

Expert: Be prepared for more extreme weather

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There was a time when Malaysians could drive without air-conditioning, storms did not blow off roofs and floods were not as severe as today. A weather expert tells CHOK SUAT LING that climate change is beginning to make its mark in Malaysia.

WHAT'S happening to the weather?

Johor has seen its worst floods ever after the heaviest rainfall in 100 years.

The sun has been at its worst in Kuala Lumpur for weeks while rough seas with waves up to 5.5 metres high have been pounding the east coast.

Assoc Prof Dr Fredolin Tangang @ Tajudin Mahmud says the extreme weather is linked to climate change brought about by global warming.

It is an admission other local experts have so far been reluctant to make.

The weather expert, commissioned by the government earlier this year to study the implications of this phenomenon, said the weather was undergoing a metamorphosis.

Based at Universiti Kebangsaan Malaysia's School of Environmental & Natural Resource Sciences, Tangang hopes to complete a preliminary report for the government by the end of this month.

He warns Malaysians to be prepared for the possibility of more extreme weather.

There is even worse news: There is little that can be done to stop global warming save for reducing greenhouse gases.

He says effective action needed global co-operation, which was often impossible as the most powerful nation, the United States, was one of the worst transgressors of the Kyoto Protocol. (The Kyoto Protocol is an agreement under the United Nations Framework Convention on Climate Change. Countries that ratify this commit to reduce their emissions of carbon dioxide and five greenhouse gases).

What we can do, however, is to be better prepared.

"We have to look at our region and see how climate change affects us and come up with a strategy or policy to best position ourselves in the future. We can, for instance, determine how to optimise our natural resources and agricultural production in the light of this climate change."

But a strategy like that needs an in-depth understanding of "hard science". "There are no shortcuts other than research. We need to understand how the atmosphere and oceans react to global warming."

There has been much research internationally on what causes global warming and its impact.

Tangang explains that heat absorbed by the Earth's surface from the sun is radiated back to outer space through certain "windows".

"The size of these windows is pretty much controlled by anthropogenic



The weather is undergoing a metamorphosis which has led to several states experiencing floods.

greenhouse gases. The more gases there are, the more narrow these windows.

"In the earlier days, what comes in and goes out was balanced, but now the heat coming in is being accumulated as there has been an increase in greenhouse gases over the last 100 years."

When heat cannot escape, he says it will be redistributed in many ways and "extreme events" — more severe and frequent storms, typhoons and drought, and an intensification of the effects of the naturally-occurring El Nino phenomenon — could be a manifestation of this.

"Much of the heat absorbed by the Earth is stored in the ocean and the excess heat alters the way the ocean interacts with the atmosphere. Warmer oceans due to global warming could result in extreme events like Hurricane Katrina and the recent floods.

"Earth is like a human being. When temperatures go up, it does not feel well and will react in ways we are not used to."

What contributes to increased levels of greenhouse gases?

While some greenhouse gases occur naturally in the atmosphere, others result from human activities like the burning of fossil fuels, deforestation, and the use of chlorofluorocarbons in refrigeration systems and manufacturing processes.

"In the longer term, people need to cut down the emission of greenhouse gases."

Research by international experts



Weather expert Associate Prof Dr Fredolin Tangang (right) and fellow lecturer Dr Liew Juneng with a MMS weather simulator.

has uncovered many facts and figures but more important, he says, is "what we do for Malaysia and the region". In this regard, there is a need for capacity building.

"We require a pool of experts. My concern is that we are very behind scientifically in this issue. The US, for example, is very advanced in climate-related matters. Malaysians are also not very aware of global warming and climate change."

But he has started the ball rolling. On returning to Malaysia after his PhD from the University of British Columbia in 1997, he started to train a group of undergraduate and post-graduate students in ocean and climate studies at UKM.

This team of 15 is the only group in a local public university doing research on oceans and the climate.

"I started off as a small dot in 1997, and now the dot has expanded. A student of mine, Dr Liew Juneng, completed his PhD last year. He is now lecturing in the same school and assisting me in supervising the students. This is capacity building.

"When I returned after my PhD,

Malaysia was experiencing the El Nino effect. At that time, people did not know what El Nino was and there was a scramble for answers. Now, there is more awareness but we still lack expertise in this area."

Some of his postgraduate students are researching how extreme weather and ocean circulation characteristics will and are affecting the east coast of the peninsula, Sabah and Sarawak.

"We write scientific papers and highlight our findings to the relevant agencies on how the climate works and why extreme events occur."

He was presented the START Young Scientist award in 2002 for a paper he published in the *International Journal of Climatology*. He was the recipient of UKM's best publication award for science, technology and medicine last year.

He says: "We hope to establish a centre that deals with meteorology, climatology and oceanography. This area is still in its infancy but I think we are moving in the right direction."

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