Table 2 Data for fitting relative sea level change curves (Geng et al., 1987; Xu, 1994; Wang et al., 2004; Wang and Fan, 2005; Yao, 2014)

| Boreholes | Radiocarbon date(14C yr BP) | Calibrated date(Cal yr BP) | Two sigmarange | Elevation (m) | Sediment type | Indicative meaning(m) | Corrected elevation (m) | Indicative range (m) |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **The eastern of Laizhou Bay** |  |  |  |  |  |  |  |  |
| Y61 | 3815±130 | 3769 | 3440-4116 | -0.8 | Shells in lagoon | -3.09 | 2.29 | 1.0 |
| 02 | 7300±110 | 7765 | 7562-7967 | -4.8 | Shells in lagoon | -2.09 | -2.71 | 2.0 |
| Y86 | 6385±110 | 6864 | 6615-7149 | -4.6 | Shells in lagoon | -2.09 | -2.51 | 1.0 |
| Y86 | 2990±95 | 2770 | 2488-2999 | -1.2 | Lagoonal organicsediment | -0.35 | -0.85 | 0.4 |
| Y86 | 2740±75 | 2472 | 2302-2685 | 0.2 | Lagoonal organicsediment | -0.35 | 0.55 | 0.4 |
| Y86 | 1980±110 | 1543 | 1305-1796 | 1.5 | Shells in beach sands | 0.48 | 1.02 | 0.4 |
| Qimu in Longkou | 6710±95 | 7236 | 7011-7416 | 1 | Ostrea in silt | -3.09 | 4.09 | 2.0 |
| Liangjia in Longkou 1 | 3145±55 | 2930 | 2776-3080 | 2 | Shells in beach sands | 0.48 | 1.52 | 0.4 |
| Liangjia in Longkou 2 | 4490±90 | 4672 | 4419-4862 | 1.4 | Ostrea in silt | -3.09 | 4.49 | 2.0 |
| Liangjia in Longkou | 6010±60 | 6425 | 6287-6573 | 1.2 | Ostrea in silt | -3.09 | 4.29 | 2.0 |
| Xintuanpo in Penglai | 4345±85 | 4488 | 4257-4771 | 0.2 | Shells in silt of subtidal flat | -3.09 | 3.29 | 2.0 |
| Xiyou in Yexian | 5800±120 | 6208 | 5926-6452 | -1.2 | Organic silt of subtidal flat | -5.09 | 3.89 | 3.0 |
| Zhangjiazhuang in Penglai | 6103±80 | 6531 | 6343-6719 | 2 | Shells in silt of subtidal flat | -3.09 | 5.09 | 2.0 |
| Xiyou in Yexian | 840±65 | 465 | 307-560 | 2.5 | Shells in beach sands | 0.48 | 2.02 | 0.4 |
| Sanshan in Yexian | 4425±90 | 5054 | 4853-5299 | 0.5 | Shells in silt of subtidal flat | -3.09 | 3.59 | 2.0 |
| Fuxi in Yexian | 5740±100 | 6143 | 5914-6343 | 3.5 | Shells in Marine deposition terrace | 0.07 | 3.43 | 1.0 |
| Tiaozi Bay in Zhifu island | 10310±260 | 11469 | 10708-12330 | -18.5 | Organic sediment | 0.07 | -18.57 | 1.0 |
| Outside in Shuangdao island | 9295±170 | 10571 | 10171-11109 | -22 | Freshwater marsh | 0.48 | -22.48 | 0.4 |
| **The Southern of Laizhou Bay** |  |  |  |  |  |  |  |  |
| Aoli 501 in Cangyi | 8985±105 | 9685 | 9450-10029 | -8.5 | Freshwater marsh | 0.84 | -9.34 | 0.7 |
| Xinhe II in Pingdu | 5535±140 | 5925 | 5614-6226 | 0.88 | Ostrea in living position | -0.76 | 1.64 | 1.6 |
| Yanjia in Xianhe | 5040±85 | 5394 | 5195-5588 | 0.81 | Ostrea in living position | 0.11 | 0.70 | 1.6 |
| YZ1 in Yangzi | 6580±200 | 7071 | 6630-7471 | -5.8 | Organic silt of tidal flat | -0.76 | -5.04 | 1.9 |
| Tushan-Haicang in Cangyi | 2888±80 | 2638 | 2398-2822 | 4 | Shells in shell ridge | 2.84 | 1.16 | 1.0 |
| Guojingzi in Shouguang | 5680±110 | 6082 | 5848-6313 | 4 | Shells in upper of shell ridge | 2.84 | 1.16 | 1.0 |
| Guojingzi in Shouguang | 5005±90 | 5357 | 5111-5568 | 2 | Shells in lower of shell ridge | 0.11 | 1.89 | 1.0 |
| lz908 | 7660±35 | 8115 | 8006-8201 | -4.1 | Organic silt of tidal flat | 0.84 | -4.94 | 1.9 |
| lz908 | 2100±200 | 1689 | 1258-2153 | 3 | Organic sediment | 0.84 | 2.16 | 0.7 |
| ZK305 | 1730±30 | 1283 | 1221-1349 | -0.6 | Brackish marsh | 0.84 | -1.44 | 0.7 |
| ZK303 | 4990±30 | 5711 | 5645-5756 | 0.6 | Organic sediment of tidal flat | -0.76 | 1.36 | 1.9 |
| BH2 | 1040±80 | 611 | 493-742 | -0.4 | Organic silt of tidal flat | 0.11 | -0.51 | 1.9 |
| BH2 | 8870±730 | 9598 | 7810-11390 | -10.3 | Shells in beach sands | 0.84 | -11.14 | 0.7 |
| **Yellow River delta** |  |  |  |  |  |  |  |  |
| Xiaosha-Wangjiawuzi in Zhanhua | 770±75 | 402 | 273-516 | 1 | Shells in lower of shell ridge | 0.08 | 0.92 | 1.0 |
| Shangyicun in Kenli | 858±85 | 477 | 310-619 | 0 | Shells in lower of shell ridge | 0.11 | -0.11 | 1.0 |
| Changzhuang in Haixing | 3495±115 | 3375 | 3071-3661 | 3 | Shells in upper of shell ridge | 1.30 | 1.70 | 0.8 |
| Mashan-Cheshanhou in Wudi | 5178±84 | 5533 | 5320-5704 | 0.6 | Shells in lower of shell ridge | 0.11 | 0.49 | 1.0 |
| Huangjinzhai in Boxing | 5600±150 | 5998 | 5650-6293 | 2 | Lagoonal sediment | 0.84 | 1.16 | 0.7 |
| Mashan-Cheshanhou in Wudi | 7780±170 | 8240 | 7892-8598 | -9.45 | Freshwater marsh | 1.30 | -10.75 | 0.8 |
| Offshore of Yellow River delta | 9080±345 | 9832 | 8978-10690 | -24.5 | Lagoonal sediment | -0.76 | -23.74 | 0.7 |
| Offshore of Yellow River delta | 9645±120 | 10527 | 10219-10840 | -21.7 | Lagoonal sediment | -0.76 | -20.94 | 0.7 |
| Xiaotuozi | 2147±70 | 1735 | 1553-1894 | 1.79 | Shells in lower of shell ridge | 0.08 | 1.71 | 1.0 |
| Songtuo | 2282±120 | 1896 | 1588-2200 | 0.81 | Shells in lower of shell ridge | 0.08 | 0.73 | 1.0 |
| Wangshubu1 | 6430±40 | 6914 | 6783-7038 | 2.01 | Shells in upper of shell ridge | 0.84 | 1.17 | 0.8 |
| Wangshubu2 | 6460±40 | 6953 | 6835-7103 | 2.55 | Shells in upper of shell ridge | 0.84 | 1.71 | 0.8 |
| Wangshubu3 | 6610±30 | 7145 | 7029-7231 | 1.41 | Shells in upper of shell ridge | 0.84 | 0.57 | 0.8 |
| Wangshubu4 | 7000±40 | 7495 | 7421-7564 | 1.01 | Shells in upper of shell ridge | 0.84 | 0.17 | 0.4 |
| **The western of Bohai Bay** |  |  |  |  |  |  |  |  |
| YS272 in Dongsun | 5665±65 | 6069 | 5910-6215 | 1.55 | Shells in lower of shell ridge | 0.10 | 1.45 | 1.0 |
| YS271 in Dongsun | 5340±100 | 5713 | 5505-5916 | 1.85 | Shells in lower of shell ridge | 0.10 | 1.75 | 1.0 |
| CG1771 in Miaozhuang | 4740±105 | 5009 | 4772-5300 | 0.7 | Shells in lower of shell ridge | 0.10 | 0.60 | 1.0 |
| CG175 in Miaozhuang | 3955±70 | 3951 | 3745-4148 | 2.3 | Shells in upper of shell ridge | 1.53 | 0.77 | 0.8 |
| Wuditai | 2830±120 | 2563 | 2292-2841 | 1.7 | Shells in upper of shell ridge | 1.53 | 0.17 | 0.8 |
| Wuditai | 3920±120 | 3907 | 3581-4235 | 1.1 | Shells in lower of shell ridge | 0.10 | 1.00 | 1.0 |
| Jilingpo | 2860±70 | 2609 | 2390-2756 | 0.5 | Shells in lower of shell ridge | 0.10 | 0.40 | 1.0 |
| SH-217 in Qikou | 2000±70 | 1564 | 1380-1736 | 0.9 | Shells in lower of shell ridge | 0.10 | 0.80 | 1.0 |
| YS-260 in Qikou | 1350±60 | 892 | 754-1034 | 3 | Shells in middle of shell ridge | 0.65 | 2.35 | 0.8 |
| YS-265 in Zhangjuhe | 2570±65 | 2236 | 2059-2397 | 0.6 | Shells in lower of shell ridge | 0.10 | 0.50 | 1.0 |
| YS-265 in Zhangjuhe | 1790±65 | 1341 | 1227-1501 | 2.1 | Shells in upper of shell ridge | 1.53 | 0.57 | 0.8 |
| YS-258 in Zhaojiapu | 1350±65 | 892 | 743-1041 | 3.3 | Shells in upper of shell ridge | 1.53 | 1.77 | 0.8 |
| YS-248 in Zhaojiapu | 2270±70 | 1880 | 1700-2058 | 1.1 | Shells in lower of shell ridge | 0.10 | 1.00 | 1.0 |
| SH-248 in Langtuozi | 2120±70 | 1703 | 1534-1867 | 2 | Shells in upper of shell ridge | 1.53 | 0.47 | 0.8 |
| SH-200 in Zhaojiapu | 1030±60 | 602 | 508-689 | 0.48 | Shells in upper of shell ridge | 1.53 | -1.05 | 0.8 |
| Laolangtuozi | 1455±47 | 1004 | 907-1129 | 1.6 | Shells in upper of shell ridge | 1.53 | 0.07 | 0.8 |
| Laolangtuozi | 1687±52 | 1244 | 1131-1346 | 1.8 | Shells in upper of shell ridge | 1.53 | 0.27 | 0.8 |
| Liaodong Bay in Bohai Sea | 8620±140 | 9257 | 8915-9545 | -15.5 | Brackish marsh | 1.32 | -16.82 | 1.0 |
| 12 in outside of Haihe River estuary | 9165±155 | 9920 | 9511-10275 | -31 | Lagoonal sediment | -0.88 | -30.12 | 0.8 |
| Northwestern of Bohai strait | 10095±110 | 11077 | 10744-11310 | -27 | Lagoonal sediment | -0.88 | -26.12 | 0.8 |
| Laotieshan channel in Bohai strait | 11570±140 | 13040 | 12741-13312 | -49.3 | Sediment in fluvial terrace | -0.32 | -48.98 | 1.0 |