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Supplementary Information for

Holocene Coastal Evolution Preceded the Expansion of Paddy Field Rice Farming

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This PDF file includes:

Other supplementary materials for this manuscript include the following:

Dataset S1

www.pnas.org/cgi/doi/10.1073/pnas.1919217117

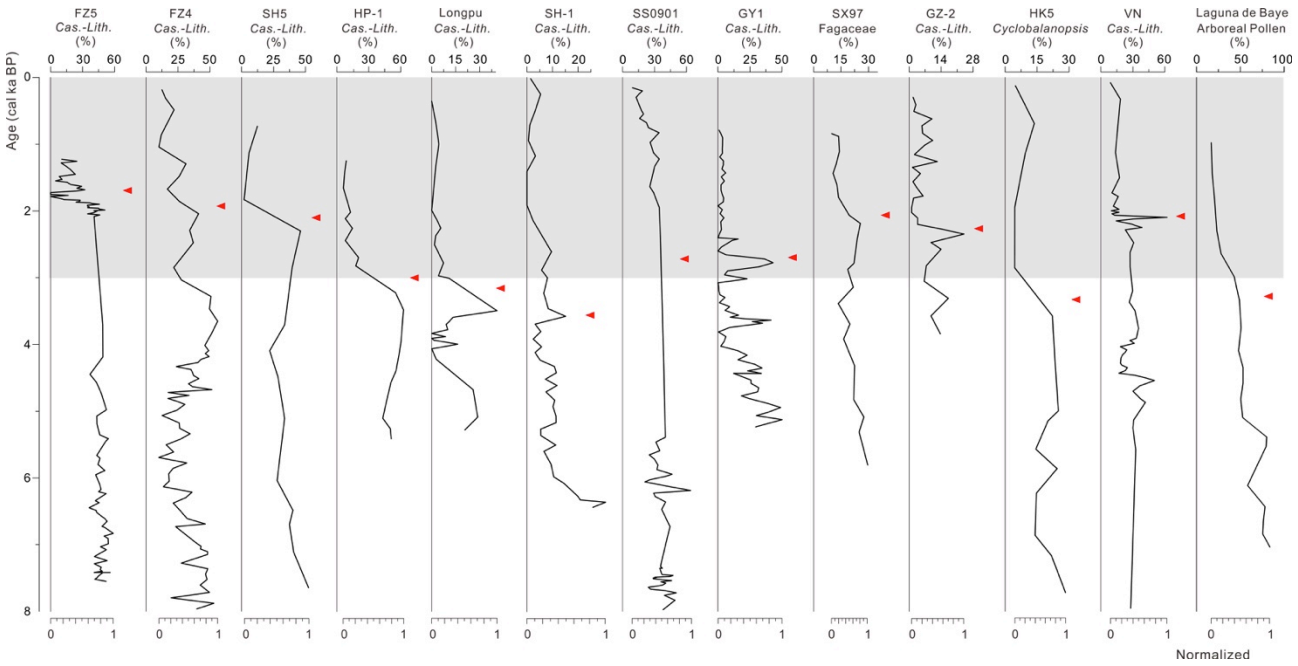

Fig. S1.
Time series of pollen data for major tree taxa. Sediment core locations are listed in Table S1. Gray band highlights the time period after 3 ka. *Cas.* - *Lith.*, *Castanopsis* - *Lithocarpus*. Red arrows indicate the start of notable declines in the frequency of tree pollen. For each record, the percentage of major tree taxa was normalized independently to values between 0 and 1; the transition to data consistently lower than 0.5 is marked by the red arrows.

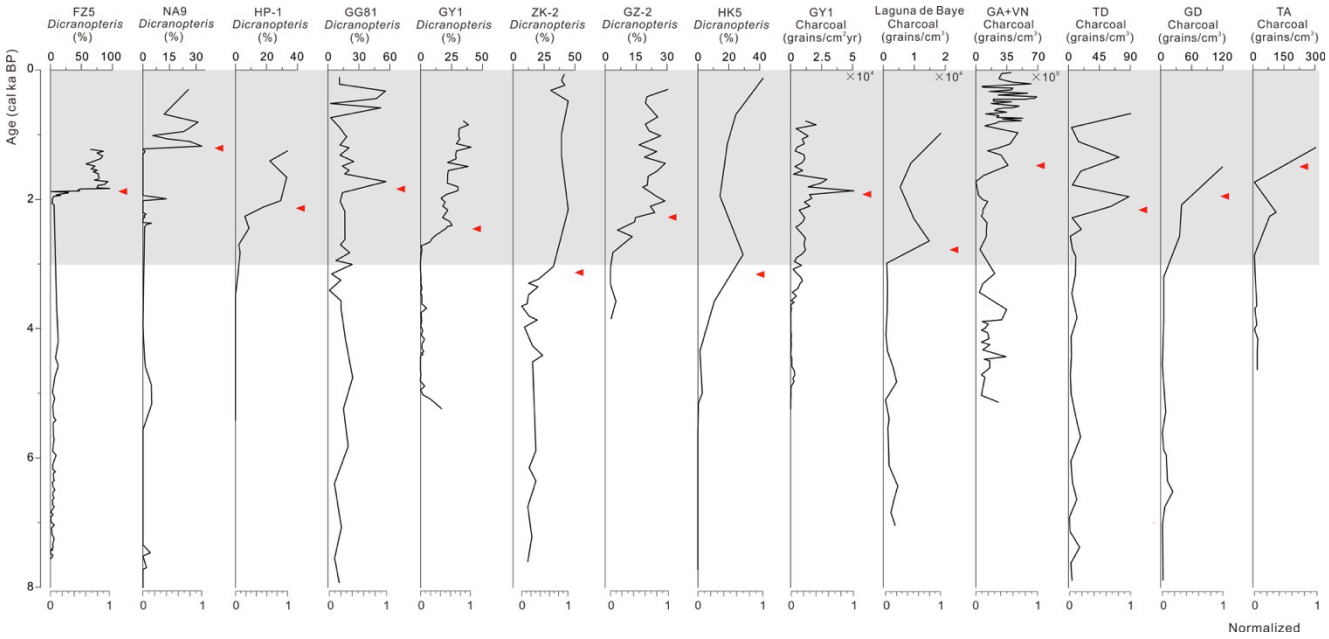

Fig. S2.

Time series of *Dicranopteri*s spore relative frequencies and charcoal particle concentrations. Sediment core locations are listed in Table S1. Gray band highlights the time period after 3 ka. Red arrows indicate the start of notable increases in the frequency of *Dicranopteri*s and charcoal particles. For each record, the percentage of *Dicranopteri*s or the concentration of charcoal particles was normalized independently to values between 0 and 1; the transition to data higher than 0.5 is marked by the red arrows.

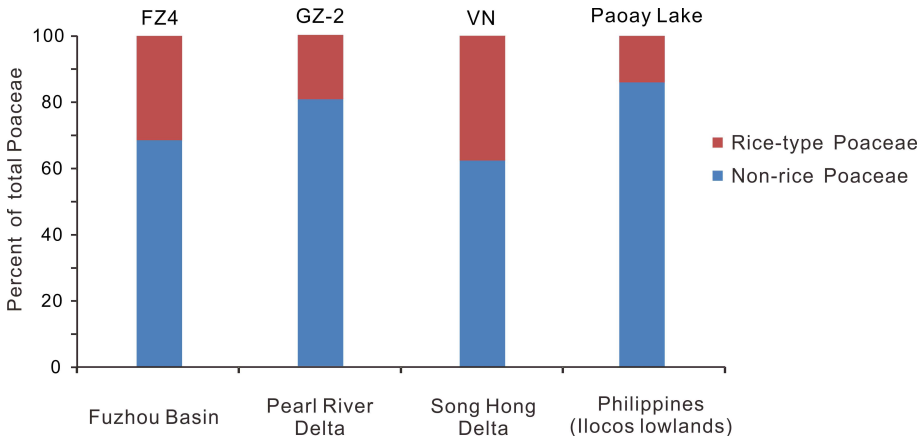

Fig. S3.
Rice-type Poaceae pollen quantified as a proportion of all Poaceae pollen for representative records from the Fuzhou Basin (China), the Pearl River Delta (China), the Song Hong Delta (Vietnam) and the Paoay Lake (Luzon, Philippines). Data is for the 2.5 - 2 ka time interval. See Fig. 2 for data showing total Poaceae pollen counts, for the broader time interval from 8 ka until recent centuries.

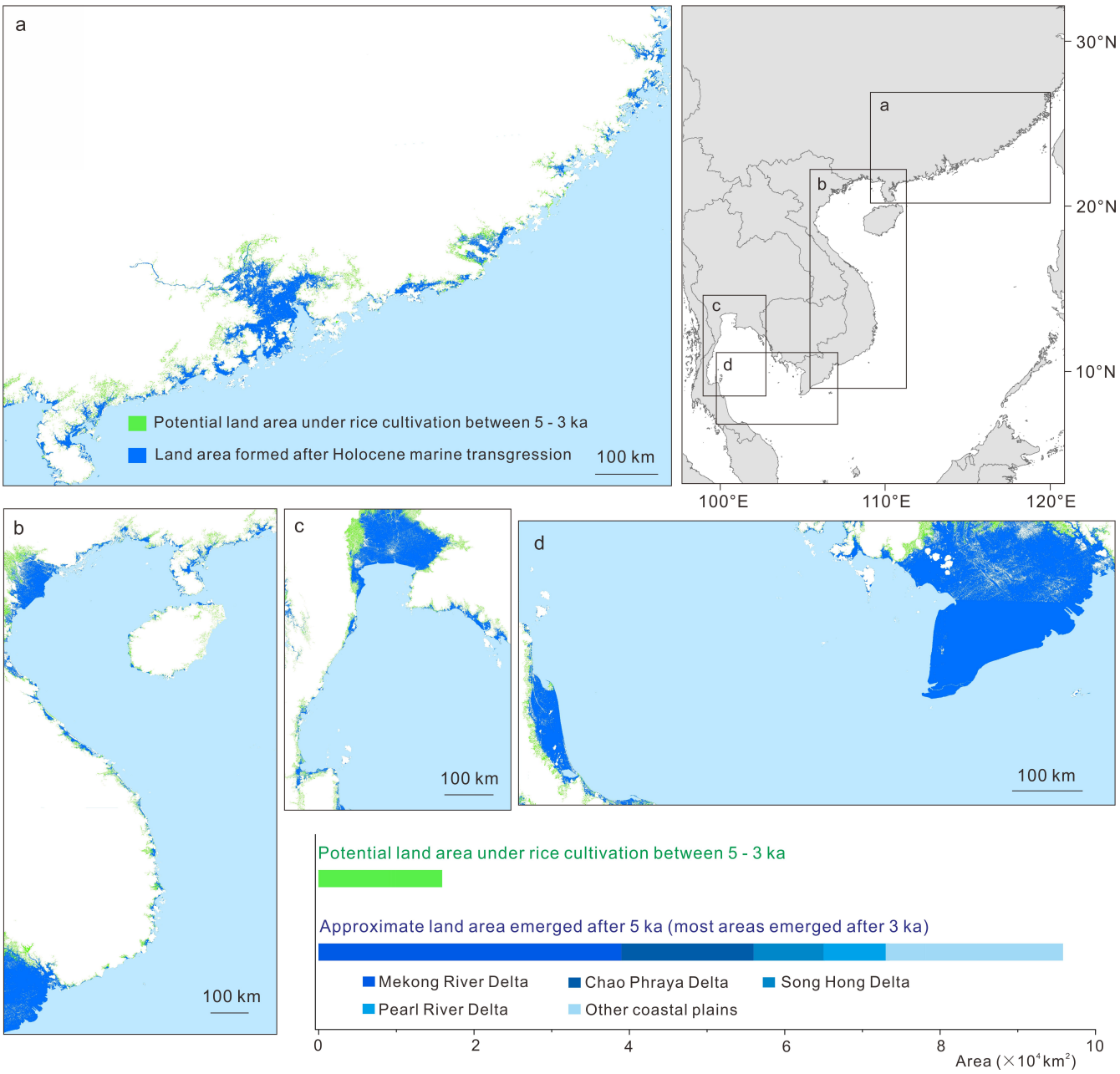

Fig. S4.
Estimation of the approximate area of low-lying freshwater flatlands suitable for wet rice cultivation in coastal areas (~200 km from the current coastline) in South China (including Fujian, Guangdong, Guangxi Province), Vietnam and Thailand. Maps show the location and geographic extent of low-lying freshwater flatlands, estimated at two periods in time: ~5 - 3 ka and the present. The green areas show the approximate extent of low-lying freshwater flatlands suitable for wetland rice cultivation at ~5 – 3 ka. This area represents land ⩽20 m in elevation and with a slope of ⩽0.5°. These criteria are often associated with very flat landforms of downstream floodlands *(1)*, conditions that favor the formation of freshwater marshes *(2)*. Blue areas approximate the extent of land that is suitable now for paddy-field rice agriculture, but which was formed after the Holocene marine transgression. Blue areas were modeled through paleoenvironmental reconstructions using sediment core data for the Songkhla-Pattalung plain (Thailand),

Haifeng plain (China) and major deltas illustrated in Fig. 4. The combined extent of both the green and blue areas represents an approximate minimum surface area of low-lying freshwater flatlands suitable for wet rice cultivation at the present; most of the blue area emerged after 3 ka.

Table S1. List of pollen records for land cover change and associated sediment cores used in this study

No.	Site name	Location	Reference
1	FZ5	E119.1300556°；N26.11466667°	This study
2	FZ4	E119.3571389°; N26.05786111°	*(2)*; this study (data of rice-type pollen)
3	NA9	E117.13205°; N23.44898333°	This study
4	SH5	E116.7105159°; N23.42350044°	*(3)*
5	SH6	E116.6924417°; N23.37723037°	*(3)*
6	HP-1	E116.4449149°; N23.26670636°	*(4)*
7	Longpu	E112.6597222°; N23.445°	This study
8	SH-1	E112.718°; N23.342°	This study
9	SS0901	E112.8416667°; N23.16805556°	*(5)*
10	GG81	E113.492708°; N23.010318°	*(6)*
11	GY1	E112.34045°; N22.9012°	*(7)*
12	ZK-2	E114.6547513°; N22.7543015°	*(4)*
13	SX97	E113.7783333°; N22.75277778°	*(4)*
14	GZ-2	E113.5138889°; N22.70555556°	*(8, 9)*
15	HK5	E113.0269333°; N21.99490278°	*(10)*
16	VN	E106.3775°; N20.41027778°	*(11, 12)*
17	GA	E106.5158333°; N20.25722222°	*(11, 12)*
18	Paoay Lake	E120.5333333°; N18.11666667°	*(13)*
19	Laguna de Baye	E121.006°; N14.518°	*(13)*
20	BMR2	E101.094°; N13.502°	*(14, 15)*
21	GD	E105.86085°; N10.67026667°	*(16)*
22	TD	E106.2154667°; N10.66218333°	*(16)*
23	TA	E106.3864833°; N10.52386667°	*(16)*

Table S2: List of sediment records used in this study to show the coastal depositional environment change

Site name	Location	Proxy	Reference
GZ-2	E113.5138889°; N22.70555556°	foraminifera; mangrove	*(9)*
PD	E113.4764833°; N22.8946°	foraminifera	*(17)*
JT	E113.4888889°; N23.00805556°	foraminifera	*(18)*
PRD04*	E113.1939°; N22.4897°	foraminifera	*(19)*
PRD05*	E113.1839°; N22.52333°	foraminifera	*(20, 21)*
PRD16	E113.5458333°; N22.87444444°	foraminifera	*(22)*
PRD17	E113.4416667°; N22.85194444°	foraminifera	*(23)*
QZK4	E113.3957306°; N22.72055°	foraminifera	*(24)*
ZK203-2	E113.4562194°; N22.67218889°	foraminifera	*(25)*
ZK201-2	E113.4568528°; N22.67799722°	foraminifera	*(25)*
QZK1	E113.2078972°; N22.97641667°	foraminifera	*(21)*
ZK13	E113.4861°; N22.6114°	foraminifera	*(26)*
PRD20	E113.2563889°; N22.865°	foraminifera	*(23)*
CN-01	E116.48583°; N23.20806°	foraminifera	*(27)*
HF-1	E115.26528°; N22.88222°	foraminifera	This study
CH2	E116.81°; N23.42°	foraminifera; mangrove	*(3)*
SH5	E116.7105159°; N23.42350044°	foraminifera; mangrove	*(3)*
ZK201	E119.46°; N26.002°	foraminifera	*(28)*
M3	E119.547°; N26.092°	foraminifera	*(29)*
M184	E113.672024°; N23.00829443°	diatom	*(30)*
D6	E113.3660454°; N22.21899627°	diatom	*(31)*
JT81	E113.492708°; N23.01031844°	diatom	*(30)*
PK16	E113.6734488°; N23.08045246°	diatom	*(30)*
D13	E113.502499°; N22.980934°	diatom	*(30)*
SDZK01	E113.2061°; N22.919°	diatom	*(32)*
FZ5	E119.1300556°; N26.11466667°	diatom	This study
HK25	E 116.71°; N 23.46°	diatom	*(33)*
E3	E116.63°; N23.65°	diatom	*(33)*
SH6	E116.6924417°; N23.37723037°	mangrove	*(3)*
VN*	E106.3775°; N20.41027778°	mangrove	*(12)*
GA*	E106.5158333°; N20.25722222°	mangrove	*(12)*
TD	E106.2154667°; N10.66218333°	mangrove	*(16)*
GD	E105.86085°; N10.67026667°	mangrove	*(16)*
TA	E106.3864833°; N10.52386667°	mangrove	*(16)*
TN-3	E100.15°; N7.78°	mangrove	*(34)*
NB*	E106.4525°; N20.33472°	None	*(35)*
HV*	E106.3302778°; N20.224167°	None	*(35)*

PIT1*	E100.65°; N13.5583°	None	*(36)*
SITE3*	E100.587°; N13.56983°	None	*(36)*
TV1*	E106.1936111°; N9.851111111°	None	*(37)*
BT3*	E106.6288889°; N10.01805556°	None	*(37)*
PRD10*	E113.24°; N22.73°	None	*(38)*

*Shown as accumulation curves (age–depth plots) in Fig. 4D.

Table S3: Radiocarbon dating used in this paper

Site name	Depth (cm)	Dated material	Radiocarbon age, yr BP	Calibrated age, cal. yr BP (95%)	Lab ID	Reference
FZ4	1082	Single piece of wood	190 ± 35	136-225	BA 07690	*(2)*
FZ4	1490	Single piece of wood	3710 ± 15	3985-4054	Beta 366744	*(2)*
FZ4	1884	Single piece of wood	4355 ± 27	4853-4974	XA 07691	*(2)*
FZ4	2632	Single piece of wood	7190 ± 20	7956-8033	Beta 366745	*(2)*
FZ4	2975	Organic lens	7400 ± 25	8176-8313	OS-71398	*(2)*
FZ4	3224	Single piece of wood	7345 ± 45	8025-8218	BA 07692	*(2)*
FZ4	3406	Single piece of wood	7979 ± 31	8716-8997	XA7235	*(2)*
FZ5	739	Single piece of wood	2010 ± 40	1877-2060	BA 07693	*(39)*
FZ5	1000	Single piece of wood	6145 ± 40	6946-7160	BA 07694	*(39)*
FZ5	1126	Single piece of wood	6640 ± 25	7484-7569	OS-71399	*(39)*
NA9	145	Plant remains	1380 ± 30	1275-1337	Beta 314476	This study
NA9	435	Plant remains	2340 ± 30	2318-2433	Beta 314477	This study
NA9	1134	Charcoal	7620 ± 30	8380-8447	Beta 314478	This study
HF-1	486	Shell	2330 ± 30	1873-2012	Beta 354592	This study
HF-1	580	Shell	3390 ± 30	3185-3333	Beta 337506	This study
HF-1	741	Shell	5350 ± 30	5628-5794	Beta 337507	This study
CN-01	253	Shell	3050± 30	2755-2880	Beta 474667	This study
CN-01	410	Shell	5680 ± 30	6000-6167	Beta 347605	*(27)*
HK25	425	Organic clay	1840 ± 85	1566-1944	KWG-302	*(33)*
HK25	965	Organic clay	5220 ± 220	5580-6443	KWG-32	*(33)*
SDZK01	500	Bulk organic	2455 ± 28	2375-2697	GZ3927	*(32)*
SDZK01	780	Bulk organic	2528 ± 29	2502-2737	GZ3928	*(32)*
SDZK01	1200	Bulk organic	6429 ± 45	7277-7423	GZ3929	*(32)*
SH-1	178	Wood	3729 ± 36	3981-4210	XA4747	This study
SH-1	409	Wood	5504 ± 30	6228-6387	GZ2659	This study
SH-1	636	Plant fragment	7941 ± 33	8649-8972	XA4857	This study
Longpu	190	Bulk organic	1250 ± 59	1057-1290	NA	*(40, 41)*
Longpu	221	Bulk organic	3305 ± 29	3457-3589	GZ774	*(40, 41)*
Longpu	241	Bulk organic	3375 ± 45	3494-3757	GZ775	*(40, 41)*
Longpu	261	Bulk organic	3448 ± 27	3640-3819	GZ776	*(40, 41)*
Longpu	281	Bulk organic	3456 ± 28	3644-3822	GZ777	*(40, 41)*
Longpu	301	Bulk organic	3429 ± 29	3609-3812	GZ778	*(40, 41)*
Longpu	321	Bulk organic	3537 ± 30	3722-3895	GZ779	*(40, 41)*
Longpu	341	Bulk organic	3587 ± 27	3839-3964	GZ780	*(40, 41)*
Longpu	381	Bulk organic	3642 ± 30	3883-4070	GZ781	*(40, 41)*
Longpu	401	Bulk organic	3665 ± 30	3906-4082	GZ783	*(40, 41)*
Longpu	421	Bulk organic	3673 ± 30	3915-4086	GZ784	*(75, 76)*

Longpu	441	Bulk organic	3813 ± 31	4102-4345	GZ785	*(40, 41)*
Longpu	481	Bulk organic	4544 ± 30	5064-5309	GZ787	*(40, 41)*
TN-3	50	NA	NA	2350-2720	NA	*(20)*
TN-3	300	NA	NA	7680-7880	NA	*(34)*
TD	133	Plant remains	2775 ± 35	2788-2949	Poz-30916	*(16)*
TD	178	Plant remains	5385 ± 35	6032-6275	Poz-30915	*(16)*
GD	112	Plant remains	4650 ± 40	5311-5554	Poz-30911	*(16)*
GD	167	Plant remains	5570 ± 35	6300-6405	Poz-21312	*(16)*
GD	213	Plant remains	6040 ± 40	6788-6986	Poz-21313	*(16)*
TA	335	Carbonate shells	4420 ± 35	4476-4707	Poz-21507	*(16)*
VN	250	Peaty organic	1800 ± 40	1621-1823	Beta 164811	*(12)*
VN	430	Shell fragments	2310 ± 40	1830-2014	Beta 164812	*(12)*
VN	1100	Jointed bivalve	2590 ± 40	2158-2336	Beta 164814	*(12)*
VN	1380	Bivalve	3440 ± 40	3213-3397	Beta 164816	*(12)*
VN	1600	Wood	3630 ± 40	3851-4074	Beta 164817	*(12)*
VN	1770	Jointed bivalve	3990 ± 40	3881-4097	Beta 164818	*(12)*
VN	2440	Jointed bivalve	4420 ± 40	4457-4740	Beta 164820	*(12)*
VN	2780	Bivalve	4960 ± 40	5235-5427	Beta 164821	*(12)*
VN	2980	Bivalve	8070 ± 40	8426-8599	Beta 164822	*(12)*
VN	3010	Gastropod	8320 ± 50	8721-9001	Beta 164824	*(12)*
GA	240	Gastropod	130 ± 40	NA	Beta 164844	*(12)*
GA	1140	Wood	290 ± 40	164-466	Beta 164847	*(12)*
GA	1860	Shell fragments	740 ± 40	299-456	Beta 164848	*(12)*
GA	1980	Bivalve	1030 ± 40	539-656	Beta 164849	*(12)*
GA	2930	Bivalve	1330 ± 40	783-942	Beta 164852	*(12)*
GA	3350	Echinoderm	1960 ± 50	1386-1624	Beta 164854	*(12)*
GA	3440	Jointed bivalve	2240 ± 40	1744-1933	Beta 164855	*(12)*
GA	3620	Bivalve	3420 ± 40	3195-3374	Beta 164856	*(12)*
SH5	850	Bulk organic	5584 ± 89	6215-6592	NA	*(3)*
SH5	1700	Bulk organic	8125 ± 128	8691-9406	NA	*(3)*
SH5	2100	Bulk organic	8780 ± 119	9550-10160	NA	*(3)*
SH6	1000	Bulk organic	2810 ± 67	2769-3076	NA	*(3)*
SH6	2800	Bulk organic	8085 ± 140	8610-9395	NA	*(3)*
HP-1	300	Bulk organic	2960 ± 160	2783-3501	NA	*(4)*
ZK-2	200	Bulk organic	3070 ± 100	2976-3477	NA	*(4)*
ZK-2	550	Bulk organic	5210 ± 100	5734-6240	NA	*(4)*
ZK-2	700	Bulk organic	8970 ± 350	9303-11098	NA	*(4)*
SX97	396	Bulk organic	957 ± 100	688-1056	NA	*(42)*
SX97	1077	Bulk organic	7080 ± 120	7686-8153	NA	*(42)*
SS0901	296	Bulk organic	4800 ± 40	5467-5603	Beta 201319	*(26)*

SS0901	600	Plant fragment	6460 ± 50	7273-7438	Beta 291320	*(26)*
SS0901	632	Plant fragment	6580 ± 40	7432-7559	Beta 290247	*(32)*
SS0901	983	Bulk organic	7480 ± 40	8202-8375	NA	*(5)*
SS0901	1226	Plant fragment	7677 ± 36	8410-8539	NA	*(5)*
SS0901	1341	Plant fragment	7961 ± 35	8698-8988	NA	*(5)*
SS0901	1467	Plant fragment	8037 ± 36	8779-9015	NA	*(5)*
GG81	400	Bulk organic	1310 ± 65	1078-1327	NA	*(6)*
GG81	600	Bulk organic	2430 ± 90	2336-2739	NA	*(6)*
GG81	1110	Bulk organic	3840 ± 95	3982-4053	NA	*(6)*
GG81	1480	Bulk organic	7340 ± 140	7932-8406	NA	*(6)*
GY1	164	Peat	1650 ± 30	1431-1616	GZ5268	*(7)*
GY1	365	Wood	3325 ± 30	3478-3630	GZ5270	*(7)*
GY1	431	Wood fragments	3915 ± 30	3478-3630	GZ5272	*(7)*
GY1	496	Wood fragments	4415 ± 30	4881-5232	GZ5271	*(7)*
GZ-2	680	Bulk organic	1817 ± 29	1645-1819	GZ2089	*(9)*
GZ-2	1053	Bulk organic	2452 ± 40	2368-2703	GZ2090	*(9)*
GZ-2	1280	Bulk organic	3698 ± 28	3950-4135	GZ2091	*(9)*
HK5	400	Bulk organic	3530 ± 100?	3577-4083	NA	*(10)*
Paoay Lake	111	Organic fraction	802 ± 24	684-757	OxA-V-2023-43	*(13)*
Paoay Lake	161	Organic fraction	990 ± 35	802-958	OZI043	*(13)*
Paoay Lake	222	Organic fraction	1299 ± 25	1186-1284	OxA-V-2023-44	*(13)*
Paoay Lake	301	Organic fraction	1670 ± 30	1528-1681	OZI044	*(13)*
Paoay Lake	361	Organic fraction	2208 ± 26	2153-2308	OxA-V-2023-45	*(13)*
Paoay Lake	392	Organic fraction	2650 ± 190	2313-3239	ANU–11918	*(13)*
Paoay Lake	440	Organic fraction	2870 ± 180	2698-3457	ANU–11917	*(13)*
Paoay Lake	443	Organic fraction	3130 ± 60	3206-3460	OZI047	*(13)*
Paoay Lake	511	Organic fraction	3187 ± 27	3369-3450	OxA-V-2023-45	*(13)*
Paoay Lake	611	Organic fraction	4080 ± 60	4437-4807	OZI043	*(13)*
Paoay Lake	650	Organic fraction	4360 ± 50	4852-5212	OZI048	*(13)*
Paoay Lake	696	Organic fraction	4677 ± 29	5324-5561	OxA-V-2023-47	*(13)*
Paoay Lake	750	Organic fraction	5567 ± 39	6294-6407	WK-15837	*(13)*
Paoay Lake	810	Organic fraction	5940 ± 70	6632-6948	OZI049	*(13)*
BMR2	90	Bulk organic	3960 ± 100	4118-4779	OxA 1449	*(14)*
BMR2	398	Bulk organic	6560 ± 100	7274-7595	OxA 1360	*(14)*
BMR2	662	Bulk organic	6610 ± 140	7253-7728	OxA 1361	*(14)*
PRD05	480	NA	1915 ± 200	1418-2328	NA	*(20)*
PRD05	520	NA	2065 ± 180	1618-2558	NA	*(20)*
PRD05	610	NA	2355 ± 150	2045-2750	NA	*(20)*
PRD05	1060	NA	2955 ± 160	2762-3453	NA	*(20)*
PRD05	1170	NA	3681 ± 94	3759-4319	NA	*(20)*

PRD05	1260	NA	5185 ± 115	5676-6240	NA	*(63)*
PRD05	1310	NA	5530 ± 180	5934-6714	NA	*(63)*
PRD05	1380	NA	6380 ± 135	6960-7525	NA	*(20)*
PRD05	1510	NA	6450 ± 180	6952-7658	NA	*(20)*
PRD05	1610	NA	7000 ± 155	7583-8141	NA	*(20)*
PRD05	1820	NA	7570 ± 180	8029-8874	NA	*(20)*
PRD16	360	NA	1437 ± 70	1223-1510	NA	*(22)*
PRD16	540	NA	1574 ± 100	1312-1697	NA	*(22)*
PRD16	600	NA	1746 ± 100	1426-1885	NA	*(22)*
PRD16	720	NA	1766 ± 100	1438-1906	NA	*(22)*
PRD16	850	NA	2127 ± 100	1892-2326	NA	*(22)*
PRD16	940	NA	3873 ± 150	3890-4773	NA	*(22)*
PRD16	1031	NA	6913 ± 140	7520-7996	NA	*(22)*
QZK4	426	Shell	1265 ± 20	757-872	BA 110961	*(24)*
QZK4	522.5	Oyster shell	3400 ± 30	3200-3342	BA 120122	*(24)*
QZK4	587.5	Oyster shell	4595 ± 40	4707-4899	BA 120123	*(24)*
QZK4	612.5	Foraminifera	5410 ± 40	5693-5880	Beta 344887	*(24)*
QZK4	637.5	Oyster shell	5270 ± 35	5578-5699	BA 120124	*(24)*
QZK4	787.5	Foraminifera	6880 ± 40	7316-7459	Beta 344888	*(24)*
QZK1	438	Silt	2545 ± 30	2507-2743	BA 110947	*(24)*
QZK1	868	Charcoal	7170 ± 35	7944-8025	BA 110948	*(24)*
QZK1	902.5	Foraminifera	8250 ± 40	8639-8931	Beta 344884	*(24)*
QZK1	987.5	Foraminifera	8440 ± 40	8965-9144	Beta 344885	*(24)*
QZK1	1112.5	Foraminifera	8300 ± 40	8731-8977	Beta 344886	*(24)*
QZK1	1305	Wood	8065 ± 35	8799-9074	BA 110950	*(24)*
ZK201-2	830	Shell	1510 ± 20	1003-1120	BA 130366	*(25)*
ZK201-2	1415	Bivalve	7730 ± 40	8123-8299	Beta 366008	*(25)*
ZK201-2	2203	Plant fragment	7855 ± 35	8568-8761	BA 130367	*(25)*
ZK201-2	2209	Plant fragment	7890 ± 35	8603-8935	BA 130368	*(25)*
ZK201-2	3477	Plant fragment	8170 ± 40	9022-9252	Beta 366009	*(25)*
ZK203-2	500	Shell	3040 ± 25	2753-2849	BA 130369	*(25)*
ZK203-2	992	Plant fragment	7120 ± 30	7877-7995	BA 130370	*(25)*
ZK13	177	Silt	1565 ± 20	1409-1521	BA 131898	*(26)*
ZK13	648	Shell	1740 ± 30	1249-1338	BA 131900	*(26)*
ZK13	1154	Silt	3190 ± 25	3372-3451	BA 131902	*(26)*
ZK13	1438	Crab shell	6870 ± 40	7308-7450	BA 131903	*(26)*
ZK13	1785	Oyster shell	8140 ± 45	8506-8749	BA 131904	*(26)*
ZK201	NA	Bulk organic	4610 ± 180	4858-5676	NA	*(28)*
ZK201	NA	Bulk organic	6920 ± 110	7590-7951	NA	*(28)*
M3	NA	Bulk organic	6250 ± 80	6955-7363	NA	*(29)*

D13	670	Bulk organic	4210 ± 100	4466-5020	KWG-744	*(30)*
M184	250	Bulk organic	1740 ± 75	1461-1839	KWG-1001	*(33)*
M184	780	Bulk organic	7200 ± 130	7757-8302	KWG-840	*(33)*
PK16	160	Bulk organic	2670 ± 85	2510-2978	KWG-100	*(30)*
PK16	1290	Plant fragment	6150 ± 160	6664-7386	GC-520	*(30)*
D6	1860	Bulk organic	2350 ± 90	2158-2702	KWG-49	*(31)*
JT81	390	Bulk organic	1310 ± 65	1076-1326	KWG-693	*(30)*
JT81	590	Bulk organic	2430 ± 90	2336-2739	KWG-690	*(30)*
JT81	1070	Bulk organic	3840 ± 95	3982-4499	KWG-700	*(30)*
JT81	1490	Plant fragment	7390 ± 140	7946-8427	KWG-890	*(30)*
E3	1400	Bulk organic	5710 ± 130	6274-6812	KWG-272	*(33)*
PRD10	610	NA	2685 ± 150	2392-3177	NA	*(38)*
PRD10	920	NA	2820 ± 140	2613-3320	NA	*(38)*
PRD10	990	NA	3235 ± 120	3164-3768	NA	*(38)*
PRD10	1160	NA	3540 ± 120	3523-4170	NA	*(38)*
PRD10	1250	NA	4100 ± 130	4244-4920	NA	*(38)*
PRD10	1340	NA	4820 ± 90	5333-5742	NA	*(38)*
PRD10	1480	NA	4920 ± 150	5329-5979	NA	*(38)*
PRD10	1630	NA	6760 ± 120	7439-7852	NA	*(38)*
PRD10	1800	NA	8130 ± 145	8637-9424	NA	*(38)*
PRD04	420	NA	276 ± 115	11-506	NA	*(19)*
PRD04	790	NA	426 ± 100	184-627	NA	*(19)*
PRD04	900	NA	889 ± 100	674-1002	NA	*(19)*
PRD04	1490	NA	1685 ± 110	1368-1862	NA	*(19)*
PRD04	1570	NA	2504 ± 115	2327-2816	NA	*(19)*
PRD04	1700	NA	3926 ± 125	4004-4782	NA	*(19)*
PRD04	1820	NA	4531 ± 130	4872-5548	NA	*(19)*
PRD04	2190	NA	5060 ± 100	5617-6042	NA	*(19)*
PRD04	2340	NA	5351 ± 115	5885-6361	NA	*(19)*
PRD04	2630	NA	6522 ± 180	7002-7722	NA	*(19)*
PRD04	2750	NA	8025 ± 100	8618-9218	NA	*(19)*
NB	1100	Wood	1270 ± 40	1086-1280	Beta 164797	*(35)*
NB	1670	Jointed Bivalve	1730 ± 40	1211-1351	Beta 164799	*(35)*
NB	2240	Bivalve	2150 ± 40	1631-1832	Beta 164800	*(35)*
NB	2480	Bivalve	2210 ± 40	1710-1891	Beta 164801	*(35)*
NB	2760	Jointed Bivalve	2640 ± 40	2218-2428	Beta 164802	*(35)*
NB	3040	Jointed Bivalve	3320 ± 40	3055-3285	Beta 164803	*(35)*
NB	3180	Bivalve	3860 ± 40	3704-3920	Beta 164804	*(35)*
NB	3410	Bivalve	5650 ± 40	5952-6161	Beta 164805	*(35)*
NB	3470	Bivalve	5740 ± 40	6054-6258	Beta 164806	*(35)*

NB	3860	Jointed Bivalve	9010 ± 40	9545-9807	Beta 164807	*(35)*
HV	1300	Bivalve	1420 ± 40	901-1046	Beta 164829	*(35)*
HV	1620	Crab shell	1680 ± 40	1170-1295	Beta 164830	*(36)*
HV	1930	Jointed bivalve	1800 ± 40	1271-1413	Beta 164831	*(36)*
HV	2250	Bivalve	2870 ± 40	2514-2728	Beta 164832	*(35)*
HV	2540	Wood	3510 ± 40	3675-3883	Beta 164834	*(35)*
HV	2780	Bivalve	4410 ± 40	4438-4695	Beta 164835	*(35)*
PIT1	110	Bivalvia	1210 ± 100	598-952	Beta 120475	*(36)*
PIT1	325	Bivalvia	2070 ± 40	1543-1731	Beta 137879	*(36)*
PIT1	570	Bivalvia	2440 ± 60	1941-2265	Beta 137880	*(36)*
PIT1	900	Bivalvia	3290 ± 50	2975-3254	Beta 137878	*(36)*
PIT1	1270	Bivalvia	3930 ± 40	3823-4035	Beta 115346	*(36)*
PIT1	1350	Bivalvia	4990 ± 200	4818-5737	Beta 115345	*(36)*
SITE3	155	Wood fragment	170 ± 60	6-311	Beta 130671	*(36)*
SITE3	275	Wood fragment	190 ± 40	3-297	Beta 130672	*(36)*
SITE3	812	Clam	1410 ± 40	894-1041	Beta 132937	*(36)*
SITE3	1210	Clam	3170 ± 50	2836-3103	Beta 130677	*(36)*
TV1	262	Shell	1190 ± 40	661-808	Beta 132928	*(37)*
TV1	456	Shell	1190 ± 40	661-808	Beta 132929	*(37)*
TV1	652	Shell	1470 ± 40	935-1121	Beta 132930	*(37)*
TV1	865	Shell	1870 ± 40	1332-1509	Beta 132931	*(37)*
TV1	1038	Shell	2000 ± 40	2464-2665	Beta 132932	*(37)*
TV1	1244	Shell	2230 ± 40	1730-1921	Beta 132933	*(37)*
TV1	1656	Shell	2350 ± 40	1876-2079	Beta 132934	*(37)*
TV1	2143	Shell	2930 ± 40	2626-2770	Beta 132935	*(37)*
BT3	494	Shell	1300 ± 90	682-1032	NUTA-6543	*(37)*
BT3	1209	Shell	1620 ± 90	975-1327	NUTA-6536	*(37)*
BT3	2145	Shell	4030 ± 70	3858-4238	NUTA-6539	*(37)*
PD	99	NA	2460 ± 100?	2340-2749	NA	*(17)*
PD	688	NA	3160 ± 100?	3094-3593	NA	*(17)*
PD	740	NA	3730 ± 100?	3834-4391	NA	*(17)*
JT	600	NA	3100 ± 30	3233-3373	NA	*(18)*
JT	700	NA	3500 ± 30	3695-3843	NA	*(18)*
CH2	876	Bulk organic	3063 ± 88	3009-3445	NA	*(3)*
CH2	1123	Bulk organic	8555 ± 288	8787-10273	NA	*(3)*

Dataset S1 (separate file). Pollen data for sites FZ5, NA9, Longpu and SH-1

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