

# COLD ANOMALIES IN RECENT AND HOLOCENE SEA SURFACE TEMPERATURE DERIVED FROM CORALS RECORDS IN THE SOUTH WEST-PACIFIC

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Corals have been shown to be reliable indicators of past sea surface temperature (SST). The chemical composition of their aragonitic skeleton (trace elements such as Sr/Ca, or stable isotopes such as  $\delta^{18}O$ ) allows the quantification of seawater temperature with a precision better than 1°C and a monthly or sometimes weekly resolution.

Recent data on past SST derived from corals indicate that during the last glacial maximum, 20 000 years ago, the tropical ocean was cooler by 5 to 6°C. In Vanuatu, 10 000 years ago, SST were 6.5°C cooler than the present mean of 27.5°C. In the following 1500 years, SST rose abruptly by 4°C. We also know that SST was similar to present some 4200 years ago. This record from Vanuatu appears to be offset when compared to a SST record from Barbados, in the tropical North Atlantic. There, the deglacial warming of surface water which amounts to 6°C started some 14 000 years ago.

In Vanuatu, the SST reconstruction over several years dated around 4166 ±15 BP indicate an intriguing 4°C cold spell which probably only lasted for a year. What exactly caused this pronounced cold episode is not known, but it could be linked to ENSO like climatic fluctuations. However, during the last 40 years of instrumental records, the temperature anomaly linked to ENSO around Vanuatu never reached 4°C. Much more extreme ENSO situations would have to be invoked to explain such a large SST drop.

It is therefore crucial to better document the amplitude and frequency of regional climatic instability in the Pacific Ocean over the last 6000 years, which is a period considered to be globally stable and similar to the present day.

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## ABSTRACTS

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