

# Fire ecology N and S of the Alps since the last ice age

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Fire ecology north and south of the Alps since the last ice age  
Tinner, W; M. Conedera, B. Ammann & AF Lotter  
The Holocene, 15( 8) 2005, pp. 1214–1226  
<http://tinyurl.com/g4zos> (contents page, the pdf is 13 pp, 1.14 mb)

**Abstract:** Wildfires are very rare in central Europe, which is probably why fire effects on vegetation have been neglected by most central European ecologists and palaeoecologists. Presently, reconstructions of fire history and fire ecology are almost absent. We analysed sediment cores from lakes on the Swiss Plateau (Lobsigensee and Soppensee) for pollen and charcoal to investigate the relationship between vegetation and fire.

Microscopic charcoal evidence suggests increasing regional fire frequencies during the Neolithic (7350–4150 cal. BP, 5400–2200 BC) and the subsequent prehistoric epochs at Lobsigensee, whereas at Soppensee burnings remained rather rare until modern times. Neolithic peaks of charcoal at 6200 and 5500 cal. BP (4250 and 3550 BC) coincided with declines of pollen of fire-sensitive taxa at both sites (e.g., Elm, Lime, Ivy, Beech), suggesting synchronous vegetational responses to fire at regional scales.

However, correlation analysis between charcoal and pollen for the period 6600–4400 cal. BP (4650–2650 BC) revealed no significant link between fire and vegetation at Soppensee, whereas at Lobsigensee increases of Hazel and decreases of Beach were related to fire events.

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Fire impact on vegetation increased during the subsequent epochs at both sites. Correlation analyses of charcoal and pollen data for the period 4250–1150 cal. BP (2300 BC–AD 800) suggest that fires were intentionally set to disrupt forests and to provide open areas for arable and pastoral farming (e.g., significant positive correlations between charcoal and culture indicators).

These results are compared with southern European records (Lago di Origlio, Lago di Muzzano), which are situated in particularly fire-prone environments. Post-Neolithic land-use practices involving (controlled) burning culminated in both regions at about 2550 cal. BP (c. 600 BC). However, fire-caused disappearances of entire forest communities were confined to the southern sites.

Such differences in fire effects among the sites are explained by the dissimilar importance of fire as a result of different climatic conditions and cultural activities.