**Figure S1. Photographs of FDEM data acquisition using the separable dual-coil CMD-DUO system (GF Instruments) on the Flüela Pass rock glacier (Fig. 1a), in HCP configuration with a coil separation of 40 m. In panel (a), operator 1 holds the data logger (with integrated GPS) and operator 2 holds the transmitting antenna; in panel (b), operator 3 holds the receiving antenna. The thin purple cable connecting the two antennas is visible. Note that the blocky, rough, and irregular surface of the rock glacier makes it challenging to optimally position the antennas (orientation) and the connecting cable (distance), which likely affects the measurement quality.**
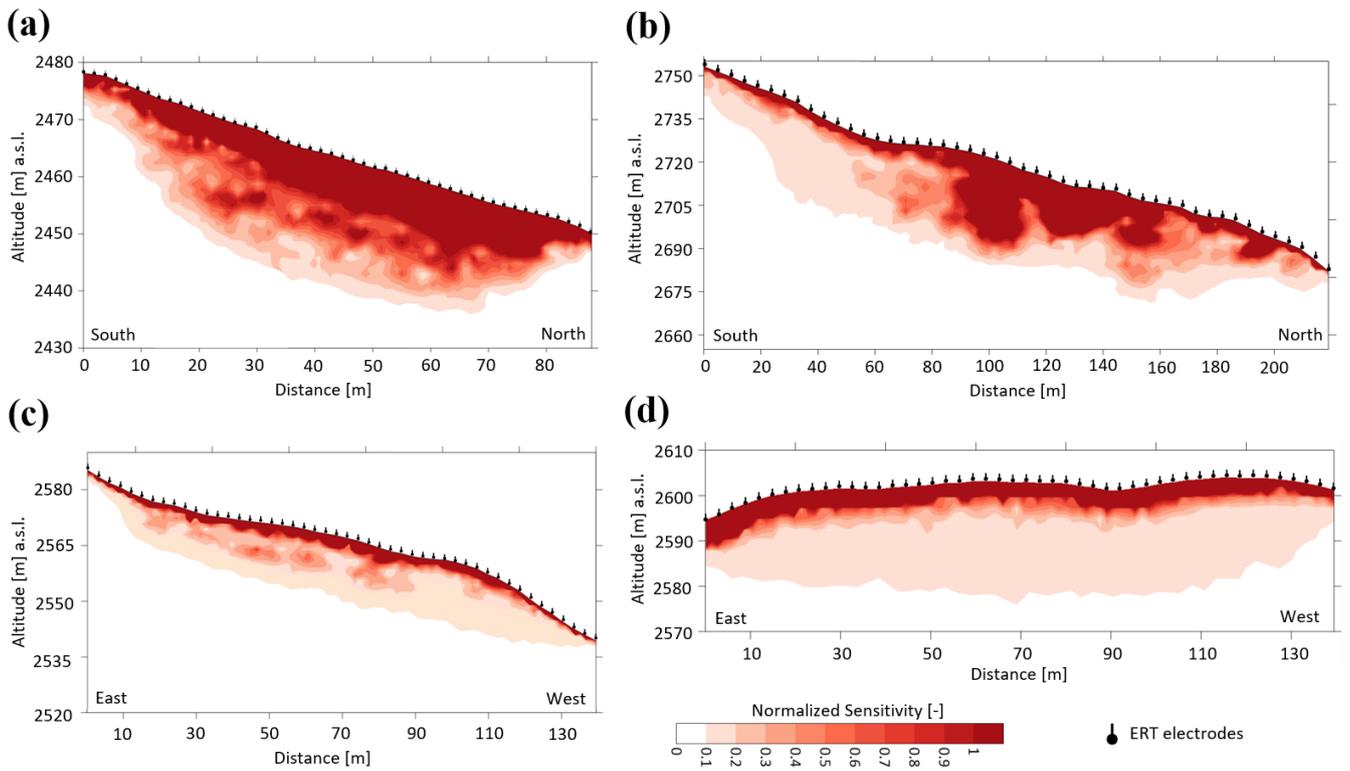
Figure S2. Normalized sensitivity models of the ERT resistivity models presented in Figure 2: (a) active rock glacier at Flüela Pass; (b) active rock glacier at Stelvio Pass; (c) Le Rese di Scorluzzo inactive rock glacier; and (d) the Le Rese di Scorluzzo inactive protalus rampart. In the resistivity models shown in Figure 2, areas with normalized sensitivity values below 0.1 were excluded, with a reasonable approximation.
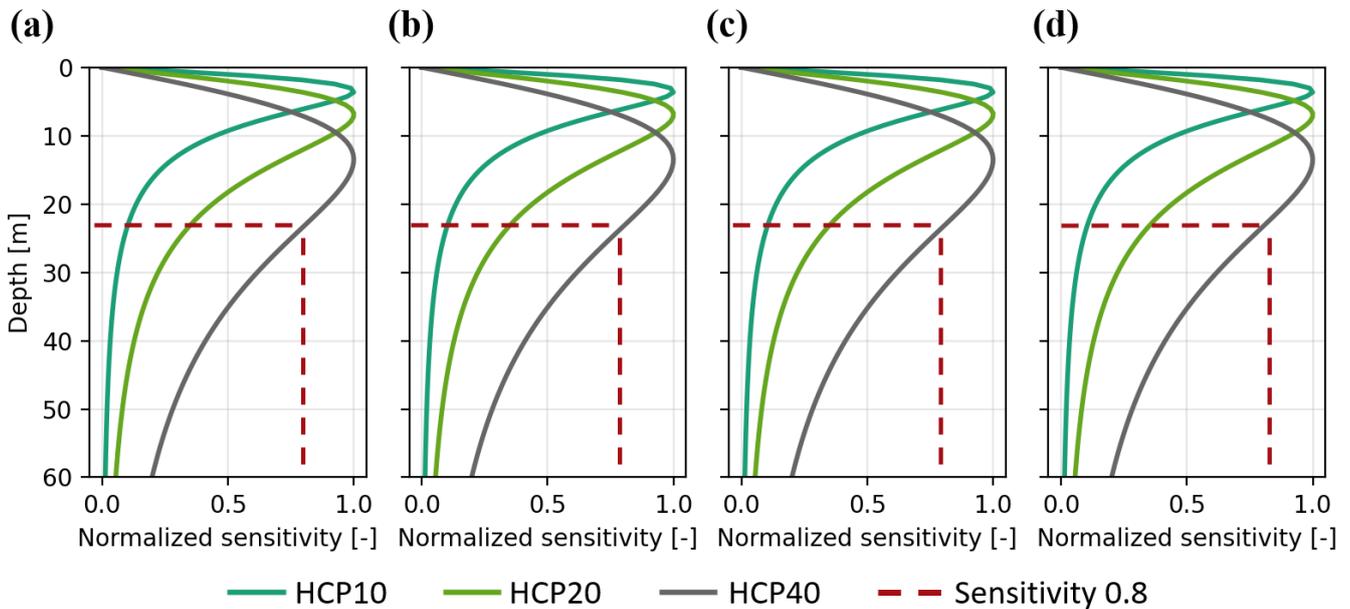
Figure S3. Normalized sensitivity profiles of measurements performed with the dual-coil FDEM system in HCP configuration, with coil spacings of 10, 20, and 40 m: (a) active rock glacier at Flüela Pass; (b) active rock glacier at Stelvio Pass; (c) Le Rese di Scorluzzo inactive rock glacier; and (d) the Le Rese di Scorluzzo inactive protalus rampart. In the pseudo-2D FDEM resistivity models shown in Figure 3, the depth threshold was defined based on the 0.8 sensitivity value (red dashed line), corresponding in all cases to approximately 24 m. Note that the sensitivity profiles are almost identical at all sites, as sensitivity is influenced by the transmitted electromagnetic signal frequency, coil spacing, and the electrical properties of the subsurface (resistivity ranges are very similar across the four sites).