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The harshest impacts of climate change have been elsewhere so far, but a report published on Monday indicates that Singapore must brace itself for tougher times ahead.

If planet-warming emissions do not come down to net-zero by around 2050, more punishing heatwaves, severe coastal flooding events, and bouts of heavier rain could be on the cards for this island.

“Cities intensify human-caused warming locally, and further urbanisation together with more frequent hot extremes will increase the severity of heatwaves,” noted the Intergovernmental Panel on Climate Change (IPCC) in its summary for policymakers.

Singapore has already experienced warming higher than the global average because of the urban heat island effect - a phenomenon of urban structures trapping heat in the day and releasing it at night.

Local temperatures are 1.8 deg C higher than they were in 1948, data from the National Environment Agency’s Meteorological Service Singapore (MSS) showed. In contrast, global temperatures have warmed by about 1.1 deg C from pre-industrial times, which ended around 1850.

And the Centre for Climate Research Singapore - a unit under the MSS - said the latest report suggests that even higher temperatures will be felt here in the coming decades.

This finding comes amid Singapore’s efforts to make the city cooler, through planting more trees in urban spaces and a pilot programme involving 130 Housing Board blocks in Tampines being coated with heat-reflective paint.

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But Singapore Management University climate scientist Winston Chow, who is an expert on the impacts of climate change on cities, said temperatures above 35 deg C in Singapore would be an uncomfortable experience for many due to the humid environment.

Humidity magnifies thermal discomfort, said Prof Chow, who contributes to the IPCC reports.

But while humans can adapt to this with air-conditioning and shade, the country's native flora and fauna cannot. "Our trees and animals on land and sea don't have that luxury if there's a prolonged heatwave."

Another worrying indicator of climate change for the island will be the rising tides. As the world warms, ocean waters expand and land ice melts, raising water levels.

Global mean projections in the latest report, of sea levels rising up to about 1m by 2100, do not differ significantly from past IPCC reports. But there was more information about the possibility of extreme sea level events, which have low probability of happening but can be very damaging when they do.

Said the IPCC: "Extreme sea level events that occurred once per century in the recent past are projected to occur at least annually at more than half of all tide gauge locations by 2100." Tide gauges are tools used by scientists to monitor changes in sea level relative to land.

The Centre for Climate Research Singapore said processes such as instabilities in marine ice cliffs - which are sea-facing blocks of ice that act as a "door-stopper" preventing land ice from entering the ocean - could potentially contribute more than one additional metre of sea level rise by the end of the 21st century, adding to the current projected global mean sea level rise.

As for rainfall, the IPCC said that in general, bouts of rain could become more intense and frequent with each additional degree of warming.

South-East Asia would also likely experience this, resulting in flash floods if ground is covered with concrete and if drainage systems are overwhelmed, but more research has to be done to see if Singapore will experience this.

This is because rainfall is highly variable. If Singapore were a bathtub and rain falling over it came from taps feeding into it, climate change would just be one spigot.

Rainfall is also influenced by other factors, including vegetation and the topography of the surrounding areas, since terrain and coastlines influence how winds transport moisture.

"The science around climate change attribution is still evolving, and MSS will continue to study this, along with the impact of climate change on Singapore's weather," said its spokesman.