

1 **Supplement to: Advancing interpretation of incoherent scattering in**
2 **ice penetrating radar data used for ice core site selection**

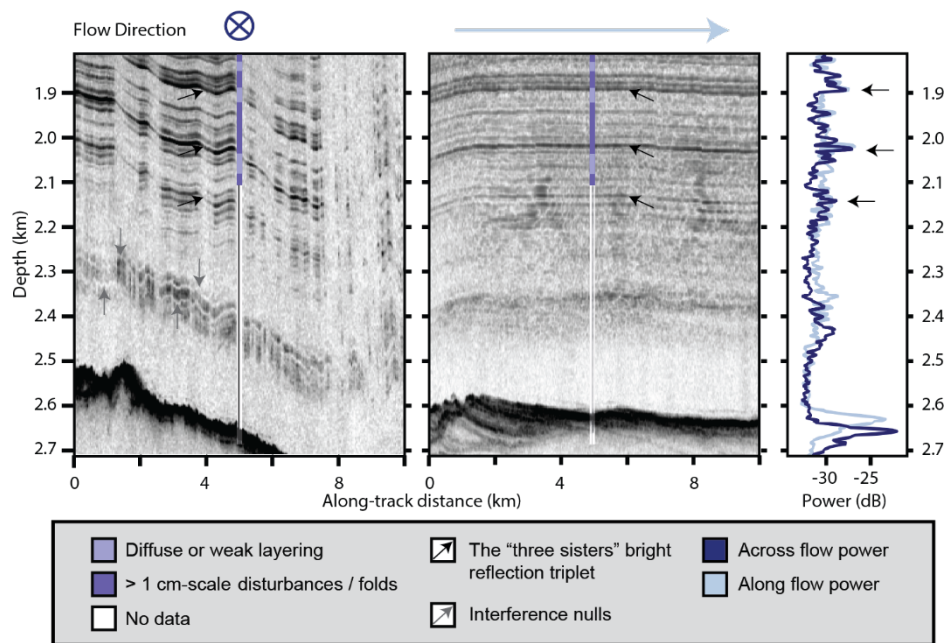
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4 Ellen Mutter¹ and Nicholas Holschuh²

5 ¹Department of Earth and Atmospheric Sciences, Cornell University, Ithaca, NY, 14853, USA

6 ²Department of Geology, Amherst College, Amherst, MA 01002, USA

7 *Correspondence to:* Nicholas Holschuh (nholschuh@amherst.edu)

8 Below, we provide four supplementary figures that provide the broader context that further justify interpretations of the radar
9 data in the main text. Here, we also include the reference list for Supplementary Tables 1 and 2.



11 **Figure S1: Across (left) and along (right) flow radar transects from near the EastGRIP ice core. Vertical colormap over**
12 **the ice core drill site visualizes depths of transitions between diffuse/weak layering and layers with periodic cm-scale**
13 **scale disturbances. Transitions between these layer types at 1900 m and 2030 m are roughly coincident with two of the**
14 **“three sisters” bright reflection horizons while the third reflection “sister” is below the depths of published linescan**
15 **images. Interference nulls are observed within the incoherent scattering unit in the across flow radargram but are**
16 **absent from the along flow radargram.**

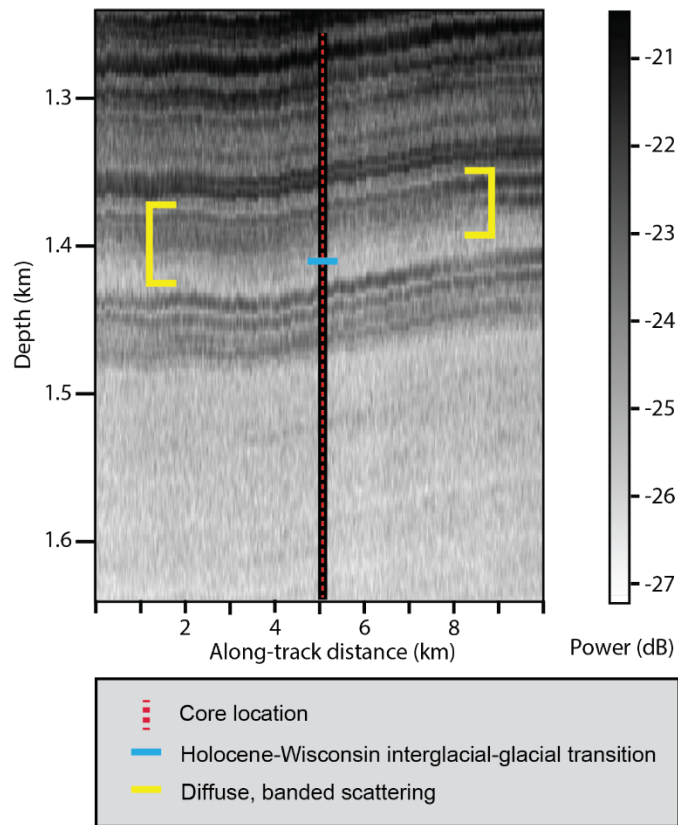
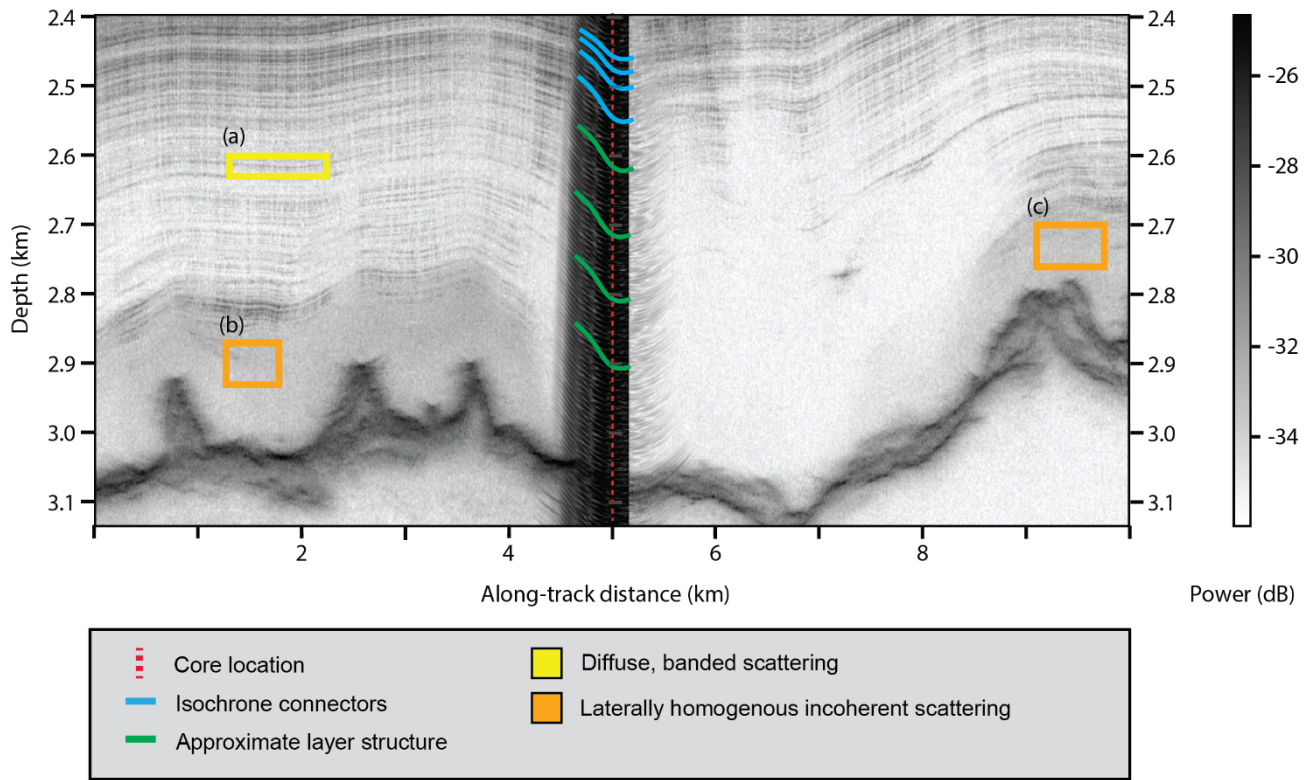


Figure S2: NEEM radargram from depths spanning the Holocene-Wisconsin Interglacial-Glacial transition at 1419 m. The climactic transition is coincident with a transition from a weak vertical girdle c-axis fabric to a strong single maximum c-axis fabric and is collocated with a band of diffuse scattering in the radargram.



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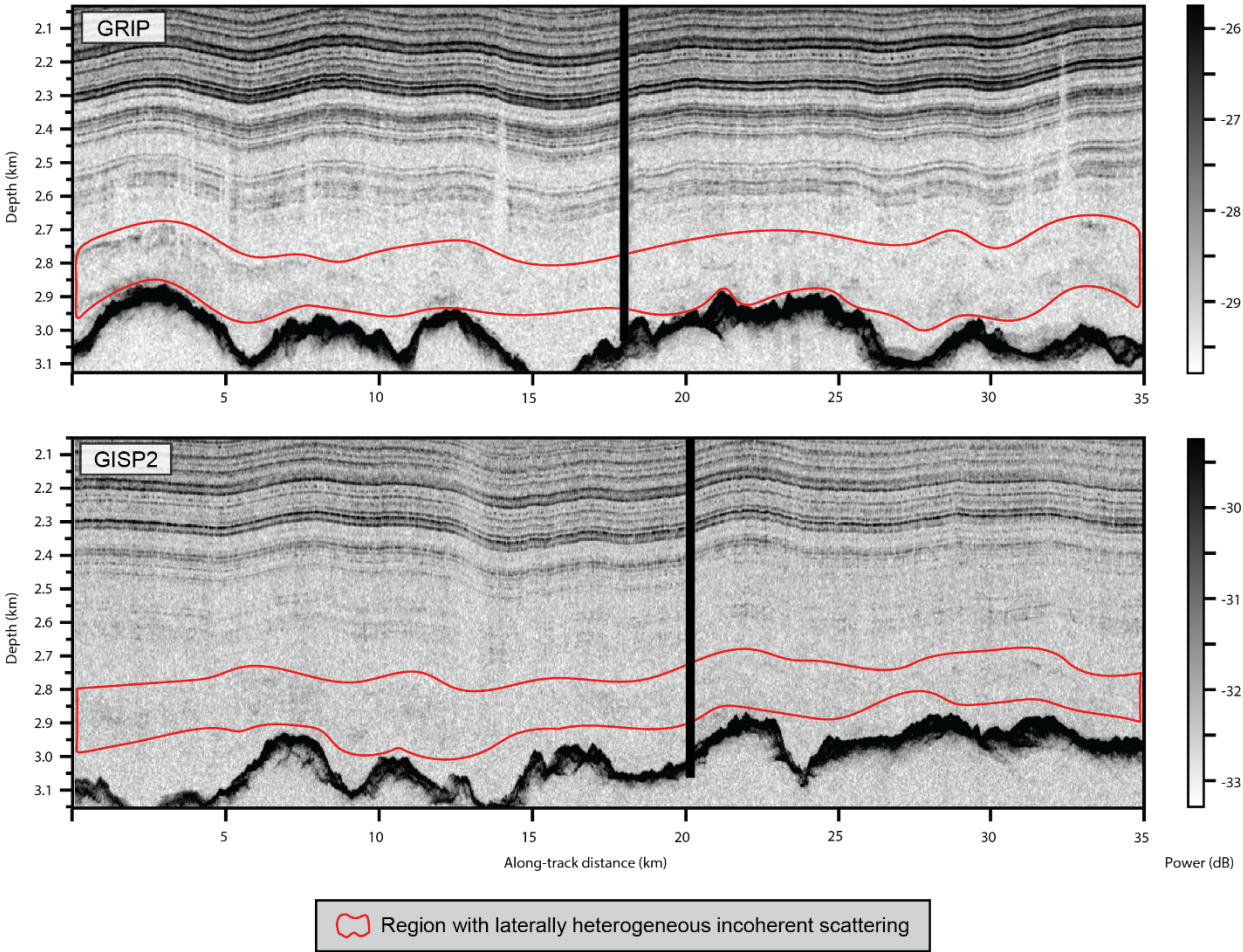
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Figure S3: Dome Fuji radargram with layer tracing across borehole (strong scattering at the ice drill core site is caused by borehole fluid in the ice core cavity). Examples of diffuse banded scattering (a) and laterally homogeneous incoherent scattering (b,c). The diffuse banded layer at (a) dips to ~2700 m at the core site and the onset of the homogenous incoherent scattering unit at (b) dips to ~2900 m at the core site.



31 **Figure S4: 35 km length radar transects from GRIP and GISP2. Areas of laterally heterogeneous incoherent scattering**
32 **are outlined in red. Black vertical line depicts location of ice core. The region of laterally heterogeneous incoherent**
33 **scattering is coincident with the approximate depth of the disturbed climate records at GRIP and GISP2.**

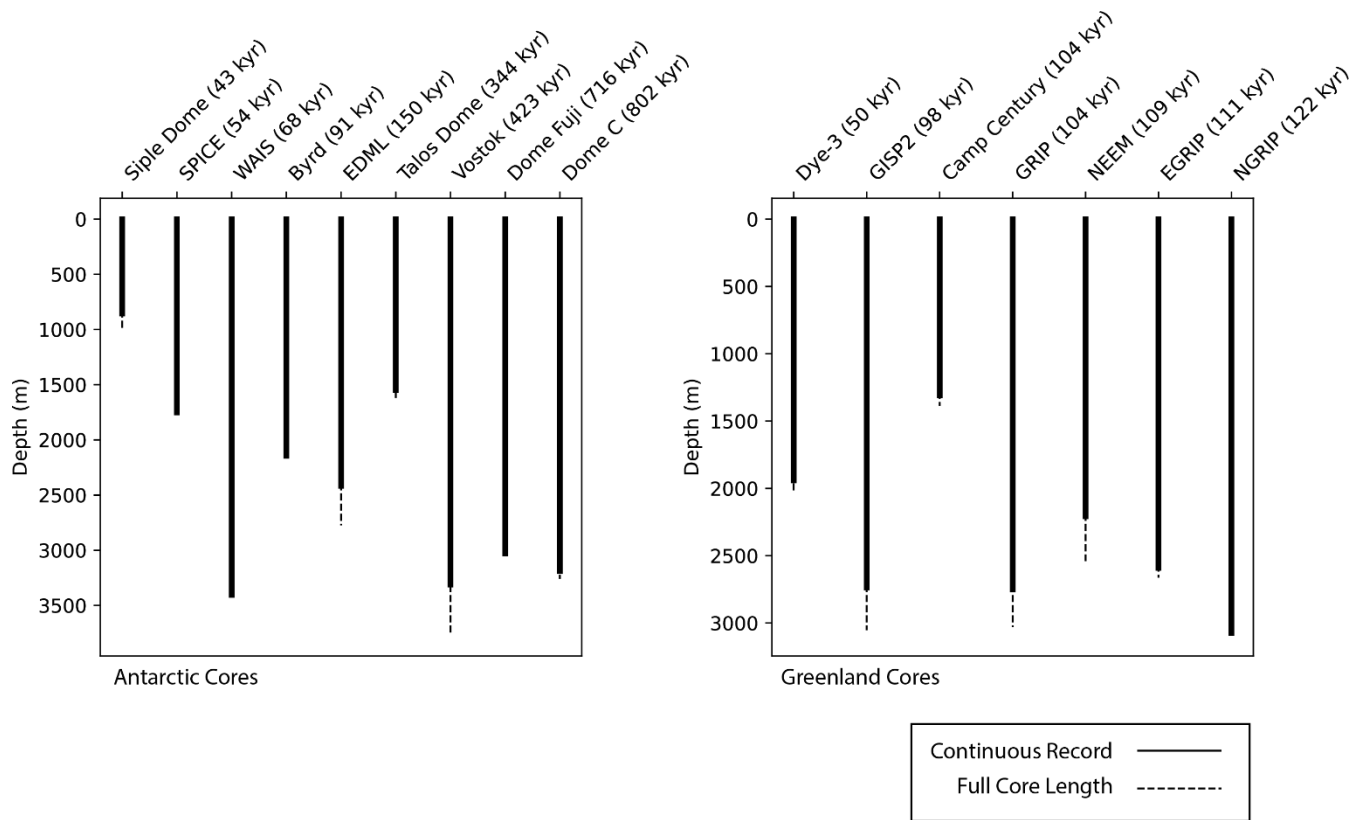


Figure S5: Plot indicating depth range associated with a continuous climate record for ice cores in Greenland and Antarctica. Ice cores are sorted in order of age, considering only the continuous part of the record.

39 **References in Supplementary Material**

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