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New reference stations to better track changes in land height, sea levels

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To better monitor changes to Singapore's land height and sea levels, up to four new coastal global navigation satellite system (GNSS) reference stations will be installed across the island for data collection.

This move comes under a new four-year partnership signed on Monday between the Singapore Land Authority (SLA) and the Nanyang Technological University's (NTU) Earth Observatory of Singapore.

The additional stations are expected to contribute to and strengthen the existing network of nine reference stations across the island managed by the SLA.

They are part of the SLA's Singapore Satellite Positioning Reference Network, a national infrastructure for precise positioning

mapping and navigation.

Established in 2008, the NTU observatory researches earthquakes, volcanic eruptions, tsunamis and climate change events around South-east Asia.

The agreement allows the observatory to access more than a decade of archived historical GNSS data.

Dr Feng Lujia, 40, a principal research fellow at the observatory, told The Straits Times the past data can help efforts to better anticipate how possible future events, such as a big regional earthquake, could change land heights in Singapore.

Dr Victor Khoo, 52, director of the survey and geomatics division at SLA, said signals received by ground reference stations can be processed to help researchers measure land heights and sea level changes at several locations around Singapore.

The observatory also hopes to utilise and compare water vapour

data collected by the GNSS and local meteorological services to study rainfall and possible flooding patterns.

The research is expected to contribute to the Singapore National Sea Level Programme, which is meant to aid in national projections of future sea levels.

Better precision in data collection can also be achieved, said the researchers. The GNSS can continuously collect data to measure yearly changes in terrain heights, down to the millimetre.

Dr Khoo said: "We hope to adopt geospatial technology and infrastructure to provide efficient and accurate long-term data collection and solutions to support the sustainable development of Singapore."

"This will aid in coastal protection and mitigate the impact of sea level rise."

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One of the Singapore Satellite Positioning Reference Network stations. Up to four new coastal global navigation satellite system reference stations will be installed across the island for data collection. PHOTO: SINGAPORE LAND AUTHORITY