



## **The 3000-4000 cal. BP anthropogenic shift in fire regime in the French Pyrenees.**

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Fire is a key disturbing agent in a wide range of ecosystems: boreal biome (Pitkanen, 2000), Mediterranean area (Colombaroli et al., 2008) as well as temperate European mountain zones (Tinner et al., 1999). During the Holocene, climate may control fire regime by both ignition and fire spread-favouring conditions (i.e. composition, structure and moisture of biomass) whereas man may change charcoal accumulation patterns through type and intensity of agro-pastoral activities. In western and Mediterranean Europe, single sites charcoal analysis recorded the anthropogenic forcing over fire regime broadly between the mid and the late-Holocene. Turner et al (2008) showed that climate and fire had been disconnected since 1700 cal. BP in Turkey. In central Swiss, Mean Fire Interval decreased by two times 2000 years ago due to increasing human impact (Stahli et al., 2006). In Italy, climate and man have had a combined influence on fire-hazard since ca 4000 cal. BP (Vannière et al., 2008).

In the Pyrenees Mountains, the linkage between agro-pastoral practices and fire could be dated back to ca 4000-3000 cal. BP with a clear succession of a clearance phase (high fire frequency) followed by a quite linear trend throughout Middle Ages and Modern times corresponding to a change in fire use (Vanniere et al., 2001; Galop et al., 2002, Rius et al., in press). The quantification of fire regimes parameters such as frequency with robust methodological tools (Inferred Fire Frequency, Mean Fire Interval) is needed to understand and characterise such shifts. Here we present two sequences from the Lourdes basin (col d'Ech peat bog) and from the occidental Pyrenees (Gabarn peat bog), which cover the last 9000 years with high temporal resolution. The main goals of this study were to (1) assess control factors of fire regime throughout the lateglacial and Holocene (climate and/or man) on the local scale, (2) evidence the local/regional significance of these control factors, (3) discuss the role of fire in landscape management during the last 3000 years.

These fire records emphasizes a shift in fire regime between ca 4000 and 3000 cal BP with similar trends during the last 3000 years (i.e. Mean Fire Interval = 150 years), which appear to be human-driven. However, both Neolithic and Bronze Age periods have different charcoal accumulation patterns suggesting discrepancies between local fire histories and thus different land-use trends and intensity.

### **References**

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