



Spatial and temporal patterns of wildfires in the Northern Alps

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Wildfires in the northern Alps are rare compared to e.g. the Mediterranean region. However, fires occurring on the dry, south-exposed slopes of the inner-alpine valleys can constitute a significant disturbance of the ecosystems in the sub-alpine belt.

We reconstructed the younger regional wildfire history (last few centuries) of a part of the the Northern Limestone Alps using chronicles, forestry and fire brigade records as well as historical pictures (postcards, aerial photos etc.), local names and interviews with local people. The long-term fire frequency was investigated using mire drillings, charcoal in soils and dendrochronology.

In the surrounding of the Karwendel, Wetterstein and Mieminger Mountains we have identified c. 400 forest fires to date. The earliest detected fire dates to more than 2900 years; the largest one (in 1705) affected an area of several thousand hectares. Approximately 90% of the fires are man-made (negligence, arson, railway) which explains the concentration on the south-exposed slopes of the densely populated Inn valley. Most of the larger fires take place in the altitudinal belt between 1400 and 1900 m a.s.l.; apart from very few exceptions, they are restricted to southerly orientations. Locally, mean recurrence intervals of 200-300 years occur which is similar to e.g. boreal forests in Canada. We observed a strong seasonality with 40% of the fires occurring in spring and 30% in summer. There is a weak correlation with the weather conditions in the one or two weeks before the fire with dry periods promoting wildfire ignition and burnt area size; however, there are many exceptions from the rule. The 1940ies stands out for more than twice as much fires than in all other decades which is both due to climatic and anthropogenic causes. Today, there is an apparent trend towards more frequent and smaller fires. The frequency is biased by the multitude of available documentation today (e.g. websites of fire brigades), while the decreasing size is due to improved fire fighting.

Additional first results of the charcoal records in soils and mires will be presented at the meeting.