

International Conference TOPWOOD + LIA Forestia

12-15 March 2019 / Bariloche, Argentina.

Adapting forest ecosystems and wood products to biotic and abiotic stress



Hotel NH Bariloche Edelweiss
San Martín 202, Bariloche –
Patagonia, Argentina

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Organized by
European Union Marie-Curie
project TOPWOOD, the
International Associated
Laboratory INRA (France)-
INTA (Argentina) FORESTIA
and the INTA EEA Bariloche
(IFAB INTA – CONICET) -
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INTRODUCTION

The human activities interact with the essential processes that regulate the biosphere. They strongly influence the survival and distribution of ecosystems and species. For example, recent drought-induced diebacks associated with the climate warming are manifestations of maladaptation. However, they also provide opportunities to study the adaptive value of traits that can be observed in both dead and surviving trees, the wood properties. The wood functions explain why tree response to environmental variation may affect forest productivity and forest-wood chain. This international conference will address the functional role and the genetic determinism of adaptive traits involved in the response to stressors associated with the global change. With the intensification of international trade and travel, an increasing number of forest pests are exotic. The conference will also focus on the study of the invasion pathways and risks, and evolutionary mechanisms involved in the species adaptive success. The conference includes four sessions:

1. Wood functional traits and wood quality facing global change, chaired by Maria-Elena Fernandez (CONICET, Argentina), Sabine Rosner (BOKU University, Austria) and Alejandro Martinez-Meier (INTA, Argentina)
2. Innovative phenotyping tools for wood functional and quality traits studies, chaired by Esther Merlo (MADERA PLUS, Spain), Gonzalo Caballé (INTA, Argentina), Jean-Paul Charpentier (INRA, France)
3. Invading and expanding forest insects populations, chaired by Juan Corley (INTA, Argentina) and Marie-Anne Auger-Rozenberg (INRA, France)
4. Plastic and evolutionary adaptation of forest trees to biotic and abiotic stress, chaired by Philippe Rozenberg (INRA, France), Vincent Segura (INRA, France), Verónica Arana (INTA, Argentina)

This conference is organized by the European Union H2020 RISE project TOPWOOD and by the international associated laboratory INRA-INTA FORESTIA.

TUESDAY 12 MARCH 2019

11h30 – 13h30 Registration at Hotel NH Bariloche Edelweiss

14h00 Welcome & Official Opening

SESSION 1: Wood functional traits and wood quality facing global change

14h15 **María Elena Fernández**

New insights into wood anatomy and function relationships: how Eucalyptus challenges what we already know

14h50 **Cyrille Rathgeber**

Wood formation phenology of larch trees growing along a 1,000 m elevation gradient in the French Southern Alps

15h10 **Sabine Rosner**

The conifer curve: Fast prediction of hydraulic conductivity loss and vulnerability to cavitation

15h30 **Teemu Paljakka**

Pathogenic fungus infection disturbs tree water transport with decreased surface tension in Norway spruce (*Picea abies*)

15h50 **Javier Gyenge**

Phenotypic plasticity of anatomical and functional xylem traits of *Populus* along different water contents in the soil

16h10 **Coffee break**

16h40 **Hervé Cochard**

Mechanisms of tree resistance to extreme drought and hot events

17h00 **Thibaud Chauvin**

Potential of evolutionary adaptation of Douglas fir (*Pseudotsuga menziesii* Franco.) to drought: role of resistance to cavitation, xylem microdensity and pit anatomical traits

17h20 **Anna Lintunen**

Understanding the freezing process better in tree stems via visualizing bubbles in frozen xylem

17h40 **Kaisa Rissanen**

The effects of drought and irrigation on resin-based defence of Scots pine

18h30 Verónica Rusch,

¿QUE BOS-QUE VOS-QUE-RES? ¿Y vos...? ¿Y vos...? ¿Y vos...?

Sala del Concejo Deliberante, Centro Cívico.

Charla destinada al público en general (en español)

Los bosques pueden brindar multiplicidad de servicios, desde materiales a espirituales, pero ¿es posible tener todo al mismo tiempo? ¿Qué tenemos que tener en cuenta para pensar nuestros bosques de hoy y del mañana?

La ventaja que significa que los bosques puedan brindar una multiplicidad de servicios, es también potencial fuente de conflictos, ya que a la hora de priorizar vemos que existen compromisos entre algunos usos. ¿Qué herramientas nos ayudan para resolver esta problemática, considerando a su vez las diferentes miradas y las transformaciones que los bosques pueden sufrir en el contexto de cambios globales? ¿Entendemos los grandes procesos que llevaron a conformar el paisaje? ¿Los ecológicos? ¿Los que subyacen en la toma de decisiones sobre su uso? ¿Cómo integramos esta complejidad en el diseño de los bosques que queremos?

WEDNESDAY 13 MARCH 2019

SESSION 2: Innovative phenotyping tools for wood functional and quality traits studies

08h30 Jean Paul Charpentier

Potentiality of use of near infrared spectroscopy for the prediction of certain wood properties and ecophysiological characteristics of trees

08h50 Esther Merlo Sanchez

Accuracy of methods and models to predict wood basic density in *Eucalyptus globulus* based on NIR spectroscopy in laboratory and field conditions

09h10 Anne-Sophie Sergent

Assessment of resistance to cavitation in Cordilleran cypress using near-infrared spectroscopy

09h30 Nicolas Martin-St. Paul

Which method to assess embolism resistance in trees? A comparison of 4 techniques on 5 native Patagonian species

09h50 Coffee break

10h30 Thierry Améglio

Continuous stem diameter variations as an innovative phenotyping tools for tree functioning under stress

10h50 Juan Diez

Preliminary results of the monitoring of the stem growth of the Cordilleran cypress (*Austrocedrus chilensis*) along it's continuum area of distribution in Patagonia, Argentina

11h10 Gonzalo Caballé

Using acoustic to model modulus of elasticity of ponderosa pine at stand and tree level

11h30 Mariano Gómez Berisso

High-resolution digital radiographic images of wood using CMOS image sensors

11h50 Gilles Chaix

Input of near infrared hyperspectral imaging to evaluate drought impact on wood chemistry and density

12h10 -14h00 Free time for Lunch

SESSION 3: Invading and expanding forest insects populations

14h00 Marie-Anne Auger-Rozenberg

Climate change and globalization, drivers of insect invasions in Europe

14h30 Juan Corley

Invasive insects in plantation forests of Argentina

14h50 Ma. Victoria Lantschner

Droughts drive outbreak dynamics of the invasive forest woodwasp *Sirex noctilio* in Patagonia

15h10 Mathieu Laparie

How *Merizodus soledadinus*, a carabid predator native from forests in Patagonia and Tierra del Fuego, rapidly invaded sub-Antarctic islands with no trees

15h30 Coffee break

16h00 Juan Paritsis

Ormiscodes outbreaks dynamics: impacts and perspectives in a warming world

16h20 Lucia Molina

Wood fungal microbiomes in *Nothofagus* forest diseases in Patagonia

16h40 Patricia Fernández

Early herbivory alerts conspecific sawfly females from unsuitable host plants in *Salix humboldtiana*

POSTER SESSION 17h30 Sala del Concejo Deliberante, Centro Cívico.

18h30 Gonzalo Caballé, Alejandro Aparicio, Federico Letourneau, Esther Merlo y Oscar Santaclara (INTA EEA Bariloche y Madera plus)

Sala del Concejo Deliberante, Centro Cívico.

Mejoramiento genético y silvicultura de pino ponderosa para la producción de madera de calidad para usos estructurales, y sólidos en general. Silvicultura de monte y determinación de calidad de productos forestales mediante técnicas no destructivas
Charla destinada al sector productivo de bosques implantados: productores y foresto-industria

THURSDAY 14 MARCH 2019

SESSION 4: Plastic and evolutionary adaptation of forest trees to biotic and abiotic stress

08h30 Verónica Arana

Environmental gradients as "natural labs" for elucidating adaptation and plasticity of forestry species to different climatic scenarios

09h10 Corina Graciano

Identifying abiotic stresses during seedling establishment in rainforest restoration.

09h30 Georgina Sola

Forest management has not impact on short local dispersal potential of two *Nothofagus* species

09h50 Julieta Cagnacci

Regeneration dynamics of three *Nothofagus* species under different climatic scenarios in the Southern Andes

10h10 Margarita Escobar

Phenotypic plasticity of European larch (*Larix decidua*) tree-ring to climate: variation along an altitudinal gradient in the French Alps

10h30 Coffee break

11h00 Marc Villar

Conservation and adaptation of genetic resources of the riparian black Poplar (*Populus nigra* L.) in France, facing actual anthropogenic, biotic and abiotic challenges

11h20 Vincent Segura

Genome-wide association study for growth in *Populus nigra* identifies a gene involved in local adaptation

11h40 Corina Graciano

What have we learned about the way leaf rust affects poplar growth?

12h00 Ma. Elena Gauchat

Interest of combining different levels of investigation of growth to better understand expression of heterosis in relation to climate: results from a hybrid pine (*P. elliotii* × *P. caribaea* var. *hondurensis*) case-study

12h20 -14h30 Free time for Lunch

14h30 Philippe Rozenberg

The adaptive potential of Douglas-fir to drought: twenty years of collaborative investigation

14h50 Annabel Porté

Evaluating rapid evolution and plasticity to temperature in native and invasive populations of *Robinia pseudoacacia*

15h10 Ramiro Ripa

Genetics of *Pinus radiata*, the most widely planted forestry species, in its original and invaded range related to fire

15h30 Federico Letourneau

Effect of 55 years annual rainfall variation into the growth of Ponderosa pine trees in Argentina Northwestern Patagonia

15h50 Manuela Ruiz-Diaz

The potential of Partial Triadic Analysis to reveal genetic variation in a multi-site annual-ring microdensity dataset

16h10 Perspectives and conclusions

18h30 Conference closing / Happy hour at a beer house

FRIDAY 15, MARCH 2019 FIELD TRIP: Puerto Blest (to confirm).
From 09h00 to 18h00 (approximately)