

350-YEAR RECORD OF SOUTH PACIFIC SEA TEMPERATURES RECONSTRUCTED



⌚ The research team led by Prof. Chuan-chou Shen of the Department of Geosciences and Prof. Kristine DeLong of Louisiana State University pose for a group photo.

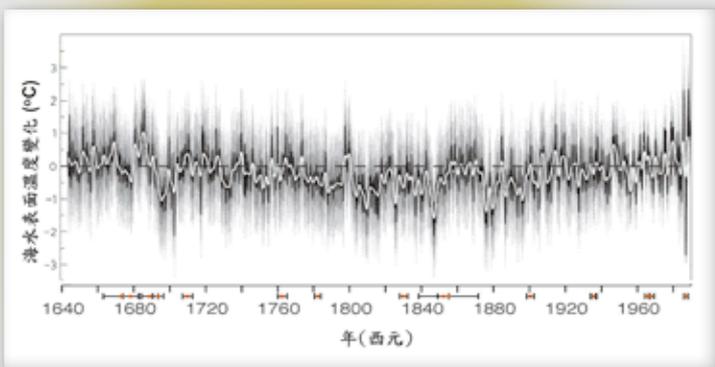
A research team led by Prof. Chuan-chou Shen of NTU's Department of Geosciences and Prof. Kristine DeLong of Louisiana State University published its latest findings regarding climate change in the South Pacific Ocean over the last 350 years in the June 24 issue of journal *Nature Climate Change*. Utilizing a unique, cutting-edge "natural thermometer" developed in Prof. Shen's lab, the investigators for the first time accurately reconstructed a record of sea surface temperatures in the Southern Hemisphere from 1649 to 1999. The team further discovered a striking correlation between rainfall in Taiwan and sea temperatures in the South Pacific Ocean.

To look back in time, the team extracted five core samples from coral reefs off the coast of Amédée Island, New Caledonia. They then spent seven years applying a uranium-thorium dating method and analyzing strontium and calcium ratios in the coral samples. Strontium/calcium ratios in coral can be used to serve as a natural thermometer because for every one-degree Celsius rise in seawater temperature there will be a corresponding 0.8%

decrease in the strontium/calcium ratio of living coral.

Looking at the team's three-and-a-half century reconstruction, we can see a steady rise in sea surface temperatures beginning in 1890 that is a reflection of global warming. Their record reveals that the sea surface temperature has already climbed one-degree Celsius since 1890.

📍 Divers from the joint NTU-Louisiana State University team extract five core samples from coral reefs off the coast of Amédée Island, New Caledonia, in the South Pacific.



The big news for Taiwan is that both the coral and modern data show a close relationship between summer rainfall volumes in Taiwan and South Pacific Sea surface temperatures. If the team's climate model is accurate, we are entering a decade of higher temperatures in the South Pacific. Coupled with the effects of global warming, this rise in temperature is highly likely to lead to an increase in both the intensity and frequency of summer rainstorms in Taiwan and coastal East Asia.