



Late summer temperature (and precipitation) reconstruction from a tree-ring network in the Italian Peninsula

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A reconstruction of late summer (August–September) temperatures was performed in the Italian Peninsula using a tree-ring network of maximum latewood density series (MXD) from eight sites. The species composition of this network initially comprised specimens of *Abies alba* (5 sites), *Pinus nigra* (2 sites) and *Pinus leucodermis* (1 site) growing along a latitudinal gradient spanning from 37° 46' N to 44° 07' N. The model was calibrated and validated using a site-specific dataset of climate data, and the annual-resolved reconstruction covers a period back to the early 1700s: the reconstruction holds a clear signal of late summer temperature and a weaker signal of late summer precipitation. The spatial validation of this reconstruction performed on a period starting in 1901 evidences positive correlations ($r > 0.6$) within the central-northern region of the Mediterranean basin and the western Balkans and statistically significant correlations spacing from the northwestern Maghreb, the entire Alpine arch, to the southeastern Europe and the western Anatolian Peninsula. The same spatial analysis evidences also a dipole with precipitation over Europe: negative correlations with late summer precipitations of northwestern Balkans up to the western Black Sea and southern Italy, and positive correlations in a region at approximately 55°N, centred over Ireland, the British Isles and eastward up to the Southern Fennoscandia. The performed reconstruction underlines periods of climatic cooling and also of wetter conditions the Italian Peninsula, in 1699, 1740, 1814, 1914 and 1938.

Bibliographic reference

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