



LRT of *Fagus* pollen over Catalonia (NE Spain)

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Fagus is a not very widespread tree in Catalonia neither in the rest of Spain. It grows at an altitude of (300)-1000-1700 (2000) m in shady and humid mountain areas and rarely in planes in the North of the Iberian Peninsula. We analyse the dynamics of the *Fagus* pollen in the atmospheric spectra of 7 localities in Catalonia, along with 63 annual series of Hirst daily data, corresponding to the period 1997-2006. *Fagus* pollen is present in about the 80% of the yearly atmospheric pollen series, usually with low levels, except in Vielha, the only sampling station inside the distribution area of beech, and the only in Catalonia that shows important values for this pollen, especially in 2004. In most localities, the presence of the pollen in the atmosphere is clearly dependent on the long range transport from source areas. In this work, the *Fagus* pollen transport is investigated as a measure of the dispersion capacity of the species. As the territory studied constitutes a southern limit of the distribution area of *Fagus*, the information obtained could have important biogeographical implications. The significant concentration peaks in the time series were identified using a paired T-test between consecutive days in each serie. In order to isolate LRT from regional/local sources, the synoptic flux for the days with simultaneous peaks were analysed by means of back trajectories, assuming that those would be related to the arrival of loaded air-masses to the region from distant sources. Source-receptor methodologies establish relationships between a receptor point and the probable source areas. In this way, the recorded concentration data were connected with back-trajectory data in a source-receptor analysis to determine the likely provenance regions to Catalonia. The methodology was applied to the complete set of daily back-trajectories for April, May and June 1997-2005.