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Vegetation History, Landscape Development, and Archaeology of the Lower Engadine, Switzerland

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General context

The Lower Engadine Valley (canton of Grisons, Switzerland) follows the Inn River in the Rhaetian Alps until it meets the Austrian border. Pronounced cliffs flank the river, and the today's villages are located on geological terraces at elevations between 1000 and 1500 m a.s.l. The village of Ardez (1460 m a.s.l.) and its vicinity harbour archaeological sites from the Bronze Age to the Roman Period. Today, the geological terrace and its land-surface where Ardez is located are used for cattle grazing and for some cultivated fields. Sparse larch trees (*Larix decidua*) grow on the lower slopes of the Silvretta Massif (north of Ardez), forming the so-called larch meadows, which were used as grazed forests for more than 4000 year.

The earliest permanent settlements in the Lower Engadine date back to the Middle Bronze Age (1550–1350 BC), among those are Mottata near Ramosch, Scuol-Munt Baselgia, Ardez-Suotchaste, Lavin-Las Muottas, and Susch-Motta Palu. So far not a single Neolithic settlement is known. However, palynological data, namely pollen indicators typical for grazing, revealed human impact on the landscape since the 4th millennium BC (Dietre et al. 2014, Kothieringer et al. 2015). Investigations of agricultural field terraces near Ramosch yielded further evidence of an initial settlement phase in the Lower Engadine during the 4th and 3rd millennia BC. One of these terraces was re-examined in 2008 by the "Rückwege"-project, a project initiated in 2007 by the University of Zürich, revealing a massive charcoal layer that was interpreted as evidence of fire-induced forest clearances. Radiocarbon samples from this layer date the fire incident back to 2840–2470 BC, thus confirming the assumptions by older investigations. The above-mentioned settlements of the so-called inner-alpine Bronze Age culture mark the beginning of a continuous human occupation of the Lower Engadine valley and were integrated into a supra-regional trading and communication network. In adjacent areas, many other settlements within this inner-alpine culture area show similar cultural and economic developments. Various studies, e.g. at Airolo-Madrano

(Ticino/Switzerland), have shown that these sites were part of a wider settlement and economic system that also involved the exploitation of high altitude zones for upland summer farming or grazing.

The Saglias and Cutüra Bogs near Ardez

The Saglias Bog (100×50 m) is located southwest of Ardez (46°46'6.72" N, 10°10'57.22" E, 1420 m a.s.l.), on the southern side of the Inn River, near the hamlet of Sur-En. The name Saglias probably refers to "a ditch besides a cultivated field" in the Rhaeto-Romanic language, which describes very well the location of this mire. The small bog, 50×30 m in dimension, and heavily grazed Cutüra Bog is located west of Ardez (46°46'19.39" N, 10°11'23.88" E, 1400 m a.s.l.), on a terrace overlooking the Inn River. The name Cutüra relies thereby to the cultivation of food crops in the Rhaeto-Romanic language, which also describes the historical and today's importance of this wetland area formerly surrounded by cereal fields and livestock grazing areas.

The Saglias Bog stratigraphy documents the evolution of the flora and vegetation since 6150 cal. BP (Figure 1), while the Cutüra Bog record covers the last 1200 years only (Figure 2). The palynological analyses conducted on the Saglias and Cutüra Bog records provided a detailed history of the use of fire in the Lower Engadine Valley since the Late Neolithic Period, as well as of the cultivation of cereals and pastoral practises. Fire was used during the Late Neolithic period to gain open land for pastoral activities, and potentially for early attempts of cereal cultivation. This relates to the cultural activities known from archaeological and palynological studies in nearby sites of the Lower Engadine Valley. The valley floors were preferred for terrace-managed agriculture, and higher, subalpine areas were used for pastoral purposes, at least seasonally between spring and autumn.

Palynological data from the Cutüra Bog enabled a refined vision of the land-use around the village of Ardez during the Medieval Period. Cultivation of cereals was pursued since AD 900, in addition to large areas

used for pastoral activities. Cultivation of rye (*Secale cereale*) reached an optimum around AD 1350, when also people belonging to the Walser communities settled the valley floor. Then, the Little Ice Age cooling event was most probably responsible for limited food-production and an important human population decline subsequently leading to large-scale forest recovery. During Late Medieval and Modern Times, pastoral activities were introduced again around Ardez, and this land management is still in use nowadays.

The Valley of Urschai and the archaeological and palynological studies at Abri Urschai and at Plan da Mattun

So far, a rock shelter at Plan da Mattun at the head of the Urschai valley represents the oldest known archaeological site in the study area. This Mesolithic site is strategically located near the Futschölpass, at a place where huge boulders form numerous abri (shelter) sites. Underneath one of these rock shelters, Plan da Mattun L2, we found flint artefacts, bones, and a small fireplace dating to the mid-9th millennium BC. These finds indicate early Mesolithic hunting activities during the Early Holocene. After a hiatus of about 2000 years, further Mesolithic finds date back to the mid-7th millennium BC. Future research is likely to fill this gap indicated by several sites dating to this period in adjacent areas. In our study area, sites dating to the Late Mesolithic period were found in the Urschai valley (Plan da Mattun L3), Tuoi valley, Fimba valley (all in Switzerland) and Jam valley (Austria). While we distinguish here between rock shelters and open-air fireplaces, both types of sites are most likely related to seasonal foraging activities. In the Fimba valley, a fireplace was identified on a hilltop at 2300 m a.s.l. offering a good overview of the surroundings. ¹⁴C-dates of charcoal samples show that this site was repeatedly used during the Late Mesolithic period, the Mesolithic-Neolithic transition (c. 5500 BC), and the Middle Neolithic period. At the junction of the Tasna and Urschai valleys, two fireplaces dating to the mid-5th millennium were discovered under a rock shelter, whereas in the Fimba valley an open-air fireplace was found dating as far back as the early 4th millennium BC. North of the Futschölpass in the Austrian Jam valley, a fireplace dating back to the late 4th millennium BC is contemporary with the Iceman found about 50 km SE at the Tisenjoch (Italy). It should be noted that none of these early fireplaces yielded any associated artefacts. The Bronze Age in the Silvretta Alps is evidenced by several, partly contemporary sites at different altitudes both north and south of the modern Swiss-Austrian border, but especially again in the area of Plan da Mattun. Unfortunately, these sites – rock shelters and open-air fireplaces on hilltops – usually contain little or no artefacts, with the exception of Plan da Mattun L1. At this abri, we docu-

mented a stratigraphic sequence of several fireplaces comprising calcined animal bones, flint and bronze artefacts, and pottery of the Laugen-Melaun culture (1200–500 BC).

While the Plan da Mattun L1 rock shelter can be understood as a seasonal Bronze Age camp site or perhaps also as an offering site, we have so far not found any architectural remains in our study area that could clearly be related to Bronze Age upland pastoral activities like those found in the Ötztal Alps at the Austrian-Italian border and in the Dachstein area in Austria (Mandl 2006). The earliest known pastoral infrastructure (huts and livestock enclosures) in the Silvretta region dates back to the Late Hallstatt period (c. 600 BC) and the following Latène period, with sites in the Fimba valley and again the Val Tasna/Urschai.

A very remarkable newly discovered site is the so-called Abri Urschai. Underneath a rock shelter at the entrance to the Urschai valley, at an altitude of 2180 m a.s.l., several fireplaces and small pits were excavated between 2011 and 2014. Charcoal samples from this site date back to the 5th and 3rd millennium BC and will provide detailed information about seasonality and periodicity by dendrochronological data. The artefact assemblage comprises flintarrowheads and blades, small pieces of (wild) animal bones, collected plants and for the first time, ceramic fragments of several pots. The research is still in process, but we expect a multiphase campsite of Neolithic hunters, perhaps also of first herders.

The Plan da Mattun Bog

The Plan da Mattun bog is very small (4 × 2 m) peatland in the Urschai Valley, next to the archaeological complex of Plan da Mattun. The palynological analyses of the peat stratigraphy (including pollen, cryptogam and fungal spores, as well as micro-charcoal particles) described the evolution of the flora and vegetation of the Urschai Valley since around 4850 BC / 6800 cal. BP, when the bog started to accumulate deposits (Figure 3). Fire was very probably used to manage the landscape's resources, as shown by peaks of micro-charcoal particles during the multi-centennial long decrease of the tree cover, between 2250 BC and 1850 BC (i.e. 4200 and 3800 cal. BP). The acting prehistoric societies – probably originating from the Lower Engadine or even more southern areas such as the Vinschgau Valley – aimed at establishing high altitude pastures for their livestock (mainly goat, sheep, cows), as indirectly evidenced by the presence of pollen indicators for grazing pressure and by spores of coprophilous fungi (Figure 3). Our data thus reveal the continuous use of these Alpine pastures since at least 2200 BC, the transition from the Neolithic towards the Early Bronze Age period. Subsequently an intensification of pastoral activities was recorded for the Late Bronze Age, as well as for the Iron Age and Medieval Periods.

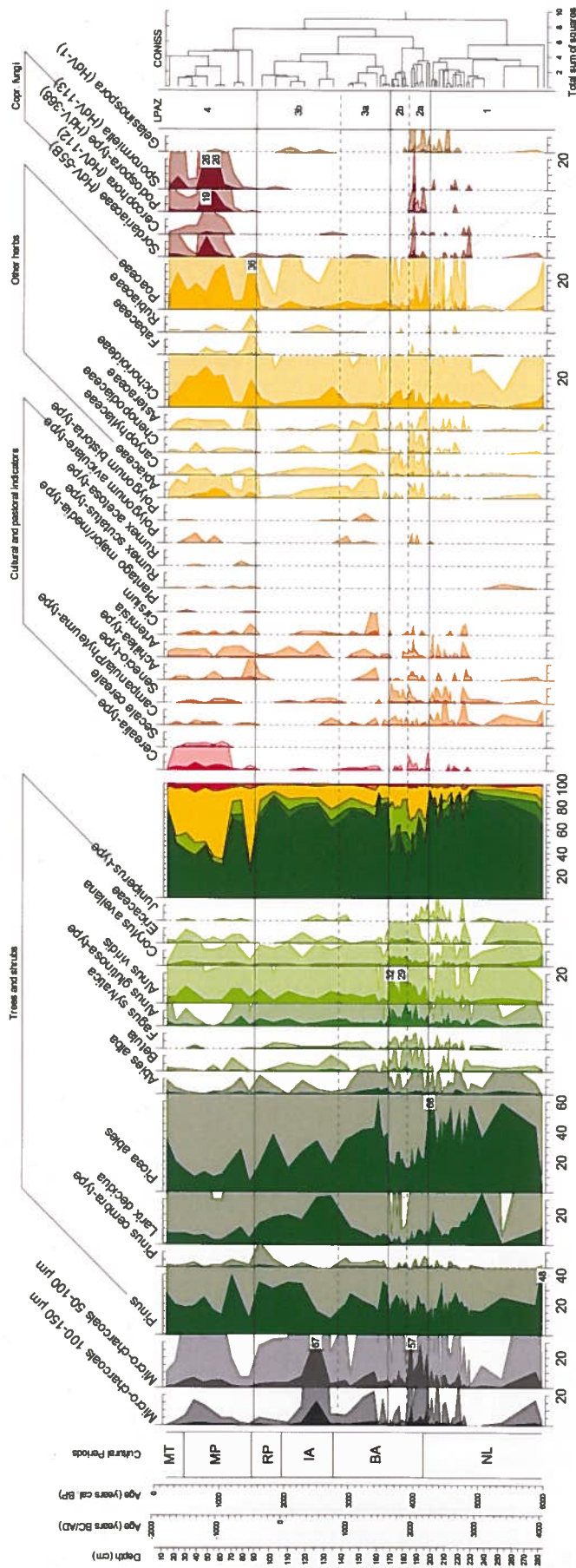


Figure 1. Palynological diagram for the Saglias Bog peat stratigraphy near Ardez, Lower Engadine, Switzerland.

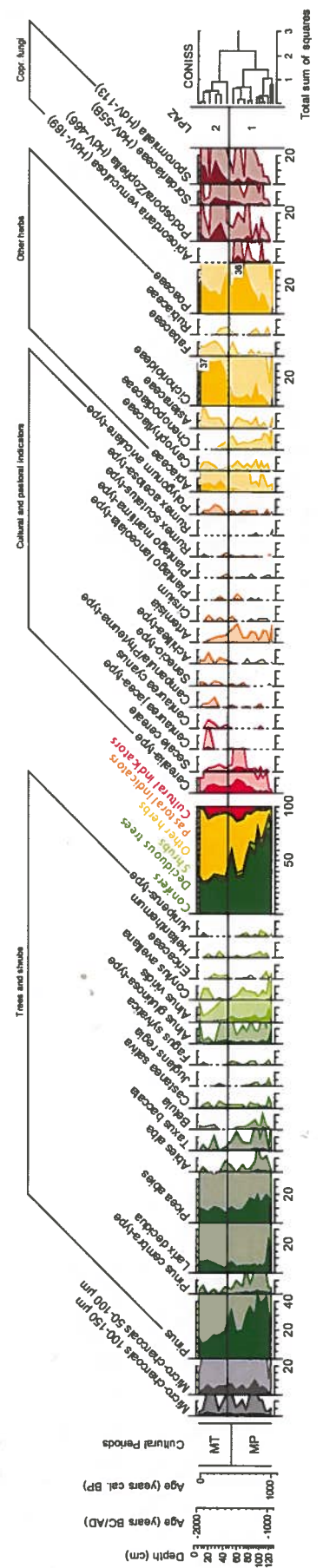
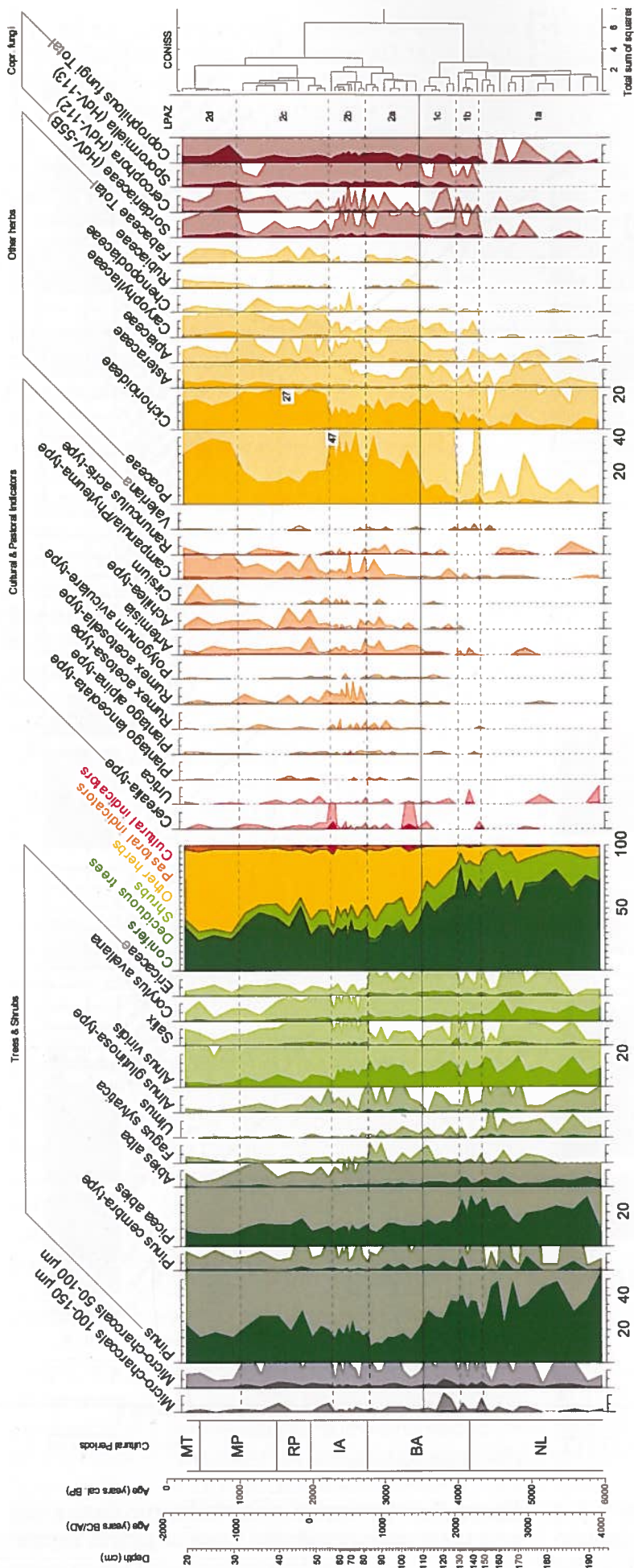


Figure 2. Palynological diagram for the Cutüra Bog peat stratigraphy near Ardez, Lower Engadine, Switzerland.



References

Dietre, B., Walser, C., Lambers, K., Reitmaier, T., Hajdas, I., & Haas, J. N. (2014). Palaeoecological evidence for Mesolithic to Medieval climatic change and anthropogenic impact on the Alpine flora and vegetation of the Silvretta Massif (Switzerland/Austria). *Quaternary International* 353, 3–16. <http://doi.org/10.1016/j.quaint.2014.05.001>

Kothieringer, K., Walser, C., Dietre, B., Reitmaier, T., Haas, J. N., & Lambers, K. (2015). High impact: early pastoralism and environmental change during the Neolithic and Bronze Age in the Silvretta Alps (Switzerland/Austria) as evidenced by archaeological, palaeoecological and pedological proxies. *Zeitschrift für Geomorphologie* 59 (Suppl. 2), 177–198. http://doi.org/10.1127/zfg_suppl/2015/5-59210

Figure 3. Palynological diagram for the Plan da Mattun Bog peat stratigraphy, Upper Urschai Valley, Lower Engadine, Switzerland.