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Supplement of

From the 8.2 ka event to the Little Ice Age: Holocene cold periods and human impact recorded in alpine glaciofluvial peatlands (Silvretta Mountains, Switzerland)

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Supplementary Material

Core descriptions

Lower Las Gondas

Table S1: Core description of peat profile A of Lower Las Gondas (LLG).

Depth (cm)	Description
251-190	mineral; fine silt with clay and very little dark organic material
188	mineral layer of coarser sediment (mm-sized grains)
187-174	mineral; gradually more organic, macro-charcoal (187, 184 cm), charred wood chunks (180-183 cm), coarser mineral layer at 183 cm, sediment-peat matrix in upper part with brown moss
174-172	mineral; fine grey clay/silt
171-164	brownish-grey mix of peat and mineral sediment, wood at 167 cm
163-158	interchanging layers of grey silt with organic content and dark blackish peat with brown moss, few wood
157-146	coarse angular mineral sediment, unsorted gravel (mm to cm scale)
145-128	interchanging layers of grey silt and organic rich sediment/peat, wood at 139 cm
125-127	transition to dark, blackish peat
124-110	dark/blackish brown, humified, decomposed peat, roots and rhizomes, mineral layer at 119 cm
109-98	dark humified peat, decomposed
97-93	light grey sediment, clay/silt, Muscovite, with organic content (roots)
93-91	mineral sediment rich dark brown peat, decomposed
90-43	dark brown humified peat, decomposed, roots and rhizomes, blackish and less humified at 78 cm, *Eriophorum* spindles and lower decomposition at 65-67 cm, higher sediment content at 63 and 54 cm
41-42	decomposed peat with high mineral content, grey silt/clay

40-19	dark brown, decomposed, roots and rhizomes, lower humification around 20 cm
18-10	brown decomposed peat, less humified, darker at 10 cm, wood at 11 cm
10-3	brown decomposed peat, slightly reddish, roots and rhizomes, *Eriophorum spindles*, some charcoal at 8 cm
4-1.5	fine yellowish mineral sediment with rootlets

The peaty sections of the LLG-core sequence generally consist of highly decomposed *Cyperaceae* peat, with occasional relatively small *Eriophorum* spindles in the upper 150 cm. The sections dominated by mineral material mostly consist of finely laminated grey silt, containing various amounts of fine to coarse organic matter. With variable but only a little offset, core LLG-B has the same number and order of mineral layers as LLG-A, which are used as marker horizons.

Marmot Mire

Table S2: Core description of Marmot Mire (MM).

Depth (cm)	Description
112-107	coarse yellowish grey sediment, gravel (mm to cm scale)
107-101	fine dark blueish grey sediment
101-93	transition to dark peat, wood 99/100 cm, fine grey sediment layer at 93.5 cm
93-83	dark brown humified peat
83-62	brown humified peat
52-34	lighter brown humified peat, yellowish mineral sediment in lower part, darker peat 39/40 cm
33-24	dark brown peat, lower humification after 29 cm
23-12	lighter brown peat, roots, relatively lower humification around 20 cm with brown moss stems and leaves
11-2	lighter brown peat, higher decomposition, higher humification

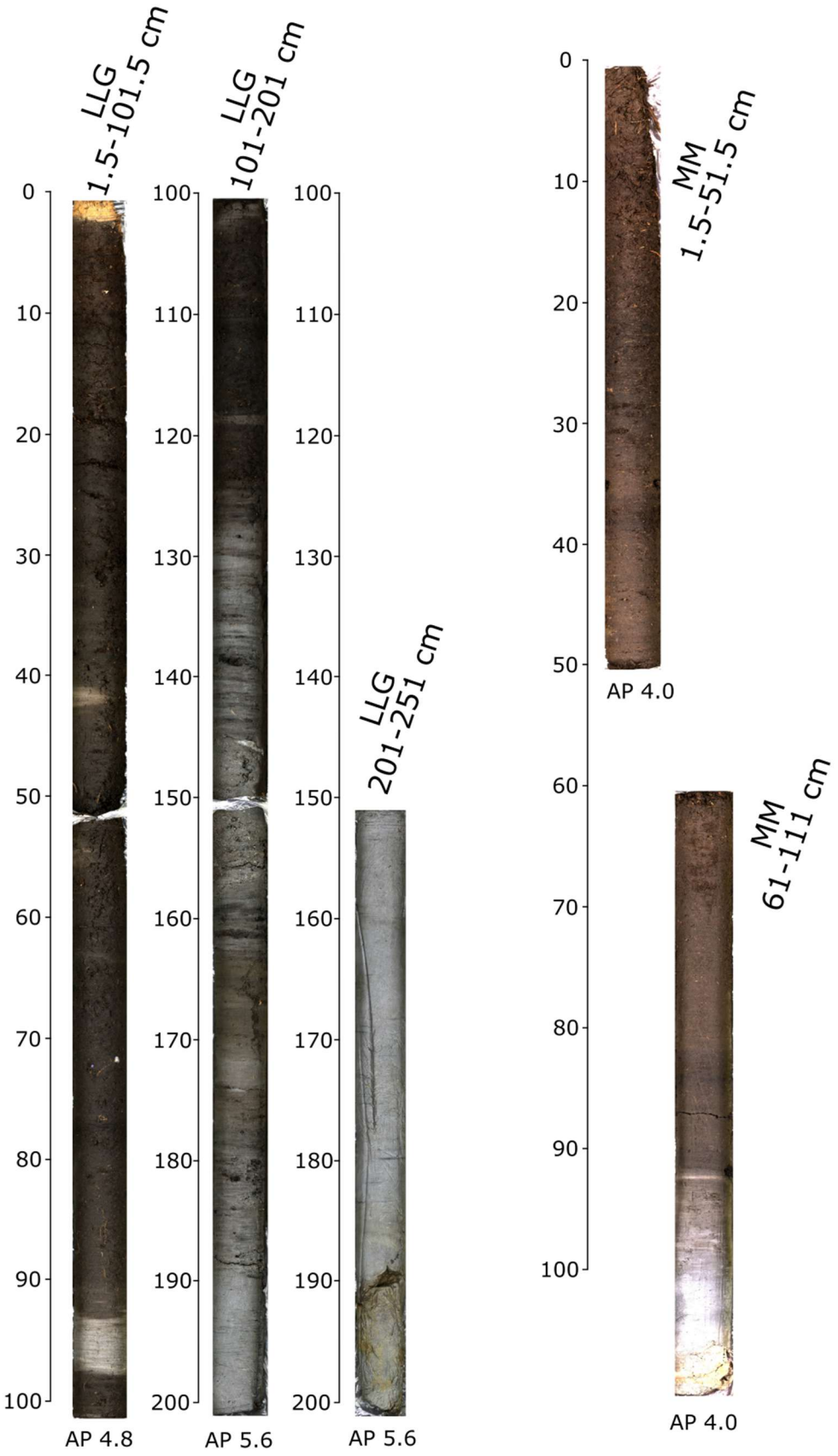

Figure S1: Line scans of LLG-A and MM-A using different apertures to account for the darker or brighter material.

Additional cores

The Upper Las Gondas core (ULG) sequence can be described mostly as a dense, dark, decomposed sedge peat. The peat is denser and more humified, and potentially more mineral rich from 73 to 100 cm. A 2-cm thick silt band is centred around the depth of 137 cm. A decomposed, soft and wet gyttja is present from 145 cm to 160 cm.

Figure S2: Upper metre of the heterogeneous LCM core showing alternating peat and sediment layers in the upper metre from top (left) to bottom (right).

The Lower Coffine Mire core (LCM) is a very complex profile of interlayering peat and silty sediment, covered by a layer of recent brown moss (Fig. S1). Very coarse and angular gravel with low organic content is visible in the upper 23 cm, overgrown by brown moss.

Age-depth model of Upper Las Gondas (ULG)

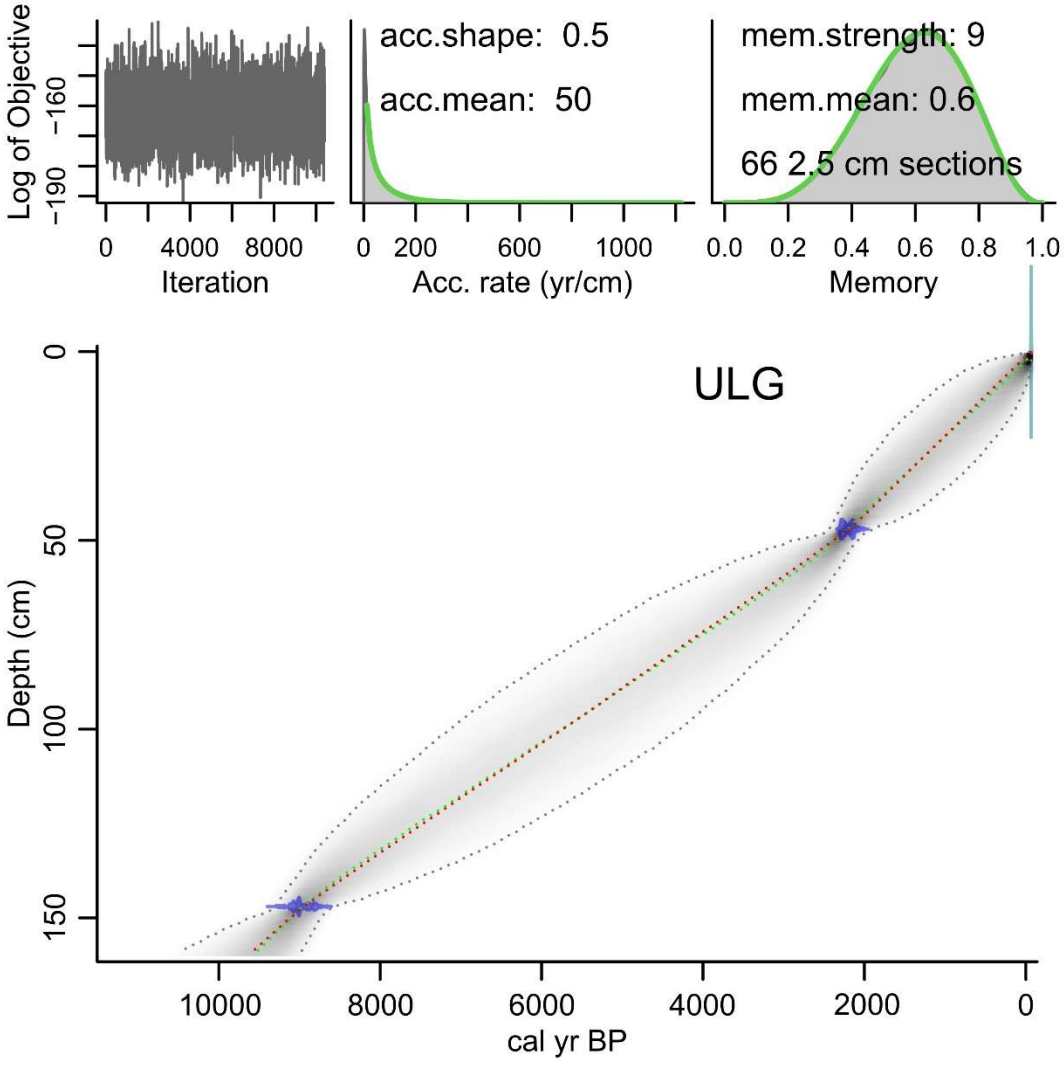

Figure S3: Age-depth-model of the Upper Las Gondas (ULG) core, produced in rbacon.