



Climate influence and radial growth of silver fir (*Abies alba* Mill.) in Tuscany: first results

F. D'Aprile (1), N. Tapper (2), P. Baker (3), and L. Bartolozzi (4)

(1) School of Geography and Environmental Science, Monash University, Clayton Campus, Wellington Rd, Melbourne VIC 3800, Australia (Fabrizio.DAprile@arts.monash.edu.au), (2) Head, School of Geography and Environmental Science, Monash University, Clayton Campus, Wellington Rd, Melbourne VIC 3800, Australia (Nigel.Tapper@arts.monash.edu.au), (3) Faculty of Science, Monash University, Clayton Campus, Wellington Rd, Melbourne VIC 3800, Australia (Patrick.Baker@sci.monash.edu.au), (4) Corpo Forestale dello Stato, Ufficio Territoriale per la Biodiversità di Vallombrosa (FD), Italy (l.bartolozzi@corpoforestale.it)

In 2006, the School of Geography and Environmental Science of Monash University (Australia) signed a research protocol with the "Corpo Forestale dello Stato", Uffici per la Tutela della Biodiversità at Pistoia, Pratovecchio, Vallombrosa, and the "Comunità Montana del Casentino, Settore Foreste". The aim of the research program was to study the effects of recent and historical variability of climate in the Tuscan Alps on the growth of silver fir (*Abies alba* Mill.).

Climate variations on Tuscan mountains appear to follow partially different trends than lower elevations, and this may reflect upon a different tree growth response. Moreover, at local level the elevation gradient may influence silver fir growth of which relevance is not known.

Therefore, in 2006-2007 we identified a set of paired study sites at each of the four forests. The site pairs were located at the upper and lower limits of the distribution of silver in each of the study locations. The primary objective was to determine if growth responses to climate in silver fir have change in recent decades as a consequence of changing environmental conditions associated with climate change.

The dendrochronological analysis revealed that trees of different age (80-140+ years) at the four sites had a period of rapidly increasing radial growth during 1980-90, but returned to relatively low growth rates during the 2000s. Moreover, first results appear to show a loss of association between silver fir growth and climate variables in the mid '70s. Preliminary results suggest that there may be important interacting influences associated with climate and perhaps phytopathology that affect the growth response of silver fir in unanticipated ways.