

## EXPLORING THE COMBINED ROLE OF CLIMATE AND HUMAN CONTROLS ON HOLOCENE BIOMASS BURNING BASED ON A SYNTHESIS OF EUROPEAN SEDIMENTARY CHARCOAL DATA

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Although fire is widely recognised a valued land-use tool at least since the Middle Palaeolithic Age (Behre, 1988; Caldararo, 2002; Daniau *et al.*, 2010; Roebroeks and Villa, 2010), recent simulations based on sedimentary charcoal records suggest that until the pre-Industrial era global fire dynamics were mainly controlled by climate factors, shifting to an anthropogenic-driven regime only during the late 18<sup>th</sup> - early 19<sup>th</sup> centuries (Marlon *et al.*, 2008; Pechony and Shindell, 2010).

To verify this assessment at finer spatial (regional) and temporal scales, we investigated Holocene fire dynamics based on European high resolution sedimentary charcoal records selected from the Global Charcoal Database (GCD version 2.0, <http://gpwg.org>), the European Charcoal Database (ECD, <http://www.fireman-europe.com/ECD.html>) and the European Pollen database (EPD, <http://www.europeanpollendatabase.net>). To improve the regional coverage, some additional sites were directly furnished by the original author. Only well dated records from lacustrine and peat bog sediments were selected from the past 9 000 years. Despite some geographic regions were less well sampled than others, this synthesis provide a quite comprehensive view of European biomass burning.

In particular, our analysis is focused on the reconstruction of European fire activity over the Holocene trying to refine – with a higher spatial and temporal resolution than previously attempted – the interpretation of possible factors controlling past trends in fire regime by comparison with independent reconstruction of climate (Schurgers *et al.*, 2006; Mikolajewicz *et al.*, 2007) and land-use changes (Klein Goldewijk *et al.*, 2010; Kaplan *et al.*, 2010).

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