

## Ice thickness and deglaciation ages of the Cordilleran Ice Sheet in central and southern British Columbia constrained by $^{10}\text{Be}$ exposure dating

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The Cordilleran Ice Sheet (CIS) covered most of the Canadian Cordillera at the local Last Glacial Maximum (ILGM, OIS 2). However, its subsequent demise is not well understood, particularly at high elevations in mountains and east of its ocean-terminating western margin. We present  $^{10}\text{Be}$  exposure ages from two high-elevation sites in southern and central British Columbia. We sampled granite erratics at elevations of 2126-2230 m a.s.l. in the Marble Range and at 1608-1785 m a.s.l. in the Hazelton Mountains at the margin of the Interior Plateau. At both sites, the sampled erratics were situated near ice-marginal meltwater channels that provide information on the local ice surface slope direction and thus the regional ice sheet configurations during deglaciation. The locations of the erratics and their relation to meltwater channels ensure that the resulting  $^{10}\text{Be}$  ages date CIS deglaciation and not the retreat of local montane glaciers. Our sample sites emerged above the ice sheet surface when its divide in central and southern British Columbia had migrated to the west and was positioned above the Coast Mountains. Two of the four samples from the summit area of the Marble Range yielded exposure ages of  $14.2 \pm 0.8$  and  $15.5 \pm 0.9$  ka. These ages are 1.5-3 ka younger than the well-established ILGM age of ca. 17 ka for the Puget lobe in Washington State. The other two samples yielded older exposure ages of  $21.0 \pm 1.5$  and  $33.7 \pm 1.8$  ka. These unexpectedly old ages indicate inheritance of  $^{10}\text{Be}$  either as a result of limited glacial erosion in the source area of the sampled erratics or because of pre-ILGM delivery of the boulders to the sample site. Four samples collected in the summit area of the Hazelton Mountains yielded well clustered exposure ages of  $10.3 \pm 0.7$ ,  $10.5 \pm 0.8$ ,  $10.7 \pm 0.6$ , and  $11.8 \pm 1.2$  ka, which are in general agreement with published deglacial  $^{14}\text{C}$  ages from areas near sea level to the west. Our ages indicate that the CIS persisted longer in central British Columbia than in southern British Columbia. The CIS disappeared from southern British Columbia within a few thousand years of the ILGM whereas in central British Columbia and possibly also farther north the ice sheet persisted, albeit in a much reduced state, until after the Younger Dryas. Our data resolve the previous debate concerning the upper limit of the CIS over the southern Interior Plateau as we demonstrate that the summit area of the Marble Range was covered by ice during the ILGM. The younger deglaciation ages from the Hazelton Mountains highlight the need for studies of the Skeena ice dome in northwest British Columbia after the ILGM.