Rising sea levels
New study offers insight into future impact

S’pore study on sea-level rise offers ‘strategic insight’

Data can lead to more robust and accurate local projection of rising waters: NTU team

Audrey Tan
Environment Correspondent

About 10,000 years ago, sea levels in Singapore were at least 10m lower than today. But with the ice age coming to an end, melting land ice fuelled the oceans and sea levels rose over the next few millennia.

Eventually, rising waters flooded and killed a mangrove forest along Singapore’s southern coast, according to a new study by climate scientists at the Nanyang Technological University (NTU).

Their findings were published last week in the scientific journal The Holocene.

They offer insight into how rising sea levels today could impact the city in the years to come – especially with the accelerating rate of sea-level rise due to human activity.

Researchers found that from 10,000 to 5,000 years ago, sea levels were rising at rates as high as 10mm to 15mm a year.

Data for the subsequent two millennia is patchy and NTU researchers are looking to fill the gaps. But preliminary data indicates that sea levels reached about 30,000 years ago and remained relatively constant until the start of the Industrial Revolution in the 19th century.

In the 20th century, a warming planet due to human emissions caused sea levels to rise 1mm to 2mm a year as water expands when heated.

Today, the rate is between 2mm and 4mm; thermal expansion is still happening but land ice is also melting faster.

Scientists say sea levels will only rise faster, as mankind continues to burn fossil fuels and clear forests, allowing carbon dioxide trapping gases into the atmosphere.

They lead author Stephen Chua, who did the research as part of his doctoral work at NTU’s Earth Observatory of Singapore and the Asian School of the Environment, said understanding how sea levels have changed in Singapore could lead to more robust and accurate local projections of sea-level rise.

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Professor Philip Gibbard, a geologist from the Potsdam Institute for Climate Impact Research at the University of Cambridge, who was not involved in the study, said the findings help put the rise in the past few millennia into perspective.

He said the rise in sea levels from ice sheets was important, as the processes driving sea-level changes in such areas would be different from the processes nearer to the poles.

"This important contribution from Singapore and the region provides a valuable record... This record can then be further refined as more studies become available," he said.

audrey@shc.com.sg