

# AMERIDENDRO 2016

## Third American Dendrochronology Conference

Monday March 28 - Friday April 1, 2016, Mendoza, Argentina



### Organizing institutions

IANIGLA



CONICET

U.N. CUYO  
GOBIERNO  
DE MENDOZA



**Tree-Ring Society**

### Sponsors



FUNDACIÓN  
WILLIAMS



Ministerio de Agroindustria  
Presidencia de la Nación



MENDOZA  
ARGENTINA

influence of meteorological variables (precipitation and temperature). Samples from 60 trees were collected, 30 males and 30 females, in the municipalities of São Bento do Sul and Campo Alegre. Based on an analysis of variance (ANOVA), significant differences were found between the increments of male and female trees; when evaluating the entire period in common 1917 -2013,  $p < 0.001$ ; the females had higher values. A significant difference was observed between wood increment ( $p < 0.1$ ) when the decades 1940, 1950, 1980, 1990 and 2000 were evaluated. Male and female trees have a similar response to total precipitation and average temperature.

### Dendrochronology of *Raulinoa echinata* R. S. Cowan in Santa Catarina, Brazil

ESEMANN-QUADROS, K.<sup>1,2</sup>; BILK, K.D.<sup>2</sup>; ADENESKY-FILHO, E.<sup>1</sup>

1. Programa de Pós-Graduação em Engenharia Florestal, Universidade Regional de Blumenau FURB; Rua São Paulo, 3250, Sala H-17, Itoupava Seca, 89030-000, Santa Catarina, Brazil; 2. Herbário Joinvillea e Jardim Botânico da Universidade da Região de Joinville - UNIVILLE - Sala D-19, Rua Paulo Malschitski, 10, Zona Industrial, 89.219-710 - Joinville, Santa Catarina, Brazil.

karinesemann@gmail.com

*Dendroecology: ECO-P-09 - Main Hall*

*Raulinoa echinata* R. S. Cowan (Rutaceae) is an endemic species of the Itajaí Valley, with a distribution restricted to a stretch of river banks and islands along the Itajaí-Açu River between the municipalities of Ibirama and Apiúna, in Santa Catarina State, Brazil. This species is a rheophyte, is highly adaptive to changing and adverse environmental conditions resulting from frequent changes in water level, and may remain partially or totally submerged during the flood season. The aim of this work was to recognize the tree rings in the stem wood of *R. echinata* and establish their dendrochronology. The material analyzed was removed from the stem (of the most developed branch) 20,0 cm from the base. The samples were dried at room temperature and their end face was polished with sandpaper. The tree rings of the polished samples were identified and counted using a stereoscope. Digital images were taken and analyzed with specific software. The stem wood had some distinct growth layers in marginal lines interspersed with sparse paratracheal axial parenchyma. An analysis of the results found that the youngest plant sample had two tree rings, the oldest had 25 rings, and the estimated average age of the samples was 8 years. The average increase observed was 764.98  $\mu\text{m}$ . The low number of rings in the stem indicates that the branches do not reach a very old age, and are probably periodically replaced by new branches due to damage caused by the river current. A positive correlation was found between growth and temperature.

### Dendroecology of *Araucaria angustifolia* under two geomorphological conditions in the seasonal semideciduous forest and mixed ombrophilous forest ecotone of Paraná, Brazil

ESEMANN-QUADROS, K.<sup>1,2</sup>; GALVÃO, F.<sup>4</sup>; BOTOSSO, P.C.<sup>3</sup>; ADENESKY, E.F.<sup>1,4</sup>

1. Programa de Pós-Graduação em Engenharia Florestal, Universidade Regional de Blumenau FURB; Rua São Paulo, 3250, Sala H-17, Itoupava Seca, 89030-000, Santa Catarina, Brazil; 2. Herbário Joinvillea e Jardim Botânico da Universidade da Região de Joinville - UNIVILLE - Sala D-19, Rua Paulo Malschitski, 10, Zona Industrial, 89.219-710 - Joinville, Santa Catarina, Brazil; 3. Empresa Brasileira de Pesquisa Agropecuária - Florestas, Paraná, Brazil; 4. Programa de Pós-Graduação em Engenharia Florestal, Universidade Federal do Paraná, Paraná, Brazil.

karinesemann@gmail.com

*Dendroecology: ECO-P-10 - Main Hall*

The present physiognomic condition of the vegetation that covers the Brazilian Southern Plateau is the result of successive climatic changes that occurred in the Quaternary Period. The accentuated expansion of *Araucaria angustifolia* (Bertol.) Kuntze on the second plateau of Paraná began about 1500 years ago during a very humid period. The middle region of the Tibagi river, in Campos Gerais, corresponds geologically to the sedimentary basin of Paraná, and the occurrence of geological lineaments in the form of diabase dikes has resulted in a relief of continuously alternating slopes and valleys and a more nutrient-rich, pedogenic environment. The goal of the present study was to better understand the dendroecology of individuals of *A. angustifolia* from the slopes and plains on the Tibagi river. The study was conducted in the municipality of Telêmaco Borba, in Paraná State, and assessed growth diameter and height; the synchronization of the times series of tree rings, and the relationship between growth and meteorological variables. The growth rates of diameter, total height and age of individuals on the slope were statistically higher than the rates of individuals on the plain, which is the result of the diabase dikes on the slope acting as an ionic supplement. The synchronization of the times series from each environment was satisfactory, showing a common signal among individuals. A time period of 370 years (1641 -2010) was found, which is an important element in the development and extension of regional chronologies for *A. angustifolia*. The association of the meteorological variables with the time series showed that climatic signals influenced each environment differently. Precipitation was the limiting factor for individuals on the slope and temperature was the limiting factor for individuals on the plain, both coinciding with months with higher growth.

### Dendrochronological analysis of *Araucaria angustifolia* in Santa Catarina, Brazil

ESEMANN-QUADROS, K.<sup>1,2</sup>; OLIVEIRA, J.R.<sup>2</sup>; ADENESKY-FILHO, E.<sup>2</sup>

1. Programa de Pós-Graduação em Engenharia Florestal, Universidade Regional de Blumenau FURB; Rua São Paulo, 3250, Sala H-17, Itoupava Seca, 89030-000, Santa Catarina, Brazil; 2. Herbário Joinvillea e Jardim Botânico da Universidade da Região de Joinville - UNIVILLE - Sala D-19, Rua Paulo Malschitski, 10, Zona Industrial, 89.219-710 - Joinville, Santa Catarina, Brazil.

karinesemann@gmail.com

*Dendroecology: ECO-P-11 - Main Hall*

This study conducted a growth analysis of *Araucaria angustifolia* (Bertol.) O. Kuntze from the northern Santa Catarina Plateau, in Brazil. Tree age and wood increment were estimated,