

Malaysia must prepare for hot and dry weather with impending El Niño

BY TAN ZHAI YUN

At least three expected natural phenomena — the El Niño, the start of the southwest monsoon season and a positive Indian Ocean Dipole (IOD) — are expected to bring hot and dry weather to Malaysia from June to October, potentially resulting in more heatwaves, forest fires, haze, water supply disruptions, droughts and reduced agriculture output.

The bad news does not end there. Coupled with higher average temperatures due to climate change, the effects of these climate conditions could make 2026 even warmer than previous years, according to some scientists. Already, the past 11 years have been the warmest on record, according to the World Meteorological Organization (WMO).

“Our background temperature is already high due to climate change. El Niño could bring extreme temperatures even higher, and 2026 or 2027 could be declared the warmest year to replace 2024, which was also an El Niño year,” says Dr Fredolin Tangang, emeritus professor of climatology and climate change at Universiti Kebangsaan Malaysia.

Many mainstream media have reported on an impending “super El Niño”. However, this is not a scientific term and is merely used to describe the condition when ocean surface temperatures on the eastern Pacific Ocean go 2°C above average.



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These conditions are not confirmed to occur yet.

“Current forecasts from global climate models show a 62% chance of a moderate intensity El Niño occurring from June to August 2026, which will continue to early next year,” Dr Mohd Hisham Mohd Anip, director-general of MetMalaysia tells ESG in an email response.

“Although the status of a ‘super El Niño’ is not yet confirmed, it is important to make early preparations to reduce the impact on the people, economy and sources of water in the country.”

The El Niño conditions are expected to coincide with the start of the annual southwest monsoon season in Malaysia, which results in low rainfall in many parts of the country.

The positive IOD, meanwhile, will prolong the drier-than-normal season into 2027. The IOD is the difference in sea surface temperatures in the west and east of the Indian Ocean. A positive IOD results in less rain in the eastern side of the ocean, including Malaysia.

ADDING FUEL TO THE FIRE

Currently, there is no evidence that climate change increases the frequency or intensity of El Niño events, according to WMO. But it can amplify the associated impacts, because a warmer ocean and atmosphere increases the availability of energy and moisture for extreme weather events, such as heatwaves and rain.

“In simple terms, El Niño is the engine, but climate change adds extra heat to the system ... El Niño normally develops when the central and eastern equatorial Pacific Ocean becomes warmer than usual and the trade winds weaken. Under climate change, the ocean and atmosphere are already warmer, because greenhouse gases have trapped additional heat in the climate system,” says Dr Ricky Anak Kemarau, senior lecturer and research fellow at the Institute of Climate Change at Universiti Kebangsaan Malaysia (UKM).

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Regardless, this matters for Malaysia because El Niño can suppress rainfall over the maritime continent (countries between the Indian and Pacific Oceans, including Malaysia), while climate change raises the baseline temperature.

“When these effects overlap, Malaysia may experience stronger heat stress, faster drying of soil and vegetation, higher water demand, reduced river flow, greater agricultural pressure, and higher haze or fire risk. Even if an El Niño event is only moderate or strong, its impacts can feel more severe because it occurs in a warmer climate system,” says Ricky.

This is not to say that all parts of Malaysia will not receive rain.

“One district may receive heavy rain and flash flooding during short, localised inter-monsoon thunderstorms, while a nearby dam catchment or agricultural area may remain dry. This is why a thunderstorm occurrence does not necessarily mean drought risk is over,” says Ricky.

What matters for water security, explains Ricky, is repeated rainfall over rivers, reservoirs, soil and catchment areas.



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A FOOD, WATER, ENERGY, ENVIRONMENT AND HEALTH RISK

Perhaps more worrying is the stress on Malaysia’s water and food systems. Around 81% of Malaysia’s drinking water comes from rivers, according to the National Water Services Commission (SPAN), 18% from dams and a small percentage from underground reservoirs. With low rainfall, dam storage will decline, and water quality will deteriorate as pollutants become more concentrated.

Haze and hot weather, meanwhile, result in public health risks in the form of respiratory and heat-related illnesses.

In the agriculture sector, rice planting faces the most immediate risk, due to extreme heat sensitivity and water dependency, says Dr Christopher Teh, associate professor at the faculty of agriculture at Universiti Putra Malaysia (UPM).

“More recent field studies suggest that meaningful damage can begin at temperatures as low as 33°C to 34°C — because flowering in rice occurs during a narrow morning window of just one to two hours, even a few hot days at the wrong moment can severely damage yields,” says Teh.

Popular Malaysian varieties, including MR219 and MR220, demonstrate high yields under optimal conditions. However, “under severe experimental drought stress, they have shown extremely large yield reductions, including zero grain yield in some controlled studies,” says Teh.

This is worsened by the fact that Malaysia’s agricultural land is concentrated



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in regions showing the most severe water stress — Kedah, Perlis, Perak and Johor.

“The water conditions in these regions significantly exceed the 80% concern threshold. As at late March 2026, the Muda Dam in Kedah, the country’s most important agricultural reservoir, had plunged to just 7.47% of capacity, well into critical territory, according to SPAN’s classification (below 30%),” says Teh.

“Combined storage across the three main Muda system reservoirs (Muda, Pedu and Ahning) stood at only about 39%, while Timah Tasoh in Perlis registered around 38%.”

In the south, four of Johor’s 11 dams operated at cautionary levels below 70%, he adds, “placing additional stress on agricultural and industrial water demand”.

“SPAN reported that 10 of Malaysia’s 43 dams reached cautionary levels, representing close to one-fourth of the reservoirs,” says Teh.

Meanwhile, oil palm requires roughly 2,000mm to 2,500mm of well-distributed annual rainfall with no extended dry periods. The impact of drought and water stress on oil palm will not appear immediately, he adds, and could only manifest in late 2026 through 2027.

On the other hand, prolonged hot weather followed by sudden rainfall events can trigger toxic algal blooms, which could result in die-offs in coastal cage farms for fish. “Higher sea surface temperatures during El Niño also bleach coral reefs, degrading coastal ecosystems that support inshore fisheries,” says Teh.

This is not the first time Malaysia has gone through a severe El Niño event.

In Teh’s view, the benchmark was set between 1997 and 1998. At the time, crude palm oil production declined, rice planting ceased across northern Malaysia, Selangor experienced scheduled water rationing and Sabah and Sarawak suffered from forest and peatland fires.

“One comprehensive study estimated total economic losses to Malaysia across affected sectors at about RM12.87 billion,” says Teh.

MetMalaysia will continue monitoring the global developments and local conditions, says Mohd Hisham, especially on rainfall patterns, dam levels and indicators for forest fires and droughts.

Like the other interviewees, he suggests that Malaysians and businesses make early preparations, conserve water and watch out for extreme weather alerts.

Businesses, Ricky adds, should identify operations that depend heavily on water, cooling, outdoor labour, agricultural raw materials, transport and clean air.

“Water-intensive sectors should audit water use, recycle water where possible and identify critical processes that must be protected. Employers with outdoor workers should adjust work schedules, provide shaded rest areas, ensure hydration, and follow occupational safety guidance during heat or haze episodes,” says Ricky.

