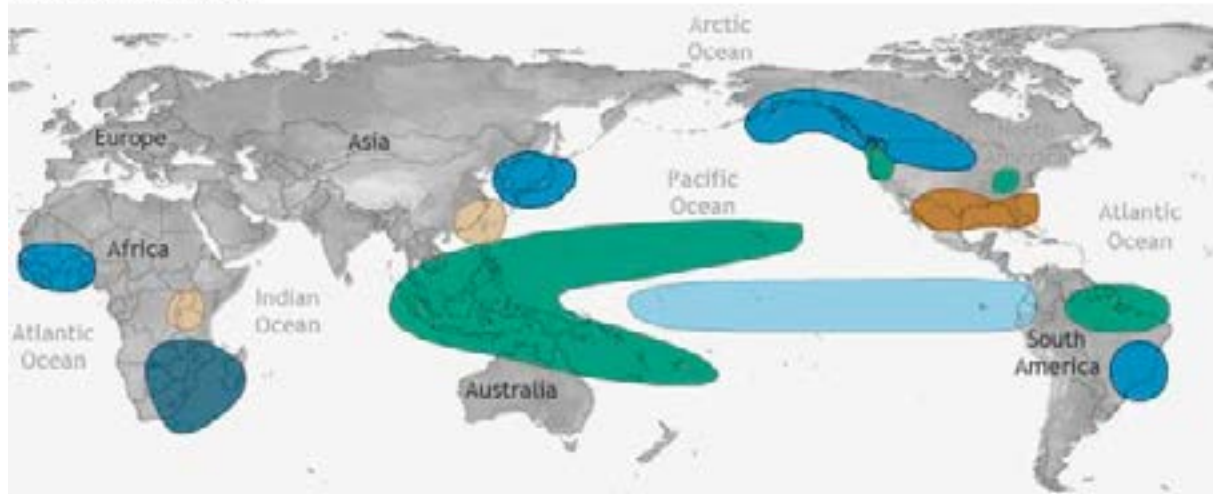
Figure 2: El Niño climate impacts



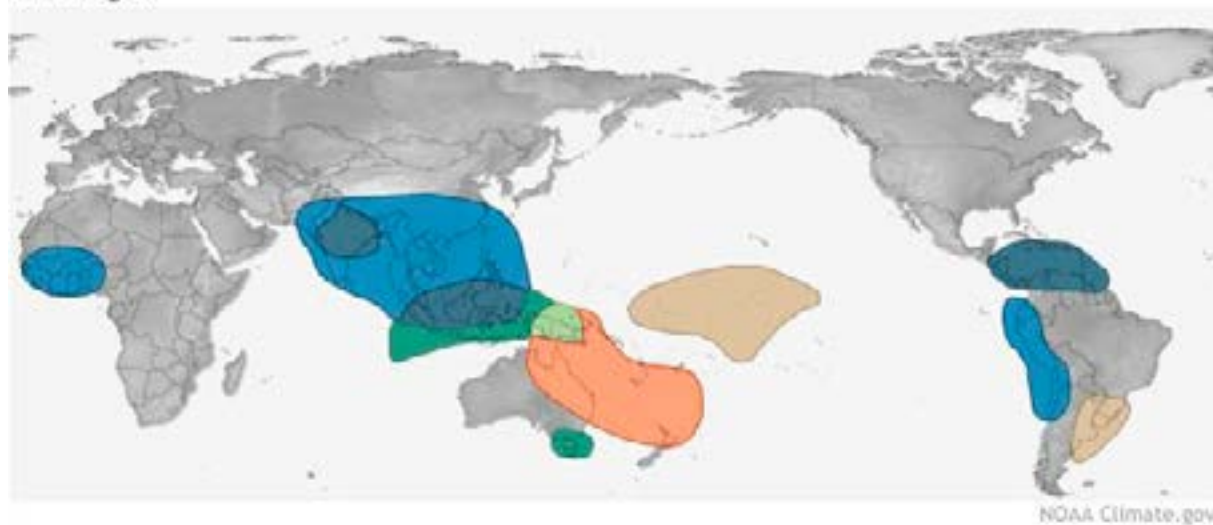
Source: Rebecca Lindsey, *Global impacts of El Niño and La Niña*, National Oceanic and Atmospheric Administration (NOAA), Maryland, 9 February 2016, [online](#).

Figure 3: La Niña climate impacts

December-February



June-August



NOAA Climate.gov

Source: NOAA, 'La Nina climate impacts', no date, [online](#).

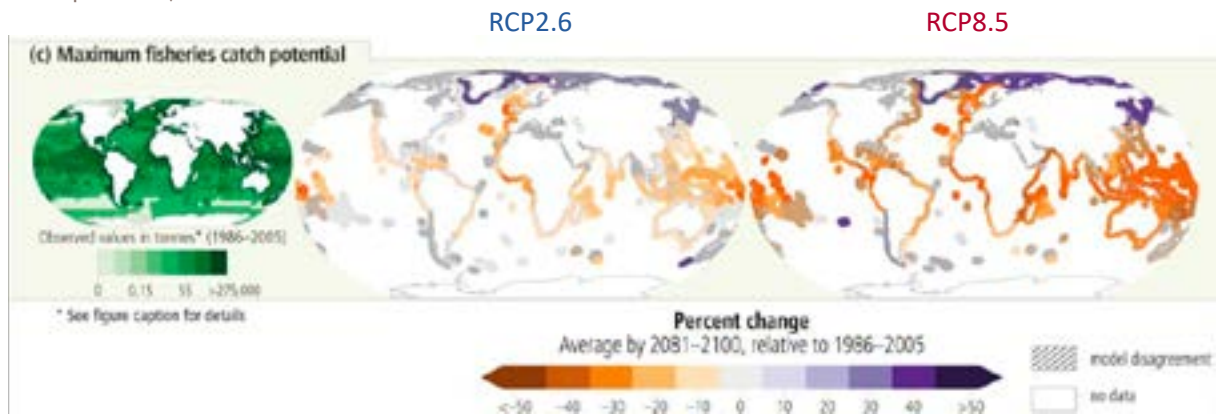
The frequency of El Niño events is expected to double under 1.5°C of warming—a level that could be reached within a decade¹⁰—and both El Niños and La Niñas are likely to intensify. Consequently, the region will not only experience more severe extremes, but also more frequent swings from extreme heat and drought to severe floods. The diminishing time for recovery in between such events will have major consequences for food security and resilience.

Crop yields will be reduced by rising temperatures, changes in rainfall, the expansion of the reach of crop pests and shifts in predators that keep crop pests in check.¹¹ The number and duration of heatwaves are increasing, disproportionately affecting MSEA, where hundreds of millions of people are already exposed to extreme heat, including in the agriculture sector. Recent analysis suggests that globally Malaysia, Indonesia, and the Philippines are among the most at risk to the heat-related loss of labour capacity.¹²

Scientists have determined that by 2040, at 2°C of warming, Southeast Asia’s per capita crop production may decline by one-third.¹³ Climate impacts occurring outside of the region will further diminish the options available to countries to offset the domestic effects, such as by importing additional food, as Indonesia did on an unprecedented scale during its severe drought in 1998.¹⁴

Amplifying the food insecurity risks is the region’s reliance on fisheries (Figure 4).¹⁵ Indonesia obtains more than half of its animal-source protein from fish, while in the Philippines the figure is about 40%.¹⁶ Fish species are already moving out of the region to escape warming waters, and the region’s coral reefs, the ‘nursery’ for roughly 10% of the world’s fish supply, are degrading rapidly; globally, over 90% of reefs will have collapsed at 1.5°C of warming.¹⁷

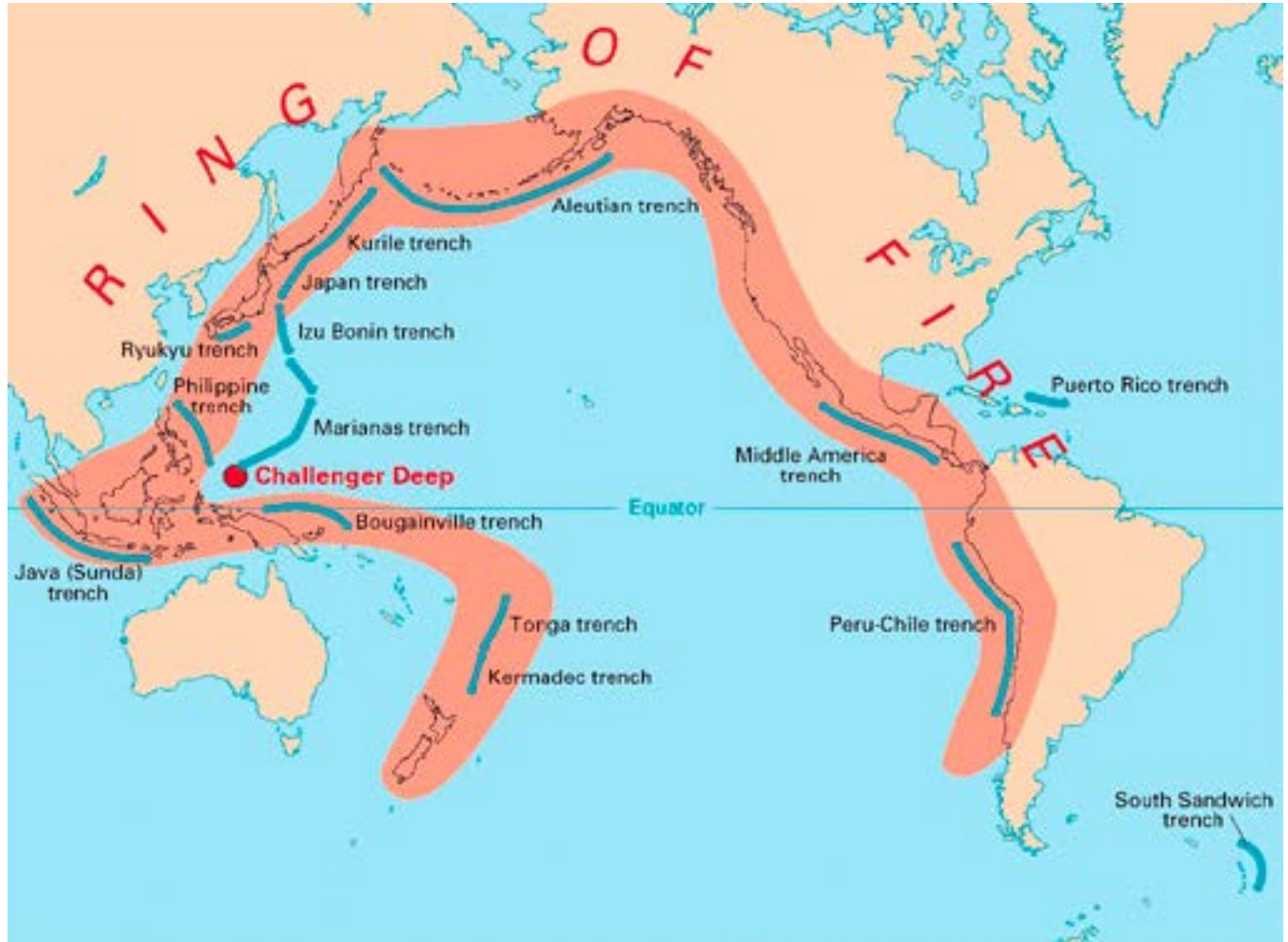
Figure 4: Projected changes, impacts and risks for ocean ecosystems as a result of climate change (maximum fisheries catch potential)



Source: H-O Pörtner, DC Roberts, V Masson-Delmotte et al. (eds), *IPCC special report on the ocean and cryosphere in a changing climate*, Intergovernmental Panel of Climate Change (IPCC), Geneva, 2019, [online](#).

The impact of climate-related hazards will be compounded by simultaneously occurring geological hazards. MSEA is within the ‘Ring of Fire’, which is the world’s most seismically and volcanically active zone (Figure 5). Indonesia and the Philippines together account for 77% of the total global threat from volcanoes.¹⁸ Indonesia has the largest number of active volcanoes and at least one significant eruption every year.¹⁹ Some of the deadliest geological disasters in recorded history have struck the region, including the 2004 Boxing Day earthquake and tsunami, which killed more than 160,000 Indonesians.

Figure 5: Ring of Fire



Source: US Geological Survey, no date, [online](#).

Climate hazards will also directly magnify the impacts of some geological hazards. Coral reefs in the ‘Coral Triangle’ of Indonesia, Malaysia, Timor-Leste, the Philippines, Papua New Guinea and Solomon Islands are singular natural barriers not only to cyclones, but also to tsunamis triggered by earthquakes.²⁰ The reefs reduce the wave energy from extreme events by an average of 97%.²¹ With the collapse of the reefs, the impact of those hazards on densely populated coastlines will grow significantly.

Any one of the increasing risks would be serious cause for concern for Australian policymakers, but the combination of them, emerging nearly simultaneously, suggests that we’re on the cusp of an unprecedented and rapidly advancing regional crisis.²²

Climate ‘tipping points’ are thresholds in the climate system that, once exceeded, trigger cascading climate impacts, such as the sudden release of massive amounts of methane gas from thawing arctic permafrost, which would greatly accelerate climate warming. But the resilience of countries also has tipping points, particularly in regions, such as MSEA, that are highly exposed and vulnerable to climate hazards. The hazards in these climate ‘hotspots’ trigger cascading societal impacts that can overwhelm existing coping mechanisms.

Australia urgently needs to begin thinking about political, economic and security tipping points generated by climate change. The countries of the region have made enormous economic progress in recent decades, with the Indonesian economy projected to become the 4th largest in the world by 2050.²³ But there remain significant vulnerabilities that will become sources of instability as

the climate continues to warm, particularly in Indonesia and the Philippines, where about a quarter of the countries' populations live on less than US\$3.20 per day.²⁴ Those two countries account for 90% of the people living below the poverty line in Southeast Asia.²⁵ Much employment is in informal sectors, with no official social safety nets to support large populations displaced by disasters.²⁶ Inequality is increasing,²⁷ and ethnic and religious tensions²⁸ have previously led to major outbreaks of violence.²⁹

We can't wait for the severity of the situation on our northern doorstep to become obvious before we act, as the pace of climate change impacts is rapidly accelerating and many of our responses to those threats require long lead times to identify, plan and implement, particularly as they will require multilateral as well as national responses.

Some government agencies are already moving in the right direction. The Bureau of Meteorology, for example, has now begun supporting key national security agencies to identify the potential impacts of adverse weather and climate on food security, refugee migration and conflict.³⁰

This must become part of a much wider, whole-of-government process involving Defence, Home Affairs, Foreign Affairs and Trade, CSIRO, Health, Agriculture, and other departments and agencies. The objective should be to greatly expand Australia's capacity to understand and identify the most likely paths through which disruptive climate events (individually, concurrently or consecutively) can cause cascading, security-relevant, regional impacts, such as disruptions of critical supply chains, food insecurity, separatist movements, humanitarian disasters, population displacement, opportunistic intervention by outside powers, political instability and conflict.³¹ US President Biden's recently announced whole-of-government approach to climate change demonstrates what can be done when the issue is put at the centre of national security planning.³²

Australia should develop an action plan that identifies priority investments to build the capability within Defence, Foreign Affairs, the intelligence agencies, Home Affairs and other departments to recognise emerging climate impacts and should establish an ongoing process to re-evaluate the evolving strategic equation in the light of regional developments and as our capacities and understanding improve.

With that greater knowledge, we'll also be in a better position to identify opportunities, such as Australian aid interventions, to reduce the risk at critical points in the chain, but also investments that build our capacity for regional stabilisation and humanitarian response missions.

It's becoming increasingly clear that the Australian aid program will need to scale up its efforts to strengthen regional resilience to climate change, particularly in MSEA. Recent compelling analysis suggests that helping less developed countries to adapt to climate change can reduce the likelihood of conflict and forced migration.³³ It will be critical, for both humanitarian and national security reasons, to strengthen climate resilience in pivotal states to our north as well as to increase support for our Pacific island neighbours, for whom climate change is an existential threat.

The emerging regional impacts could also overstretch our operational capacities to act, such as by creating demands on the ADF to simultaneously support disaster relief in Australia and respond to a regional security challenge. The posture, training and capabilities of the ADF will need to change so that it can be part of Australia's response to more frequent, higher impact regional natural disasters. Its capability set will also need to evolve to equip it to operate at greater scale and in places affected by large natural disasters.

Early last year, in the wake of the devastating Black Summer bushfires, Scott Morrison for the first time characterised climate change as a national security risk:

This summer reminded us that our national security is also about our preparedness, responsiveness and resilience to natural disasters and the environment we will live in today, over the next decade and well beyond.³⁴

He said that meeting this challenge will:

have implications for our force structure, for its capability, development, its command, its deployment and the training of our defence forces. So I don't put this forward lightly.

His comments, which concerned climate-related natural disasters *within* Australia, apply equally well to the unfolding situation in our immediate region. Australia's defence strategy has consistently identified maintaining the stability and security of MSEA and the South Pacific as a top strategic objective, second only to denying, deterring and defeating attacks directly on Australia.³⁵ Realising that objective is about to become much harder.

Notes

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Acronyms and abbreviations

ENSO	El Niño – Southern Oscillation
ADF	Australian Defence Force
MSEA	maritime Southeast Asia

About the author

Dr Robert Glasser is head of ASPI's new Climate and Security Policy Centre. He was previously the United Nations Secretary General's Special Representative for Disaster Risk Reduction.

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Tel +61 2 6270 5100

Fax +61 2 6273 9566

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