



The *MedFireAtlas*: A regional historical fire database for the Mediterranean Basin

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Wildfire is a fundamental Earth system process that has shaped terrestrial ecosystems, biogeochemical cycles, and human societies for millions of years. The Mediterranean Basin is one of the world's major fire hotspots, where climatic extremes interact with dense human populations and long-standing land-use legacies, frequently resulting in severe wildfire activity. Nevertheless, the knowledge on the long-term history of Mediterranean fires has remained poor, and existing information is often difficult to access and reuse, with governmental documents, independent research groups, and numerous unpublished or inaccessible datasets. This lack of integration has limited our ability to detect wide-scale retrospective regional patterns, understand the drivers of fire occurrence, and place recent wildfire extremes within their historical context. Here, we present the Mediterranean Fire History Database (*MedFireAtlas*), the first openly accessible, standardised, region-wide compilation of long-term Mediterranean fire history data, designed to address this critical knowledge gap.

The *MedFireAtlas* database integrates two types of data, covering different temporal resolutions and spanning both southern Europe and the North African regions of the Mediterranean Basin. The first type of data includes 43 site-level tree-ring-based fire history reconstructions spanning from the 13th century onward, mainly from forests characterised by surface-fire regimes. These datasets offer annually resolved and multi-century long information for surface-fire-adapted species, primarily *Pinus nigra*, as well as *Cedrus atlantica* and *Pinus pinaster*. The second type of data includes governmental documentary fire records, primarily covering the mid-20th century to recent decades, available through open or authorised sources. It contains over 1.8 million documentary records from a total of ten countries. All entries were harmonised under a common metadata structure, including location, date, cause (when available), burned area, and data type. End-to-end data architecture, workflows, quality-control procedures, and metadata guidelines within the database ensure consistency and reliability. The *MedFireAtlas* links detailed recent fire occurrences with multi-century historical reconstructions, enabling spatiotemporal analyses of fire regimes and regional patterns that are not possible using either data source alone.

The key feature of *MedFireAtlas* is an interactive web interface built by R Shiny that enables users to visualise, filter and download fire data through a spatial interface. The platform provides full capabilities to investigate long-term temporal trends, country-level and regional patterns, and comparisons among multiple datasets, supporting scientific research and applied uses, providing valuable multi-century benchmarks for fire regime modelling and long-term ecological and climate research. The *MedFireAtlas* is designed as a living, community-driven resource: researchers and fire management agencies across the Mediterranean are encouraged to contribute their new or historical datasets. Overall, the *MedFireAtlas* establishes the first comprehensive database initiative for regional fire regime representing a critical step toward integrated, science-based fire management in one of the world's most fire-prone and climate-vulnerable regions.