Supplementary Table 7) Radiocarbon dating 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), and HLY0501-05 (de Vernal et al., 2013; McKay et al., 2008).

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| **HLY0205-GGC19** (Latitude: 72.16° N, Longitude: 155.51° W, Water depth = 369m) | | | |
| **Depth (cm)** | **Dated Material** | **C14 Age** | **Source** |
| 56 | Mixed benthic foraminifers | 2040 ± 35 | Keigwin et al. (2006) |
| 166 | Mollusc fragments | 3650 ± 40 | Farmer et al (2011) |
| 220.5 | Mixed benthic foraminifers | 4270 ± 40 | Keigwin et al. (2006) |
| 326 | Bivalve, *Portlandia arctica* | 5040 ± 35 | Farmer et al (2011) |
| 336 | Mollusc fragments | 5320 ± 35 | Farmer et al (2011) |
| 339 | Foraminifer, *Nonionella labradorica* | 5290 ± 50 | Keigwin et al. (2006) |
| 361 | Bivalve, *Portlandia arctica* | 5570 ± 50 | Farmer et al (2011) |
| 400 | Mixed benthic foraminifers | 5840 ± 80 | Keigwin et al. (2006) |
| 411 | Gastropod, *Neptunea* sp. | 6260 ± 40 | Farmer et al (2011) |

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| **P1-92-AR-P1** (Latitude: 73.69° N, Longitude: 162.66° W, Water depth = 203m) | | | |
|  |  |  |  |
| **Depth (cm)** | **Dated Material** | **C14 Age** | **Source** |
| 24-26 | Mollusc fragments | 2170 ± 90 | Darby et al. (2001) |
| 49-51 | Mollusc fragments | 3340 ± 50 | Darby et al. (2001) |
| 64-66 | Mixed benthic foraminifers | 5120 ± 110 | Darby et al. (2001) |
| 99-100 | Mixed benthic foraminifers | 6240 ± 70 | Darby et al. (2001) |
| 105 | Bivalve, *Bathyarca* sp. | 6590 ± 70 | Darby et al. (2001) |
| 134-136 | Mixed benthic foraminifers | 7030 ± 110 | Darby et al. (2001) |

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| **P1-92-AR-B3** (Latitude: 73.71° N, Longitude:162.74° W, Water depth = 203m) | | | |
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| **Depth (cm)** | **Dated Material** | **C14 Age** | **Source** |
| 12-13 | Mollusc fragments | 1230 ± 30 | Darby et al. (2001) |
| 25-26 | Mollusc fragments | 1530 ± 30 | Darby et al. (2001) |
| 41-42 | Mollusc fragments | 1980 ± 30 | Darby et al. (2001) |

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| **HYL0501-05** (Latitude: 72.69° N, Longitude: 157.52° W, Water depth = 415m) | | | |
| **Depth (cm)** | **Dated Material** | **C14 Age** | **Source** |
| 112 | Bivalve, *Thyasira* | 1930 ± 45 | McKay et al. (2008) |
| 559 | Bivalve, *Yoldia* | 4465 ± 40 | McKay et al. (2008) |
| 644.5 | Bivalve, *Thyasira* | 4820 ± 70 | McKay et al. (2008) |
| 764.5 | Bivalve, *Yoldia* | 5220 ± 40 | McKay et al. (2008) |
| 875 | Bivalve, *Portlandia* | 5885 ± 40 | McKay et al. (2008) |
| 955.5 | Bivalve, *Portlandia* and *Thyasira* | 6395 ± 45 | McKay et al. (2008) |