

Supplement of

Quantity and distribution of methane entrapped in sediments of calcareous, Alpine glacier forefields

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S1 Supplementary Figures

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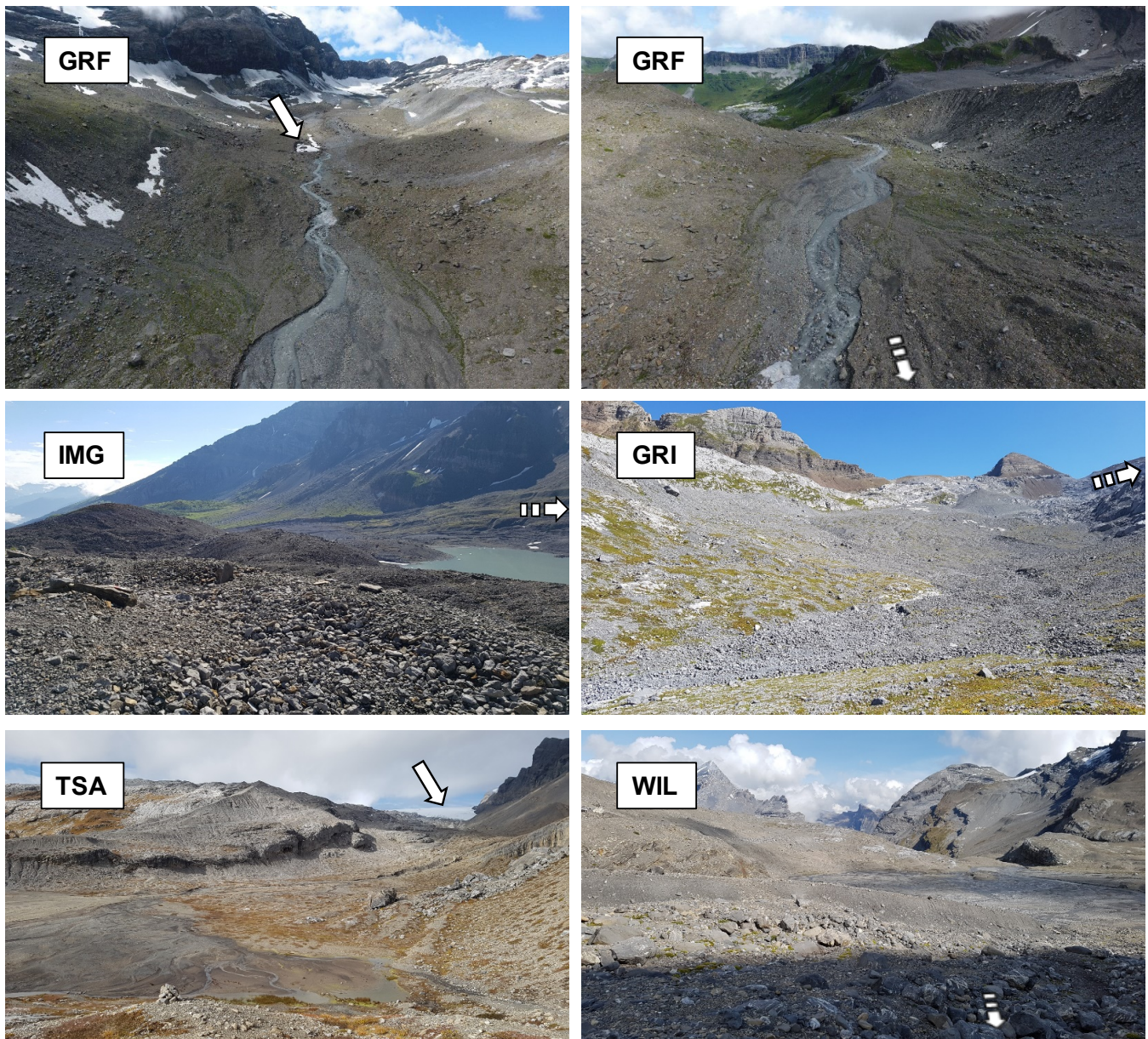
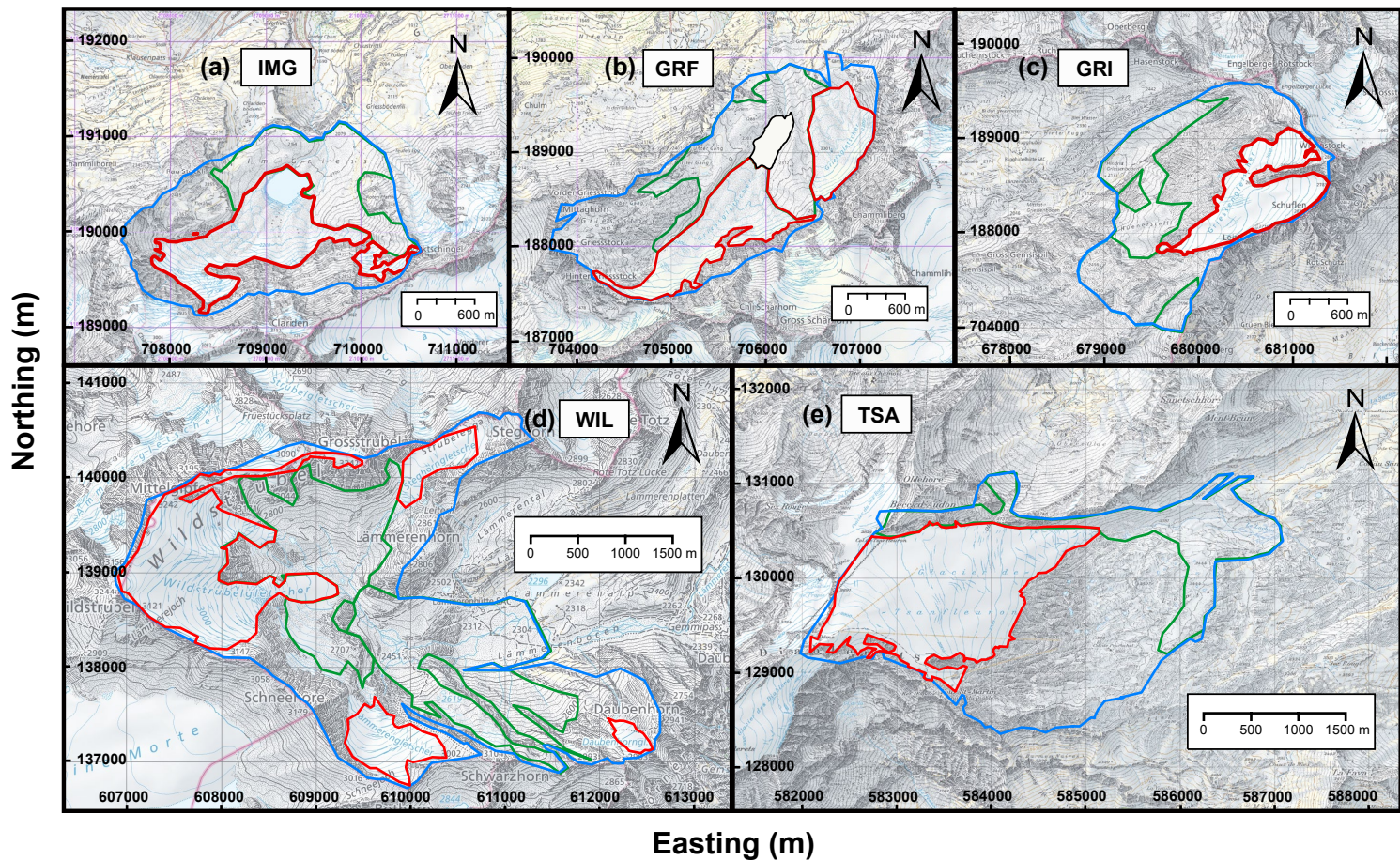
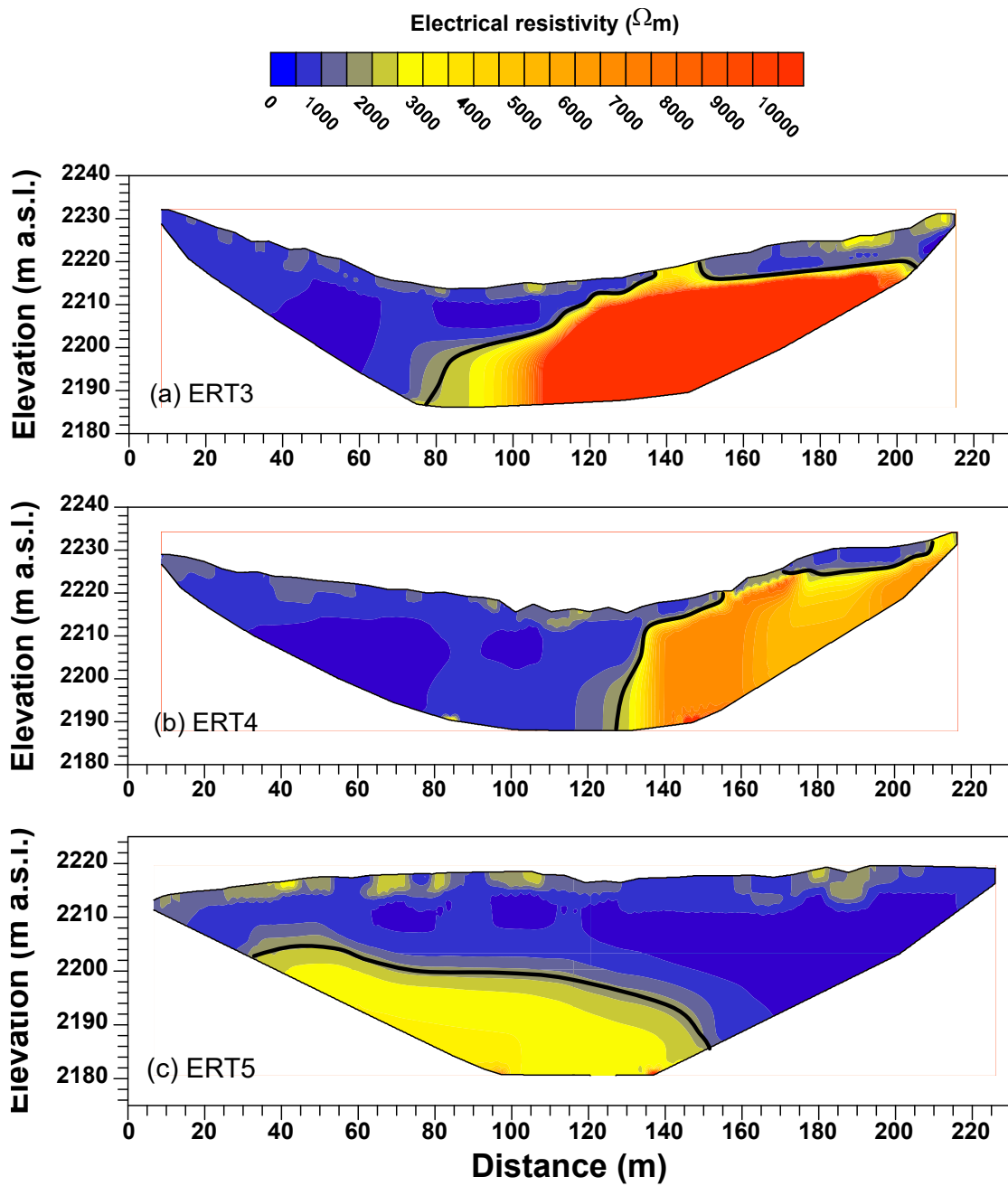


Figure S1. Photographs of the five sampled glacier forefields located within the Helvetic Nappes of the Swiss Central Alps (Im Griess (IMG), Griessfirn (GRF), Griessen (GRI)) and the Alps of Canton Valais (Tsanfleuron (TSA), Wildstrubel (WIL)). Photographs for GRF were taken from above the glacier forefield using a drone facing towards and away from the glacier terminus. The other four photographs were taken from the ground. White arrows indicate the location of the glacier terminus, with dashed arrows symbolizing that the latter is located outside the image view. Photos from IMG, GRI, and TSA glacier forefields were taken in the glacier forefields, facing the glacier terminus. Photo from WIL glacier forefield was taken facing away from the glacier terminus, looking towards the lower part of the glacial catchment.



20 **Figure S2.** Aerial extent of (a) Im Griess (IMG), (b) Griessfirn (GRF), (c) Griessen (GRI), (d) Wildstrubel (WIL), and (e) Tsanfleuron (TSA) glaciers. Blue contours indicate the glaciated area at ~1850, for which information was obtained from historical topographical maps of 1850 (WIL and TSA), 1859 (IMG and GRF), and 1864 (GRI). Red contours indicate the glaciated area in 2018. Green contours indicate the estimated minimum extent of the sediment-covered area. The white area in (b) indicates the extent of the GRF sampling zone (as shown in Fig. 2). All base maps were obtained from swisstopo (Swiss Federal Office of Topography; maps.geo.admin.ch) and show the Swiss CH1903/LV03 coordinate system (units in meters).



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Figure S3. Vertical, two-dimensional electrical-resistivity-tomography (ERT) cross sections of profiles (a) ERT3, (b) ERT4, and (c) ERT5 collected in the sampling zone of Griessfirn (GRF) glacier forefield. Solid black lines indicate the approximate location of the interface between unconsolidated sediment and the bedrock underneath. Lines were omitted at locations where the sediment-rock interface was too deep to be detected.