COST STSM REPORT

Period: From 1st to 15th of March 2014

STSM Applicant: Dejan Stojanović, Institute of Lowland Forestry and Environment, Novi Sad, Serbia

STSM Topic: "Investigating the impact of extreme drought events on the growth and physiology of European beech in Serbia"

Host: Dr. Paolo Cherubini, Swiss Federal Institute for Forest, Snow and Landscape Research WSL

1. Purpose

a. Background

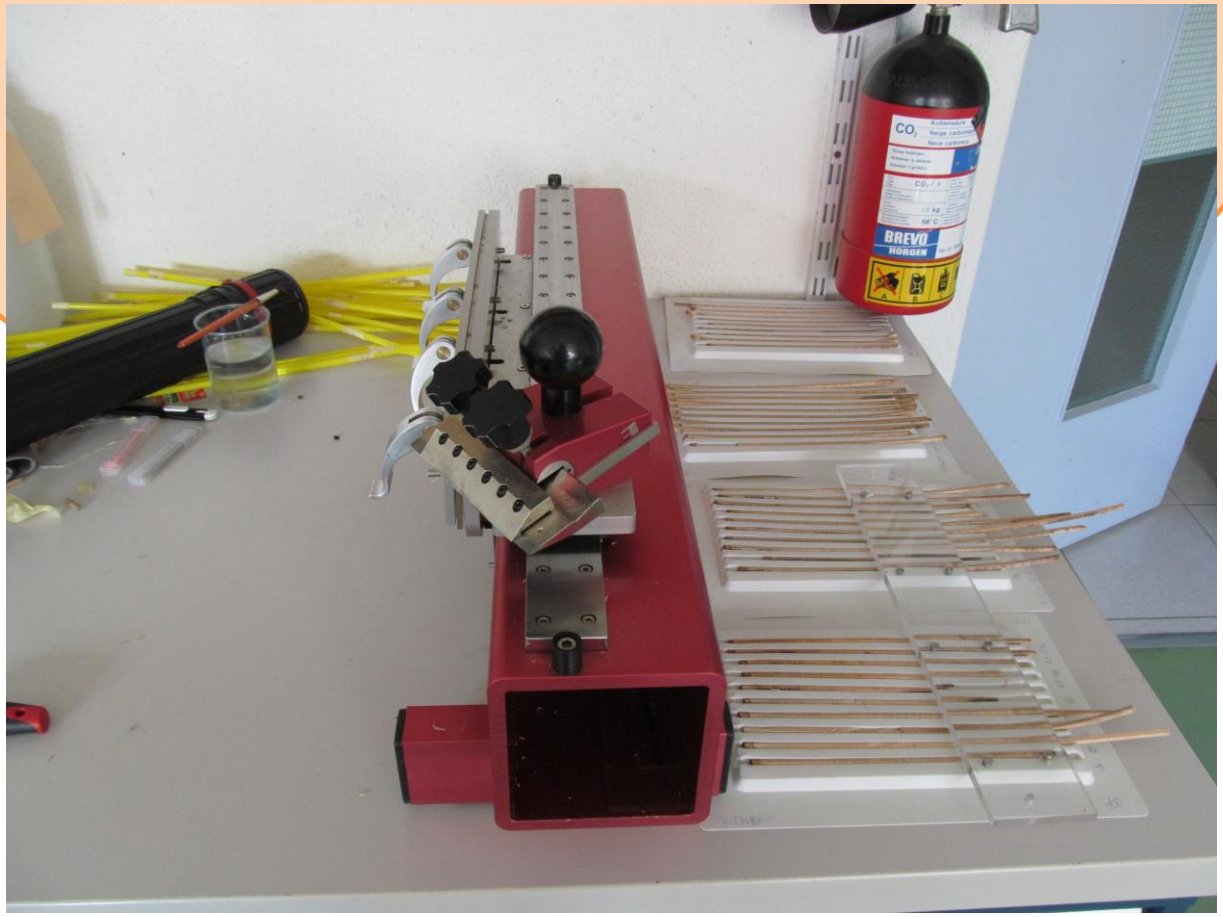
Climate model simulations coordinated by the Intergovernmental Panel on Climate Change suggest that the region of southeast Europe will suffer major climate changes in the 21st century (IPCC, 2007). They predict that average annual temperature for the most pessimistic A2 scenario will rise by as much as 3.8 degree Celsius for Serbia. It is expected that the summers will be longer and warmer, with more extreme weather events and less precipitation (Bozanić and Gasperič, 2010). Reconstruction of forest response to past drought events for better understanding of ecophysiological responses of single species and their future (Cherubini et al., 2005) is of critical importance for their sustainable management. Beech in Serbia is the most abundant, important and economically significant tree species (Banković et al., 2009). Recent studies showed that it could be highly vulnerable to climate change (Czúcz, Gálhidy, & Mátyás, 2011, Stojanović et al., 2013). In the region, mortality waves of beech were noticed during several consecutive dry years (Lakatos and Molnar, 2009).

b. Aim of the STSM

Aim of this STSM was to determine how past several draught years influenced the growth and what was the response of European beech forests at different elevations.

2. Description of the work carried out during the STSM

In Serbia, during the December 2013 and January 2014 core samples were taken from eight beech stands. Then, samples were dried and processed partially in Serbia and partially in Switzerland. At Institute of Lowland Forestry and Environment part of the samples were sanded, while in WSL another part was cut with microtome. Afterwards, dating of some samples was performed in WSL during the STSM.



Description of the main results obtained

While there were about 250 cores during the STSM just preparation of samples was performed. In follow up activities, measurement and cross-dating will be performed, including final statistical analysis. When all analysis will be finished, then final conclusions and publication of the results will be made.

3. Description about how the results contribute to the Action aims

It is assumed that final results will help in understanding how European beech forests in Serbia where influenced by change of climate, and how increased frequency and intensity of extreme climatic events affected vitality and production beech at different elevations.

As an added value, we will continue our cooperation.

4. Authorization to post the report at the Action website

I authorize the chair of COST Action FP1106 to post the scientific report of my STSM at the Action website.

5. **Confirmation by the host institution of the successful execution of the STSM**

Copy attached to this document.

6. References

1. Bankovic, S., Medarevic, M., Pantic, D., Petrovic, N. (Eds.), 2009. National ForestInventory of the Republic of Serbia. Ministry of Agriculture, Forestry and Water Management of the Republic of Serbia, Forest Directorate, Belgrade.

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3. Cherubini P., Nötzli M., Stary N., Saurer M., Siegwolf R., Kräuchi N,, Minerbi S. 2005. Tree rings predict which trees will survive the next drought and which will die: a case study from South Tirol (Italy). International Forestry Review, 7, 5, 98.

4. Czúcz, B., Gálhidy, L., Mátyás, C., 2011. Present and forecasted xeric climatic limits of beech and sessile oak distribution at low altitudes in Central Europe. Annals of Forest Science 68, 99–108.

5. Intergovernmental Panel on Climate Change (IPCC), 2007. Climate change 2007: the scientific basis. Available from: http://www.ipcc.ch/.

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7. Stojanović, D.B., Kržič, A., Matović, B., Orlović, S., Duputie, A., Djurdjević, V., Galić, Z., Stojnić, S., 2013. Prediction of the European beech (Fagus sylvatica L.) xeric limit using a regional climate model: An example from southeast Europe. Agricultural and Forest Meteorology 176, 94–103.

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Sincerely yours,

Dejan Stojanović, M.Sc. Ecologist

Novi Sad, 22nd of March, 2014