



## Using intra annual density fluctuations and d13C to assess the impact of summer drought on Mediterranean ecosystem

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Tree-ring growth and wood density have been used extensively as indicators of climate change, and tree-ring has been commonly applied as a proxy estimate for seasonal integration of temperatures and precipitation with annual resolution (Hughes 2002). While these relationships have been well established in temperate ecosystems (Fritts, 1976; Schweingruber, 1988, Briffa et al., 1998, 2004), in Mediterranean region dendrochronological studies are still scarce (Cherubini et al, 2003).

In Mediterranean environment, trees may form intra-annual density fluctuations, also called “false rings” or “double rings” (Tingley 1937; Schulman 1938). They are usually induced by sudden drought events, occurring during the vegetative period, and, allowing intra-annual resolution, they may provide detailed information at a seasonal level, as well as species-specific sensitivity to drought.

We investigated the variability of tree-ring width and carbon stable isotopes of a Mediterranean species, *Arbutus unedo* L., sampled on Elba island, (Tuscany, Italy). The samples were taken at two different sites, one characterized by wet and one by dry conditions. d13C was measured using Laser- Ablation- Combustion -GC-IRMS.

Here, we present first results showing the impact of drought on tree growth and on false ring formation at the different sites and we underline the importance of using Laser Ablation to infer drought impact at the intra-annual level.

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