



Supplement of

Penultimate glacial sea surface temperature and hydrologic variability in the tropical South Pacific from 150 ka Tahiti corals

Ryuji Asami et al.

Correspondence to: Ryuji Asami (ryuji.asami.b5@tohoku.ac.jp)

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Table S1 Results of X-ray diffraction (XRD) analysis and scanning electron microscopy (SEM) observation on fossil corals. Subsamples with numbers are investigated for diagenesis screening, which correspond to skeletal portions with numbers in Figs. 3 and S1.

Sample ID	Subsample for diagenesis test*	XRD		SEM
		Aragonite (%)	Calcite (%)	Secondary aragonite cement
Exp.310-9B-17R-1 (44-53 cm)	①	100.0	0.0	none
	②	100.0	0.0	<i>partially distributed</i>
	③	89.6	10.4	-
	④	80.5	19.5	-
	⑤	71.3	28.7	-
Exp.310-9D-25R-1 (65-75 cm)	①	100.0	0.0	none
	②	100.0	0.0	none
	③	100.0	0.0	none
	④	100.0	0.0	none
	⑤	100.0	0.0	none
	⑥	100.0	0.0	none
	⑦	100.0	0.0	none
	⑧	100.0	0.0	none
	⑨	95.3	4.7	<i>partially distributed</i>
Exp.310-9D-25R-2 (43-51 cm)	①	100.0	0.0	none
	②	100.0	0.0	none
	③	100.0	0.0	none
Exp.310-9D-25R-2 (51-57 cm)	①	100.0	0.0	none
	②	100.0	0.0	none
	③	100.0	0.0	none
	④	100.0	0.0	none
	⑤	100.0	0.0	<i>partially distributed</i>

*The subsample number corresponds to that in Figure DR2.

Table S2 Differences in SST and its seasonality estimates attributable to differences in sampling resolution during winter and summer (so-called averaging effects).

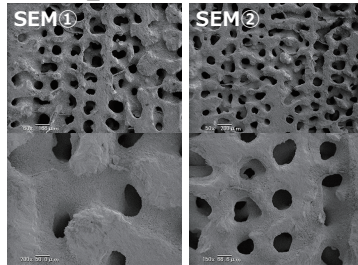
OISST v2.1 for 1982-2022*	Monthly data (°C, $\pm 1SD$)	Bimonthly data (°C, $\pm 1SD$) [†]	Offset (°C, $\pm 1SD$) [§]
Annual maximum (summer)	28.95 $\pm$ 0.38	28.86 $\pm$ 0.39	-0.09 $\pm$ 0.06
Annual minimum (winter)	26.28 $\pm$ 0.33	26.36 $\pm$ 0.29	+0.08 $\pm$ 0.07
Seasonality	2.67 $\pm$ 0.45	2.49 $\pm$ 0.41	-0.18 $\pm$ 0.09

*Data from the monthly OISST v2.1 time series (Huang et al., 2021)

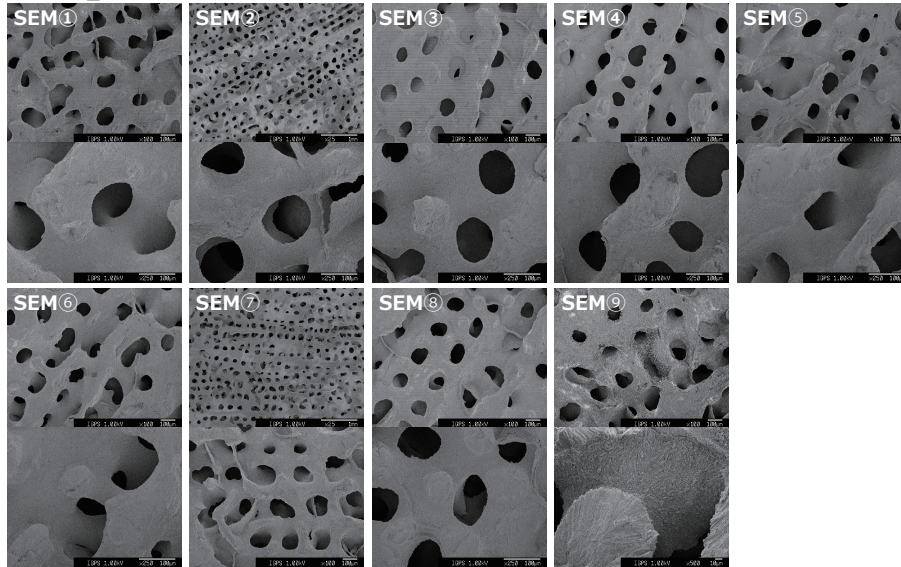
[†]Bimonthly maximum and minimum data were estimated as the 2-month average of monthly 1st and 2nd highest SSTs and of monthly 1st and 2nd lowest SSTs for each year, respectively.

[§]The offsets were estimated as differences between monthly and bimonthly values.

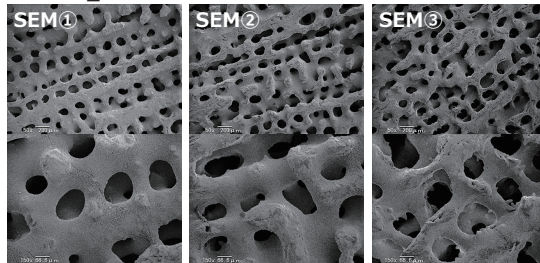
9B17R1_44-53cm



9D25R1_65-75cm



9D25R2_43-51cm



9D25R2_51-57cm

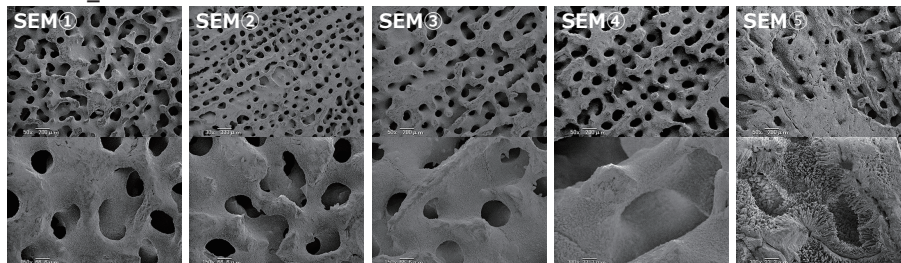


Figure S1. SEM images of coral skeleton from sample 310-9B-17R-1, 310-9D-25R-1, and 310-9D-25R-2. Numbers correspond to those of skeletal portions shown in Fig. 3.