

Dendroclimatic investigation of endemic woody species from the Azores

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Dendroclimatological investigations on endemic woody species from the Azores are rare to non-existent. Such investigations would importantly improve the understanding of changing climate. In addition, better understanding of climate-growth relationships could be implemented in spatial and growth models and therefore improve their predictive capabilities. The main objective of my SSV is to apply dendroclimatological methods on samples of endemic species from Azores, such as *Morella faya*, *Picconia Azorica*, *Lauris Azorica*, *Ilex perado* subsp. *Azorica* and *Juniperus brevifolia*. Tree cores were already collected, but tree-ring width measurements and climate-growth analysis are yet to be done. Such analysis is going to reveal the information related to key climate variables that effect tree-ring formation. The understanding of climate-growth relationships is important in terms of warming climate and its effects on tree growth and forest resilience in general.

To analyse climate-growth relationships, previously collected tree-ring cores will be used. Research group from the InBIO Laboratory has already collected more than 500 samples of endemic species. 50-60 the oldest samples will be selected and analysed. This data is related to the PhD study of young researcher Diogo Pavão, which will bring a relevant contribution to this training and to the final output of his PhD.

In the first week, tree cores will be prepared for tree ring analysis. On Day 1, tree cores will be sanded to a high polish to obtain clearly visible tree-rings. Then, cores will be mounted in wooden holders and later scanned with high resolution optical scanner. At the end of the first week, ring widths will be measured in CooRecorder. At the beginning of the second week, individual chronologies will be visually cross-dated and potential errors will be removed using the COFECHA programme. Then, individual chronologies will be standardized and averaged to obtain mean site chronologies. Climate-growth relationships will be analysed for monthly and daily mean temperature and sum of precipitation data. Climate data will be obtained from local meteorological stations. If not available, it will be downloaded from the KNMI Climate explorer (<https://climexp.knmi.nl/start.cgi>), where gridded monthly and daily data is available. We are going to calculate monthly and daily climate-growth correlations with the treeclim and dendroTools R packages, respectively.

In the second week, I am going to prepare a set of presentations related to my previous scientific work, Slovenian Forestry Institute, Slovenian forestry in general, dendroclimatological theory and the dendroTools R package. Researchers and students from the University of Azores will be invited and able to benefit from my lectures and practical examples. Hopefully, interesting discussions will develop and new ideas about future cooperation and common project applications will evolve.

On the last working day of my SSV, the preparation of common scientific publication will begin. We plan to present our results at domestic and international conferences. As a result of this SSV, enhanced long-term cooperation will be established between Slovenian Forestry Institute and the University of Azores, Research Center in Biodiversity and Genetic Resources.