Supplementary Table 6) Information for marine sediment cores HLY0205-GGC19 (Farmer et al., 2011, Keigwin et al., 2006), P1-92-AR-P1/B3 (combined piston/box cores; de Vernal et al., 2005), HLY0501-05 (de Vernal et al., 2013; McKay et al., 2008), including latitude and longitude (decimal degrees), water depth (m), sediment depth (cm), Bacon age estimate (cal yr BP), and estimated ice cover (months/year >50% ice cover).

|  |  |  |
| --- | --- | --- |
| ***HLY0205-GGC19*** (Latitude: 72.16° N, Longitude: 155.51° W, Water depth = 369m) | | |
| Depth (cm) | Bacon Age (cal yr BP) | Sea Ice Cover > 50% (months/yr) |
| 4 | 1.381 | 4.28 |
| 14 | 199 | 4.34 |
| 24 | 402.58 | 4.83 |
| 34 | 607.72 | 4.11 |
| 44 | 811.18 | 5.72 |
| 54 | 1012.2 | 3.08 |
| 64 | 1186.5 | 2.95 |
| 74 | 1350.7 | 5.35 |
| 84 | 1519.6 | 3.47 |
| 94 | 1687.1 | 3.3 |
| 104 | 1855.1 | 8.31 |
| 114 | 2024.3 | 4.85 |
| 124 | 2194.5 | 4.58 |
| 134 | 2363 | 4.33 |
| 144 | 2531.1 | 6.17 |
| 154 | 2696.7 | 9.19 |
| 164 | 2860.7 | 7.94 |
| 174 | 3009.8 | 5.67 |
| 184 | 3149.8 | 8.93 |
| 194 | 3289.1 | 5.11 |
| 204 | 3429.8 | 1.07 |
| 212.5 | 3547 | 5.2 |
| 224 | 3703 | 4.26 |
| 234 | 3825.6 | 5.19 |
| 244 | 3948.5 | 4.48 |
| 254 | 4070.4 | 6.61 |
| 264 | 4192.8 | 7.7 |
| 274 | 4315.3 | 7.87 |
| 284 | 4437.6 | 4.2 |
| 294 | 4559.1 | 7.04 |
| 304 | 4681 | 9.07 |
| 314 | 4803.4 | 8.45 |
| 324 | 4924.3 | 8.93 |
| 334 | 5053 | 6.25 |
| 344 | 5187 | 9.09 |
| 354 | 5314.2 | 7.53 |
| 364 | 5437.9 | 4.91 |
| 374 | 5554.2 | 9 |
| 384 | 5669.4 | 7.17 |
| 394 | 5783.1 | 6.63 |
| 404 | 5898.6 | 6.35 |
| 414 | 6022.1 | 7.11 |
| 424 | 6145.8 | 4.78 |
| 434 | 6269.5 | 8.92 |
| 444 | 6393.2 | 7.35 |
| 454 | 6516.9 | 4.91 |

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| --- | --- | --- |
| ***P1-92-AR-P1*** (Latitude: 73.71° N, Longitude: 162.74° W, Water depth = 203m) | | |
| Depth (cm) | Bacon Age (Years BP) | Sea Ice Cover > 50% (months/yr) |
| 31 | 1611.5 | 7.92 |
| 36 | 1897 | 7.64 |
| 41 | 2185.3 | 4.93 |
| 46 | 2472.4 | 7.26 |
| 56 | 3278.9 | 8.34 |
| 61 | 3919.5 | 7.53 |
| 66 | 4536.7 | 7.5 |
| 71 | 4863.9 | 7.46 |
| 76 | 5105.5 | 7.82 |
| 81 | 5352.9 | 6.95 |
| 86 | 5601.2 | 8.45 |
| 91 | 5849.5 | 6.35 |
| 96 | 6091.6 | 8.35 |
| 101 | 6326.7 | 7.53 |
| 106 | 6548.5 | 4.89 |
| 111 | 6726.7 | 7.71 |
| 121 | 7005.7 | 4.96 |
| 126 | 7148.6 | 7.77 |
| 131 | 7290.6 | 6.69 |
| 136 | 7431.9 | 7.15 |

|  |  |  |
| --- | --- | --- |
| ***P1-92-AR-B3*** (Latitude: 73.69° N, Longitude: 162.66° W, Water depth = 203m) | | |
| Depth (cm) | Bacon Age (Years BP) | Sea Ice Cover > 50% (months/yr) |
| 0 | -60.8 | 11.16 |
| 1 | -35.537 | 8.77 |
| 2 | -7.0933 | 8.55 |
| 3 | 22.093 | 7.15 |
| 4 | 51.111 | 8.76 |
| 5 | 80.409 | 8.48 |
| 6 | 110.36 | 7.81 |
| 7 | 139.71 | 8.33 |
| 8 | 169.52 | 7.43 |
| 9 | 199.74 | 8.99 |
| 10 | 229 | 6.51 |
| 11 | 258.42 | 8.72 |
| 12 | 288.2 | 8.27 |
| 13 | 317.48 | 8.17 |
| 14 | 343.61 | 8.52 |
| 15 | 369.6 | 8.35 |
| 16 | 395.51 | 8.38 |
| 17 | 421.61 | 8.02 |
| 18 | 448.25 | 7.97 |
| 19 | 474.4 | 6.74 |
| 20 | 500.51 | 6.3 |
| 21 | 526.8 | 8.7 |
| 22 | 553.17 | 8.64 |
| 23 | 578.53 | 5.74 |
| 24 | 604.5 | 8.99 |
| 25 | 631.1 | 8.59 |
| 26 | 657.6 | 6.33 |
| 27 | 683.99 | 6.67 |
| 28 | 710.03 | 7.49 |
| 30 | 762.72 | 6.88 |
| 32 | 815.61 | 8.6 |
| 34 | 868.4 | 9 |
| 36 | 920.9 | 6.61 |
| 39 | 1000.1 | 8.38 |
| 41 | 1052.8 | 7.66 |

|  |  |  |
| --- | --- | --- |
| ***HLY0501-05*** (Latitude = 72.69° N, Longitude = 157.52° W, Water depth = 385m) | | |
| Depth | Bacon Age (Years BP) | Sea Ice Cover > 50% (months/yr) |
| 87 | 671.75 | 7.03 |
| 95 | 740.59 | 6.9 |
| 103 | 809.45 | 7.05 |
| 111 | 874.09 | 2.02 |
| 119 | 935.6 | 6.89 |
| 127 | 988.65 | 2.37 |
| 135 | 1041.4 | 7.44 |
| 143 | 1094 | 5.03 |
| 151 | 1147.2 | 7.42 |
| 159 | 1200.8 | 6.73 |
| 167 | 1255.5 | 7.5 |
| 175 | 1309.6 | 7.44 |
| 184.5 | 1373.5 | 7.47 |
| 192.5 | 1427.9 | 6.56 |
| 200.5 | 1481.8 | 7.46 |
| 208.5 | 1535.4 | 7.64 |
| 216.5 | 1589.9 | 7.61 |
| 224.5 | 1644.7 | 7.98 |
| 232.5 | 1700.2 | 6.87 |
| 240.5 | 1755.4 | 8.19 |
| 248.5 | 1810.4 | 7.75 |
| 256.5 | 1864.8 | 7.75 |
| 264.5 | 1919.3 | 8.4 |
| 272.5 | 1974 | 7.91 |
| 280.5 | 2028.6 | 7.72 |
| 288.5 | 2083.1 | 8.25 |
| 296.5 | 2138.6 | 7.5 |
| 304.5 | 2194.1 | 7.34 |
| 312.5 | 2249.6 | 7.43 |
| 320.5 | 2304.8 | 7.9 |
| 328.5 | 2359.9 | 5.68 |
| 337 | 2417.9 | 8.09 |
| 345 | 2472.1 | 8.25 |
| 353 | 2526 | 8.84 |
| 369 | 2634.6 | 7.47 |
| 377 | 2689.7 | 8.81 |
| 409 | 2909.7 | 6.62 |
| 441 | 3128.5 | 7.85 |
| 473 | 3346.8 | 8.26 |
| 502 | 3545.6 | 7.65 |
| 534 | 3764.5 | 8.37 |
| 550 | 3871.3 | 6.9 |
| 566 | 3976.1 | 7.27 |
| 598 | 4172.1 | 6.15 |
| 622 | 4318.3 | 5.05 |
| 643.5 | 4449.2 | 7.34 |
| 691.5 | 4727.6 | 5.75 |
| 715.5 | 4865.6 | 6.64 |
| 739.5 | 5004.6 | 8.73 |
| 763.5 | 5145.4 | 8.79 |
| 786 | 5283.9 | 8.08 |
| 810 | 5434.2 | 8.72 |
| 834 | 5586 | 8.58 |
| 890 | 5941.8 | 7.46 |
| 914 | 6101.5 | 8.54 |
| 938.5 | 6265.9 | 7.53 |
| 962.5 | 6427.2 | 6.37 |
| 986.5 | 6588 | 7.63 |
| 1010.5 | 6748.8 | 8.25 |
| 1034.5 | 6909.6 | 4.14 |
| 1058.5 | 7070.5 | 7.65 |
| 1107 | 7395.5 | 6.8 |
| 1131 | 7556.3 | 8.61 |
| 1155 | 7717.1 | 6.56 |
| 1203 | 8038.8 | 6.42 |
| 1227 | 8199.6 | 7.83 |
| 1249.5 | 8350.4 | 9.06 |
| 1263.5 | 8444.2 | 8.59 |
| 1297.5 | 8672 | 6.71 |
| 1321.5 | 8832.9 | 7.66 |
| 1345.5 | 8993.7 | 8.07 |
| 1364.5 | 9121 | 5.86 |
| 1388.5 | 9281.8 | 5.63 |