

Luochuan sequence data. Mollusk groups counts for the interval S0-L5, and associated measured low field susceptibility.

The xerophilous (taxa living in dry places, exposed to the sun) species consist of *Vallonia tenera*, *Pupilla aeoli*, *Cathaica richtofeni*, *C. pulveratrix*, and *C. pulveraticula*.

The hygrophilous (warmth and moisture loving taxa) set includes *Macrochlamys angigyra*, *Opeas striatissimum*, *Vitrea pygmaea*, *Gastrocopta armigerella*, *Punctum orphanum*, *Metodontia yantaiensis*, *M. huaiensis*, *M. beresowski*, *Kaliella lamprocystis* and *Succinea* sp.

A third group can be extracted from the previous one as it gathers the species belonging to *Macrochlamys*, *Opeas*, *Vitrea*, *Gastrocopta* and *Punctum*, and which live in particularly warm and wet habitats, currently distributed in southeastern China (Chen and Gao, 1987; Yen, 1939). Their fossil occurrence in the studied section is an indicator of humid conditions associated with particularly strong summer monsoons.

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Total depth(m)	MS (SI)	Age (kyrs)	Total count(ind/15kgs)	G dry(WMI)	G moist G oriental(SMI)
-0.80	152.300	6.100	126.00	15	107
-0.70	98.200	9.500	133.00	16	116
-0.60	96.900	10.027	172.00	20	152
-0.50	97.000	10.553	80.000	8	65
-0.40	92.200	11.080	28.000	0	25
-0.30	89.700	11.607	38.000	2	36
-0.20	87.400	12.133	63.000	5	34
-0.10	72.400	12.660	55.000	2	29
0.10	59.200	13.713	65.000	5	49
0.20	41.100	14.240	26.000	3	17
0.30	41.800	14.730	47.000	3	32
0.40	34.800	15.220	15.000	1	14
0.50	37.100	15.710	13.000	3	6
0.60	30.700	16.200	14.000	3	11
0.70	32.800	16.690	23.000	3	8
0.80	32.400	17.180	11.000	3	6
0.90	34.100	17.670	12.000	4	6
1.00	32.500	18.160	3.0000	2	3
1.10	34.000	18.650	12.000	4	9
1.20	33.400	19.460	13.000	6	12
1.30	34.500	20.270	21.000	12	9
1.40	39.100	21.080	16.000	8	8
1.50	42.700	21.890	21.000	13	8
1.60	39.700	22.700	35.000	21	12
1.70	47.600	23.510	28.000	13	19
1.80	49.000	24.320	43.000	19	28
1.90	51.200	25.130	45.000	28	28
2.00	52.700	25.940	47.000	29	26
2.10	52.200	26.750	95.000	58	21
2.20	52.000	27.560	95.000	52	34
2.30	52.100	28.370	74.000	44	25

2.40	53.200	29.180	66.000	41	14	0
2.50	60.700	29.990	56.000	25	39	0
2.60	65.500	30.800	63.000	31	28	0
2.70	66.100	31.610	73.000	20	45	0
2.80	65.900	32.420	92.000	36	34	0
2.90	70.800	33.230	107.00	40	31	0
3.00	70.500	33.804	69.000	23	20	0
3.10	69.000	34.379	82.000	54	27	0
3.20	70.800	34.953	84.000	37	31	0
3.30	66.900	35.528	85.000	47	32	0
3.40	67.900	36.102	124.00	66	50	1
3.50	68.200	36.676	139.00	84	28	0
3.60	73.700	37.251	87.000	55	24	0
3.70	69.900	37.825	133.00	85	15	0
3.80	70.900	38.399	136.00	82	21	1
3.90	68.400	38.974	124.00	72	25	1
4.00	67.600	39.548	117.00	66	9	1
4.10	67.700	40.123	135.00	85	11	1
4.20	66.500	40.697	88.000	57	8	0
4.30	67.200	41.271	113.00	63	20	1
4.40	68.800	41.846	123.00	71	16	0
4.50	60.000	42.420	125.00	72	14	0
4.60	62.700	43.737	134.00	75	22	0
4.70	72.900	45.054	154.00	94	33	1
4.80	69.600	46.371	211.00	124	40	0
4.90	72.400	47.688	164.00	108	35	0
5.00	69.000	49.005	165.00	99	24	1
5.10	75.400	50.322	149.00	88	33	0
5.20	80.100	51.639	180.00	100	32	2
5.30	75.700	52.956	170.00	107	32	0
5.40	83.100	54.273	138.00	86	34	1
5.50	88.100	55.590	149.00	78	34	5
5.60	81.300	56.594	126.00	66	23	5
5.70	78.700	57.597	99.000	77	26	6
5.80	69.900	58.601	145.00	82	25	8
5.90	64.100	59.604	165.00	101	26	12
6.00	65.600	60.608	212.00	129	34	12
6.10	65.500	61.611	233.00	163	23	15
6.20	66.200	62.615	140.00	90	28	14
6.30	62.800	63.619	194.00	112	28	15
6.40	53.800	64.622	183.00	128	19	7
6.50	55.400	65.626	223.00	187	10	1
6.60	55.800	66.629	331.00	264	20	4
6.70	49.100	67.633	321.00	252	34	6
6.80	33.300	68.636	363.00	307	14	0
6.90	33.800	69.640	488.00	465	17	3
7.00	33.900	70.523	265.00	251	9	0
7.10	34.800	71.407	189.00	181	4	0
7.20	31.600	72.290	228.00	220	8	0
7.30	31.400	72.930	134.00	128	4	0
7.40	34.600	73.570	99.000	89	8	1

7.50	37.200	74.210	437.00	421	13	0		
7.60	34.400	74.850	357.00	348	11	1		
7.70	36.000	75.490	457.00	445	12	1		
7.80	37.800	76.130	352.00	342	13	0		
7.90	38.400	76.770	495.00	486	9	0		
8.00	37.300	77.410	263.00	247	15	0		
8.10	37.500	78.050	321.00	309	14	2		
8.20	43.500	78.690	224.00	211	16	0		
8.30	41.400	79.330	254.00	215	39	0		
8.40	48.200	79.704	264.00	234	31	0		
8.50	50.800	80.078	236.00	217	27	0		
8.60	71.300	80.452	96.000	81	15	1		
8.70	73.700	80.826	94.000	73	20	5		
8.80	129.300	81.200	70.000	38	17	8		
8.90	104.500	83.633	72.000	23	19	13		
9.00	111.400	86.066	107.00	26	39	27		
9.10	128.300	88.499	161.00	42	50	35		
9.20	114.400	90.932	128.00	45	42	23		
9.30	105.800	93.365	115.00	56	32	25		
9.40	131.600	95.798	87.000	58	21	7		
9.50	132.800	98.231	146.00	95	24	7		
9.60	161.400	100.664	59.000	40	8	2		
9.70	170.800	103.097	48.000	29	6	2		
9.80	168.000	105.530	16.000	9	4	0		
9.90	180.300	112.450	1.0000	0	0	0		
10.00	171.200	116.600	5.0000	4	1	0		
10.10	165.600	120.750	5.0000	4	0	0		
10.20	154.200	123.192	1.0000	0	0	0		
10.30	122.700	125.634	1.0000	0	1	1		
10.40	97.500	128.076	1.0000	0	0	0		
10.50	74.900	130.518	2.0000	0	0	0		
10.60	23.300	132.960	69.000	66	3	0		
10.70	25.200	133.538	91.000	91	0	0		
10.80	24.400	134.117	201.00	199	2	1		
10.90	21.500	134.695	210.00	210	2	0		
11.00	24.400	135.274	326.00	322	4	2		
11.10	24.700	135.852	434.00	431	3	3		
11.20	25.100	136.431	493.00	485	8	4		
11.30	27.100	137.009	541.00	537	5	3		
11.40	29.200	137.588	513.00	509	5	2		
11.50	31.800	138.166	479.00	472	7	6		
11.60	32.100	138.745	596.00	586	11	7		
11.70	33.000	139.323	559.00	546	14	8		
11.80	33.800	139.902	586.00	573	13	6		
11.90	33.800	140.480	617.00	598	19	11		
12.00	36.100	141.058	566.00	559	6	3		
12.10	34.700	141.637	431.00	419	11	5		
12.20	34.700	142.215	439.00	423	16	5		
12.30	36.100	142.794	394.00	380	16	2		
12.40	33.700	143.372	376.00	361	13	7		
12.50	30.000	143.951	346.00	332	15	0		

12.60	30.200	144.529	203.00	198	5	0
12.70	30.700	145.108	259.00	252	5	1
12.80	27.500	145.690	230.00	220	10	1
12.90	25.600	146.265	206.00	198	6	0
13.00	27.000	146.843	175.00	168	7	0
13.10	24.000	147.422	113.00	108	4	0
13.20	23.100	148.000	121.00	111	9	0
13.30	24.500	149.013	163.00	132	29	8
13.40	30.300	150.027	187.00	153	22	5
13.50	30.200	151.040	183.00	150	27	9
13.60	32.500	152.053	150.00	116	31	7
13.70	41.400	153.067	169.00	120	42	11
13.80	53.600	154.080	289.00	239	39	12
13.90	60.500	155.093	275.00	147	77	28
14.00	71.600	156.107	252.00	138	86	29
14.10	72.800	157.120	324.00	147	139	50
14.20	59.100	158.582	223.00	100	94	31
14.30	68.200	160.044	351.00	179	129	45
14.41	68.900	161.652	488.00	210	232	79
14.50	64.700	162.968	285.00	143	108	40
14.60	51.500	164.430	379.00	196	155	36
14.70	43.300	165.892	418.00	263	133	26
14.80	39.100	167.354	368.00	252	97	14
14.90	35.600	168.816	392.00	269	112	26
15.00	35.200	170.278	327.00	258	71	12
15.10	33.700	171.740	315.00	270	48	8
15.20	38.200	172.940	402.00	366	43	5
15.30	43.400	174.140	348.00	313	43	6
15.40	46.200	175.340	516.00	483	50	0
15.50	52.800	176.540	549.00	526	34	0
15.60	56.000	177.740	560.00	549	21	0
15.70	61.400	178.940	833.00	818	18	2
15.80	74.800	180.140	81.000	74	7	2
15.90	82.500	181.340	675.00	643	30	9
16.00	112.400	182.540	318.00	307	18	2
16.10	141.200	183.740	87.000	83	3	0
16.21	142.900	187.010	23.000	21	2	0
16.30	150.700	197.300	16.000	12	4	2
16.40	148.900	203.220	12.000	9	3	1
16.50	149.800	205.237	10.000	8	2	2
16.60	140.800	207.253	17.000	13	4	2
16.70	133.100	209.270	79.000	47	32	11
16.80	113.700	209.957	108.00	63	45	19
16.90	90.400	210.643	114.00	63	51	17
17.00	65.300	211.330	84.000	60	21	8
17.10	62.800	212.471	70.000	53	17	7
17.20	51.200	213.612	254.00	190	49	14
17.30	45.600	214.753	75.000	67	8	3
17.40	42.800	215.894	101.00	78	23	5
17.50	39.700	217.035	95.000	81	14	4
17.61	38.700	218.290	55.000	49	6	4

17.70	103.200	224.040	76.000	50	24	10
17.80	105.400	228.670	81.000	61	20	8
17.90	95.100	229.751	78.000	54	24	12
18.00	92.700	230.831	143.000	100	40	19
18.10	80.800	231.912	145.000	80	60	34
18.20	74.300	232.993	179.000	114	63	15
18.30	66.900	234.074	219.000	153	54	17
18.40	67.300	235.154	193.000	126	63	24
18.50	57.400	236.235	175.000	125	45	13
18.60	51.900	237.316	238.000	170	63	20
18.70	51.200	238.396	292.000	237	50	19
18.80	44.100	239.477	435.000	357	64	21
18.90	48.500	240.558	366.000	312	41	17
19.00	47.100	241.639	433.000	401	26	7
19.10	52.100	242.719	544.000	507	31	16
19.20	37.400	243.800	578.000	543	20	6
19.30	34.400	244.164	552.000	512	8	6
19.40	36.000	244.528	538.000	511	11	6
19.50	35.400	244.892	612.000	579	3	0
19.60	37.100	245.256	569.000	532	7	0
19.70	36.800	245.620	537.000	516	3	0
19.80	35.900	246.907	571.000	532	26	5
19.90	43.300	248.194	573.000	541	14	2
20.00	41.600	249.481	549.000	532	13	3
20.10	45.300	250.768	638.000	606	19	4
20.20	46.700	252.055	599.000	573	20	1
20.30	46.800	253.342	516.000	500	22	0
20.40	47.000	254.629	536.000	495	44	2
20.50	48.100	255.916	393.000	348	48	0
20.60	48.300	257.203	339.000	280	61	0
20.70	47.900	258.490	229.000	168	66	1
20.80	54.600	261.314	227.000	165	69	0
20.90	62.800	264.139	238.000	184	58	3
21.00	77.800	266.963	258.000	194	68	2
21.10	86.600	269.787	242.000	163	86	9
21.20	104.900	272.611	200.000	142	64	8
21.30	126.700	275.436	232.000	144	93	12
21.40	149.100	278.260	152.000	75	80	6
21.50	150.700	280.885	63.000	23	40	6
21.60	160.900	283.510	46.000	18	29	5
21.70	149.800	286.146	57.000	19	40	10
21.80	133.600	288.782	33.000	6	27	12
21.90	125.200	291.418	62.000	7	55	23
22.00	123.300	294.054	99.000	16	86	34
22.10	121.700	296.690	118.000	43	76	23
22.20	127.000	299.324	138.000	51	85	21
22.30	122.600	301.958	130.000	27	104	23
22.40	126.100	304.592	122.000	24	99	39
22.50	131.000	307.226	98.000	19	79	30
22.60	139.600	309.860	37.000	10	27	10
22.70	134.500	314.215	53.000	27	25	4

22.80	118.800	318.570	63.000	19	45	11
22.90	130.200	323.290	46.000	20	27	0
23.00	105.600	324.099	36.000	16	20	1
23.10	99.300	324.908	51.000	33	18	2
23.20	92.700	325.716	74.000	54	19	5
23.30	73.900	326.525	77.000	65	12	3
23.40	71.800	327.334	110.00	101	9	1
23.50	79.200	328.142	130.00	95	35	9
23.60	22.400	328.951	81.000	75	6	4
23.70	17.200	329.760	148.00	117	32	12
23.80	20.200	330.209	82.000	81	1	1
23.90	18.800	330.658	161.00	153	6	4
24.00	19.900	331.107	73.000	61	10	7
24.10	21.200	331.556	287.00	270	16	15
24.20	21.700	332.005	299.00	277	20	18
24.30	22.700	332.454	380.00	358	21	19
24.40	24.700	332.902	494.00	460	30	28
24.50	26.000	333.351	443.00	418	22	18
24.60	27.300	333.800	1149.0	1062	82	79
24.80	30.700	334.698	1557.0	1417	134	123
24.90	35.000	335.147	1250.0	1143	96	83
25.00	33.100	335.596	1649.0	1418	227	199
25.10	30.900	336.045	1680.0	1410	255	238
25.20	34.600	336.494	1678.0	1388	288	272
25.30	31.900	336.943	1328.0	1148	180	170
25.40	33.800	337.392	1609.0	1324	286	255
25.50	32.700	337.841	1460.0	1197	242	222
25.60	33.500	338.290	1281.0	999	279	249
25.70	33.500	338.739	1407.0	1104	280	267
25.80	33.000	339.188	2137.0	1506	606	578
25.90	34.100	339.636	1768.0	1251	486	469
26.00	30.600	340.085	1619.0	1161	418	401
26.10	33.100	340.534	1964.0	1353	576	564
26.20	27.800	340.983	1386.0	1011	340	331
26.30	32.000	341.432	1298.0	842	426	420
26.40	31.400	341.881	1772.0	1158	572	565
26.50	30.500	342.330	1540.0	999	489	483
26.60	34.700	344.360	1381.0	978	342	331
26.70	42.500	346.390	1319.0	916	303	301
26.80	47.400	348.421	1194.0	921	192	189
26.90	55.900	350.451	1129.0	888	142	137
27.00	60.400	352.481	913.00	746	97	95
27.10	65.500	354.511	737.00	581	97	97
27.20	69.100	356.542	540.00	405	98	98
27.30	80.500	358.572	474.00	379	65	61
27.40	89.800	360.602	510.00	406	78	76
27.50	90.000	362.632	502.00	410	79	74
27.60	92.900	364.663	428.00	327	94	90
27.70	109.300	366.693	424.00	330	85	85
27.80	110.100	368.723	411.00	305	91	83
27.90	113.800	370.753	393.00	300	82	80

28.00	121.600	372.784	228.00 173	47	47
28.10	122.600	374.814	248.00 173	67	65
28.20	129.900	376.844	219.00 148	66	60
28.30	143.700	378.874	121.00 73	46	46
28.40	153.400	380.905	93.000 63	27	27
28.50	158.900	382.935	24.000 15	9	9
28.60	158.800	386.537	18.000 14	4	4
28.70	162.900	391.710	29.000 19	10	10
28.80	165.000	396.883	27.000 19	8	8
28.90	159.600	400.319	21.000 12	9	7
29.00	156.400	402.018	11.000 7	4	4
29.10	163.400	403.717	5.0000 4	1	1
29.20	160.400	405.416	0.0000 0	0	0
29.30	139.500	407.115	0.0000 0	0	0
29.40	129.100	408.814	0.0000 0	0	0
29.50	111.800	410.513	2.0000 1	1	1
29.60	100.600	412.212	7.0000 4	3	3
29.70	87.700 413.911	7.0000 2	5	5	
29.80	82.100 419.455	7.0000 3	4	4	
29.90	64.400 424.419	0.0000 0	0	0	
30.00	33.200 424.957	26.000 23	4	2	
30.10	26.200 425.495	73.000 68	8	3	
30.20	22.000 426.034	59.000 52	9	2	
30.30	20.700 426.572	181.00 168	19	3	
30.40	20.100 427.110	211.00 194	27	8	
30.50	21.600 427.853	336.00 320	22	8	
30.60	25.900 428.596	437.00 403	42	11	
30.70	28.800 429.339	513.00 469	44	15	
30.80	29.900 430.082	618.00 583	40	28	
30.90	30.300 430.825	818.00 737	94	45	
31.00	32.500 431.568	870.00 803	86	49	
31.10	33.800 432.311	1137.0 1023	130	92	
31.20	34.900 433.054	1101.0 983	136	98	
31.30	38.600 433.797	925.00 787	158	119	
31.40	38.000 434.540	1090.0 927	177	147	
31.50	33.800 435.203	1086.0 927	178	138	
31.60	31.200 435.865	1001.0 794	224	173	
31.70	29.200 436.528	760.00 608	168	128	
31.80	27.900 437.190	927.00 801	139	98	
31.90	30.500 437.853	966.00 838	145	109	
32.00	27.300 438.515	756.00 675	101	70	
32.10	24.700 439.178	1943.0 1421	539	481	
32.20	33.000 439.840	1099.0 923	185	147	
32.30	31.400 440.502	1182.0 984	223	151	
32.40	28.000 441.165	1175.0 1001	195	141	
32.50	32.400 441.828	1474.0 1211	282	226	
32.60	32.000 442.490	1737.0 1429	325	276	
32.70	37.100 443.153	2257.0 1828	447	394	
32.80	37.000 443.815	1325.0 1044	290	248	
32.90	37.000 444.478	2216.0 1718	519	457	
33.00	38.900 445.140	1846.0 1449	416	354	

33.10	40.700	445.803	2126.0	1667	475	412
33.20	38.500	446.465	1259.0	950	317	285
33.30	41.000	447.127	1654.0	1258	405	370
33.40	50.700	447.790	1346.0	1011	344	309
33.50	49.000	449.026	634.00	541	103	73
33.60	49.600	450.261	1740.0	1368	395	340
33.70	48.100	451.497	1480.0	1140	352	314
33.80	52.400	452.732	1439.0	1144	308	270
33.90	43.400	453.968	1151.0	959	208	167
34.00	47.500	455.203	1057.0	903	172	128
34.10	56.300	456.439	1047.0	884	177	122
34.20	54.700	457.674	884.00	751	146	91
34.30	51.000	458.910	444.00	393	60	26
34.40	53.500	461.464	452.00	425	37	12
34.50	63.700	464.018	516.00	487	38	19
34.60	76.800	466.572	415.00	371	47	19
34.70	107.300	469.126	442.00	416	31	17
34.80	175.100	471.680	193.00	189	6	2