

ENGINEERING A BETTER WORLD SUSTAINABLE DEVELOPMENT OF AGRICULTURAL AND FORESTRY SYSTEMS



SEPTEMBER 10th to 14th, Montevideo, Uruguay
NATIONAL ACADEMY OF ENGINEERING OF URUGUAY (ANIU)

The logo for ANIU CAETS 2018 features a stylized graphic on the left composed of overlapping squares in orange, blue, and white. To the right of the graphic, the text "ANIU" is written in orange and "CAETS 2018" is written in blue.

ANIU
CAETS 2018



Acad. Eng. Lucio Cáceres



Dr. Ec. Ernesto Talvi



Agr. Eng. Luis Augusto Barbosa Cortez



For. Eng. MBA. Joao Cordeiro

ENGINEERING A BETTER WORLD

Sustainable development of agricultural and forestry systems

MONDAY SEPTEMBER 10

9:00 a.m.
8:00 p.m.

REGISTRATION (Ballroom - 1 st floor)

9:00 p.m.

DINNER (at Ballroom - 1 st floor)

TUESDAY SEPTEMBER 11

8:00 a.m.

REGISTRATION

9:00 a.m.

PLENARY SESSION (Ballroom - 1 st floor)

Opening words : **Acad. Eng. Lucio Cáceres – ANIU**

**“The Economics and Politics of the Post-Financial Crisis Global Geography.
With special focus in Latin America”**

Dr. Ec. Ernesto Talvi - Uruguay

10:30
11:00 a.m.

COFFEE BREAK

“General South American trends in Bioeconomy”

Agr. Eng. Luis Augusto Barbosa Cortez - Campinas University, Brazil

**“Who needs more plantations?”: it would discuss the dynamics of world
markets for “traditional products” as well as the
“emerging products & services of the bioeconomy”**

**For. Eng. MBA. Joao Cordeiro – Biorefining & Pulp Practice Area at Pöyry
Management Consulting in Helsinki**

12:30 p.m.

LUNCH (Ballroom - 1st floor)



Acad. Eng. Maria del Rosario Pou Ferrari



Eng. For. Diego Carrau



Eng. For. PhD Ricardo Methol



Eng. For. Msc. Juan Pedro Posse



Eng. For. Msc Teôtonio de Assis



Bsc. PhD Christopher Harwood

TUESDAY SEPTEMBER 11

1:30 p.m.

PARALLEL SESSIONS

ROOM 1 (Ballroom)

Forest plantations and sustainability

Chairwoman Acad. Eng. María del Rosario Pou Ferrari

The role of Forest Plantations in supplying the World's needs of wood and fibre and the development of industrial forest plantations in Uruguay

Acad. Eng. María del Rosario Pou Ferrari

Sustainability of eucalyptus wood production in Uruguay

Eng. For. Diego Carrau,
Eng. For. PhD Ricardo Methol,
Eng. For. Msc. Juan Pedro Posse

3:30
4:00 p.m.

COFFEE BREAK

**Eucalyptus genetic improvement in the world and sustainability:
the example of Brazil**

Eng. For. Msc Teôtonio de Assis

Sustainability of Plantation wood production in South East Asia

Bsc. PhD Christopher Harwood

**The future of South American plantation forestry sector: sharing
experiences**

Panel - conclusions

Including Dr. Hernán Cortes Salas and For. Eng. Joao Cordeiro

7:00 p.m.



Agr. Eng. Dr. Andrés Dieste



Dr. Michael Ramage



Dr. Carlito Calil Jr



Dr. Bruno Gorrini



Eng. MBA. Francisco Lozano

TUESDAY SEPTEMBER 11

1:30 p.m.

PARALLEL SESSIONS

ROOM 2 (25th floor)

Engineered Wood Materials (EWM) as high-value biomaterials

Chairman: Agr. Eng. Dr. Andrés Dieste

“Supertall Timber: Functional Natural Materials for High Rise Structures”

Dr. Michael Ramage - Dept. of Architecture, University of Cambridge

“Wood in Civil Engineering, advantages and new technologies”

Dr. Carlito Calil Jr., Prof. Of the Dept. of Structural Engineering,
School of Engineering, University of Sao Paulo, Brazil

3:30
4:00 p.m.

COFFEE BREAK

“Natural adhesives in the wood industry”

Dr. Bruno Gorrini - Bioforest Arauco, Chile

“Wood Industry challenge for Engineered Wood materials production”

Eng. MBA. Francisco Lozano, Arauco

Project OPP VTT

“Bioeconomy in Uruguay”

Panel - conclusions

7:00 p.m.



Agr. Eng. PhD. Mario Allegri



Agr. Eng. PhD Walter Baethgen



Agr. Eng. PhD Ernesto Viglizzo



Agr. Eng. PhD Jorge Sawchik



Agr. Eng. Dr. Sebastián Mazzilli.



Agr. Eng. Jean-Marc Guehl

TUESDAY SEPTEMBER 11

1:30 p.m.

PARALLEL SESSIONS

ROOM 3 (25th floor)

Agriculture and sustainability

Chairman: Agr. Eng. PhD. Mario Allegri
Agronomists Engineering Association, AIA, (ROU)

“Sustainable Agriculture: a global challenge”

Agr. Eng. PhD Walter Baethgen
IRI Columbia University (USA)

**“Land-use change, climate variability and agricultural sustainability
in the MERCOSUR region”**

Agr. Eng. PhD Ernesto Viglizzo. CONICET,
Academia Nacional de Agronomía y Veterinaria (Argentina)

3:30

4:00 p.m.

COFFEE BREAK

**“Sustainability in agricultural production systems:
lessons from long-term experiments”**

Agr. Eng. PhD Jorge Sawchik,
Instituto Nacional de Investigación Agropecuaria, INIA (ROU)

**“First step to design sustainable agricultural systems:
how to measure sustainability”**

Agr. Eng. Dr. Sebastián Mazzilli.
Facultad de Agronomía, Udelar (ROU)

**“Agriculture and forests facing climate change.
How to reconcile adaptation and mitigation?”**

Agr. Eng. Jean-Marc Guehl. UMR Silva, INRA, Université de Lorraine,
AgroParisTech, Nancy, France

7:00 p.m.

Summary Panel



Dr. Agr. Eng. Fernando García Préchac



Agr. Eng. Dr. Miguel Angel Taboada



Agr. Eng. Msci Mariana Hill



Civil Eng. Dr. Luis Silveira



Agr. Eng. Dr. Mario Pérez Bidegain



Agr. Eng. Dr. Jorge Hernández

ROOM 1 (Ballroom 1 st flor)

Soil and Water sustainability under Agricultural and Plantations forestry use.

Chairman Acad. Dr. Agr. Eng. Fernando García Préchac

**The Status of the World Soil Resources Report;
main threats and recommendations.**

Agr. Eng. Dr. Miguel Angel Taboada - INTA, Argentina, member of the Intergovernmental Technical Pannel on Soils of the Global Soil Partnership de FAO

Regulations of Soil and Surface Water Conservation in Uruguay

Agr. Eng. Msci Mariana Hill, Uruguay.

Effects of Plantation forestry on Hydrology of Watersheds in Uruguay

Civil Eng. Dr. Luis Silveira - IMFIA-Fing-Udelar.

Effects of Plantations forestry on soil physical and chemical properties in Uruguay.

Agr. Eng. Dr. Mario Pérez Bidegain and
Agr. Eng. Dr. Jorge Hernández -
Soils and Water Department, Fagro-Udelar.

Panel- Conclusions



Eng. María Simon



Prof. Jaime Domínguez



Dr. Diego Passarella



Arch. Laura Moya

WEDNESDAY SEPTEMBER 12

ROOM 1 (Ballroom 1 st flor)

2:00 p.m.

Engineering Education

Chairwoman Eng. María Simon,
Dean of the Engineering School (UDELAR)

Engineering Education for XXI

Prof. Jaime Domínguez
Director of the Higher School of Engineers of Sevilla, Spain

Recent New Degrees in Uruguay

“Forestal Engineering Degree”

Dr. Diego Passarella

**“Curriculum development of posgraduate studies on timber construction
for architects and engineers”**

Arch. Laura Moya - Eng. Dr. Vanesa Baño



Acad. Eng. Norberto Cassella



Prof. Tao Zheng Guangzhou



Prof. Purnendu Ghosh



Prof. Dr. Frank Behrendt



Dr. Michael Ladisch



Eng. Tyler Campbell



Dr. James Biasca



Dr. Luiz Pereira Ramos



Eng. Eduardo F. Rodríguez Treskow



PhD Tarja Tamminen

WEDNESDAY SEPTEMBER 12

8:00 a.m.

PARALLEL SESSIONS

ROOM 2 (25th floor)

Chemical products from renewable sources

Chairman Acad. Eng. Norberto Cassella

“Second generation biofuels in China”

Prof. Tao Zheng Guangzhou - Institute of Energy Conversion,
Chinese Academy of Science

**“Biomass based Biofuel Emerging biological engineering
and technology challenges”**

Prof. Purnendu Ghosh - INAE. Birla Institute of Scientific Research, Jaipur

“Energy and biomass sustainability”

Prof. Dr. Frank Behrendt - Berlin Institute of Technology (TU Berlin)

10:30

11:00 a.m.

COFFEE BREAK

“Biorefining: Engineering, Science and Economics”

Dr. Michael Ladisch - Laboratory of Renewable Resources, Engineering,
Purdue University

“Alternative pulp fibers derived from Phoenix process”

Eng. Tyler Campbell, Andritz Pulp & Paper Group

**“Four product platforms, improved pulp properties, regenerated cellulose,
lignin and biobase chemicals”**

Dr. James Biasca - Country Manager, Biomaterials U.S. Operations Stora Enso

1:00

2:00 p.m.

LUNCH (Ballroom - 1 st floor)

**“Conversion processes, biorefineries strategies for
a sustainable bioeconomy”**

Dr. Luiz Pereira Ramos - Chemistry Dept. Federal University of Parana, Brazil

“Adding value to Biomass in a sustainable way”

Eng. Eduardo F. Rodríguez Treskow - Celulosa Arauco, Chile

Potential of Latin America in the production of lignin

PhD Tarja Tamminen - Scientist VTT Technical Research Centre of Finland Ltd



Acad. Eng. Luis María Rodríguez



Acad. Eng. Héctor Cancela



Msc Civil Eng. Jorge Kogan



Economist Ricardo J. Sanchez



Eng. PhD Luc Lebel



Prof. Mikael Ronnqvist



Dr. Lucas Noldus

WEDNESDAY SEPTEMBER 12

8:00 a.m.

PARALLEL SESSIONS

ROOM 3 (25th floor)

Logistics and Information Technology

Chairmen Acad. Eng. Luis María Rodríguez and Acad. Eng. Héctor Cancela

Logistics: an additional improvement or a fundamental pillar for the productive sustainability of Latin America

Msc Civil Eng. Jorge Kogan - former Senior Advisor on Infrastructure at CAF, Development Bank of Latin America

Balance between efficiency, resilience and sustainability of infrastructure for development

Economist Ricardo J. Sanchez - Senior Economic Affairs Officer in the United Nations. Chief Economist for Infrastructure and Ports at CEPAL.

10:30
11:00 a.m.

COFFEE BREAK

“A systems engineering approach for a sustainable and high performing forest value creation industrial network”

Eng. PhD. Luc Lebel - Director FORAC, Université Laval, Québec, Canada

“Trends for advanced and sustainable logistics”

Prof. Mikael Ronnqvist, Professor titulaire, Département de génie mécanique, Université Laval, Québec, Canada

“Plant breeding for resistance to insects: how sensor technology and artificial intelligence contribute to sustainable crop production”

Dr. Lucas P.J.J. Noldus, Netherlands Academy of Technology and Innovation - AcTI



Acad. Eng. Edgardo Cardozo



For. Eng Dr. Hernán Cortes Salas



For. Eng. Dr. Gustavo A. Daniluk



Agr. Eng. Natalia Marius

2:00 p.m.

**Sustainability and certification of forestry
and industrial crops**

Chairman Acad. Eng. Edgardo Cardozo

**“Certification Programs applied to forestry plantations.
A successful experience: the case of Chile”**

For. Eng Dr. Hernán Cortes Salas, Chile

**“Certification Programs applied to forestry plantations and chain of
custody: the case of Uruguay”**

For. Eng. Dr. Gustavo A. Daniluk, School of Agriculture,
Forestry Department, UdelaR

**“Panel with representatives from the different sectors involved
in forestry: farmers, industry, official sector,
certification companies and consumer representatives.”**

**“Good agriculture practices and commercial certification crops
Certification Programs.**

The case of Soybean and B. carinata in Uruguay”

Agr. Eng. Natalia Marius, Uruguay. SGS,
Uruguay Branch

4:00
4:30 p.m.

COFFEE BREAK



Acad. Eng. Javier Solari



Msc Chem Eng. Esa Laurinsilta



Dr. Chem Eng. Alex Berg



Cr. Alvaro García



Acad. Ing. Lucio Cáceres

WEDNESDAY SEPTEMBER 12

PLENARY SESSION (Ballroom - 1 st floor)

4:30
7:00 p.m.

Academy and Industry Synergies

Chairman Acad. Eng. Javier Solari

Industry

Msc Chem Eng. Esa Laurinsilta – UPM Strategic Partnerships and Technology

Academy

Dr. Chem Eng. Alex Berg – University of Concepcion Chile Technologic
Development Unit

Government and Public Policies

Cr. Alvaro García – Director, Planning and Budget Office (ROU)

**Panel Academy, Industry and Government Synergies;
discussion in respect of implementing circular economy.**

Closing Ceremony

Closing words: **Acad. Ing. Lucio Cáceres - ANIU**

8:30 p.m.

THURSDAY SEPTEMBER 13

**Additional technical activity in LATU. Transportation provided by LATU
Meeting with local researchers in bioprocessing and wood engineering
materials and Visit to pilot plant for biomass pretreatment.**

8:00 a.m.
8:00 p.m.

FRIDAY SEPTEMBER 14

TOUR MONTES DEL PLATA PLANT AND COLONIA DE SACRAMENTO

TITLE

AUTHORS

EW, Materials, Mechanical process

Propiedades Mecánicas del Eucalyptus grandis H. del norte de Uruguay

Alejandro Benitez Garcia and Itagaki Naoyuki

Wood Adhesives: an alternative to fossil resins by using soy flour

Rodrigo Coniglio, Gonzalo Balbi, Camilo del Puerto and Carolina Spiess

Estudio de las propiedades mecánicas de formulaciones adhesivas para la industria de la madera en base a taninos de pino.

Alejandro Benitez, Paola Serrentino, Marcela Ibáñez

Thermal Modification of Wood: changes in the structural polymers of the cell wall of Eucalyptus grandis.

Leandro Cantera and Andrés Dieste

Structural feasibility of CLT panels made from Uruguayan pine from small logs.

Daniel Godoy and Vanesa Baño

Schematic proposal of a Strategic Plan in research to impulse the development of timber construction in Uruguay.

Vanesa Baño and Laura Moya

Biorefinery

Production of Activated Carbon from Fast and slow Pyrolysis Biochar.

Bernardo Del Campo

Hydrothermal Liquefaction a pathway to produce woody biomass biofuels.

Carmina Reyes Plascencia and Nestor Tancredi

Production of bioethanol from eucalyptus sawdust using different pretreatments in a biorefinery.

Mairan Guigou, Florencia Cebreiros, María Noel Cabrera, Leonardo Clavijo, Mauricio Vique, Juan Guarino, Melissa Bariani, Florencia Risso, Norberto Casella, Mario Daniel Ferrari and Claudia Lareo

Sustainable production of ethanol from switchgrass in Uruguay.

Valeria Larnaudie, Mario Daniel Ferrari and Claudia Lareo

Towards biodiesel biorefinery: glycerol valorization using immobilized bacteria.

Magdalena Ripoll, Erienne Jackson and Lorena Betancor

Furfural production from rice husk.

Melissa Bariani, Elzeario Boix, María Noel Cabrera and Norberto Cassella

Adding value to the Hemicelluloses of industrial Eucalyptus residues. María Noel Cabrera, Melissa Bariani, Elzeario Boix, Verónica Rodríguez Quinele, Martina Constantin and Norberto Cassella

Center of Research and Development in second generation biofuels. Silvia Böthig, Fabiana Rey, Fernando Bonfiglio, Matías Cagno, Carlos Doune, Alvérico Banquerque, Carolina Noya and Nikolai Guchin

Regenerated Wood: A Novel Approach for the Resurrection of Wood Born Intelligence. Stéphan Barbe, Leonardo Clavijo and Andrés Dieste

Study of the Production of Bioethanol from Switchgrass pretreated by Steam Explosion. Fernando Bonfiglio, Fabiana Rey, Matías Cagno, Silvia Böthig, Pilar Menéndez and Solange I. Mussatto

Eucalyptus kraft lignin: some technical uses. Leonardo Clavijo, Rodrigo Coniglio, Leandro Cantera, Leonardo Bruno, Ignacio Oyabide, Florencia Dotta, Felipe Rotondo, Ignacio Di Pascua, Stéphan Barbe, Norberto Cassella and Andrés Dieste

Bioproducts from bioethanol plant. Eng. W. Bisio

Circular economy

Circular economy: adding value to a pulp-mill's residues. Leonardo Clavijo, María Noel Cabrera, Lorena Echevarría, Luciana Costabel, Leandro Cantera, Rodrigo Coniglio, Maria Eugenia Formoso, Franco Cocchiararo, Mario Furest and Norberto Cassella

Pulp industry by-products as soil amendments in Uruguay. Amabelia del Pino, Jorge Hernández, Virginia Takata, Alan Yussim, Verónica Cuadro, Valeria Cejas, Gervasio Gonzalez, Valentina Vignola, Ivan Grela, Carmelo Centurión, Ricardo Methol.

Soil and water sustainability from biotransformation of mineral. Morgana de Medeiros Machado, Danielle Maass and Dachamir Hotza

Cleaner production as strategy to reduce environmental impacts and improve competitiveness in Uruguayan companies. Silvia Lamela

Logistics

“Comparative analysis of the new Euro V trucks working for UPM forestry operations” PhD. Ing. Martín Tanco; MBA. Ing. Diego Moratorio

13 de Setiembre de 2018 EN MONTEVIDEO

En el marco de CAETS 2018, estamos organizando un encuentro de investigadores nacionales en la temática Biorrefinería. Comenzará con una conferencia a cargo del Dr. Luiz Pereira Ramos, profesor de la Universidad Federal de Paraná, y luego habrá una reunión de intercambio. La actividad finalizará con una visita a las instalaciones donde se encuentra el reactor de explosión a vapor, adquirido recientemente por el LATU en el marco de un convenio con ANCAP para el estudio de biocombustibles de segunda generación.

La etapa de intercambio se realizará mediante posters digitales, que deberán enviarse con anterioridad para cargarlos a las pantallas. Sugerimos incluir en estos el equipo de investigación, la temática desarrollada por el grupo, las capacidades e infraestructura que poseen, proyectos en ejecución, etc.

Agenda:

09:15 - 10:15 - Conferencia del Dr. Luiz Pereira Ramos

10:15 - 12:00 - Posters e intercambio

12:00 - 13:00 - Visita a las instalaciones

Si bien esta actividad está enmarcada en el CAETS 2018, el acceso es libre.

Los esperamos el jueves 13 de Setiembre de 2018, en el Club del Expositor del Parque Tecnológico del LATU (Av. Italia 6201).

Rogamos confirmar asistencia a latitud@latitud.org.uy



INSTITUTO NACIONAL
DE LA REPÚBLICA
URUGUAYA



MEJORA GENÉTICA, PLANTACIONES FORESTALES SUSTENTABLES y AGREGADO DE VALOR

En el marco de las actividades del Congreso Anual del Consejo Internacional de Academias de Ingeniería Tecnología y Ciencias (CAETS), la Academia Nacional de Ingeniería de Uruguay (ANIU), con el apoyo de UPM Forestal Oriental, Montes del Plata, la carrera de Ingeniería Forestal del Centro Universitario de Tacuarembó de la UdelaR e INIA, tendrá lugar una Mesa redonda con la participación de reconocidos especialistas internacionales.

14 de setiembre de 2018 a la hora 9:00
Campus Interinstitucional de Tacuarembó

Chris Harwood PhD expondrá: ***Como integrar la mejora genética y el manejo del sitio forestal para una producción sustentable / Integrating genetic improvement and site management for sustainable production.***

Harwood ha trabajado desde el año 1987 al 2017 en el CSIRO en Australia, como Senior Principal Research Scientist, Christopher Harwood continúa como Honorary Fellow de esta institución, y es asesor del World Agroforestry Centre (ICRAF) en temas de domesticación de árboles forestales. Es autor de numerosos trabajos científicos y técnicos.

Teotonio de Assis MSc expondrá: ***Potencial de híbridos interespecíficos de Eucalyptus para enfrentar problemas bióticos y abióticos en plantaciones forestales / Potential of hybrids for Biotic and Abiotic issues.***

De Assis es consultor internacional en mejora genética y clonación de Eucalyptus, desarrolló la técnica de la miniestacas. Ha trabajado en grandes empresas forestales brasileñas como Acesita, Bioplanta, Riocell, Klabin y Aracruz.

Esa Laurinsilta MSc expondrá: ***Valor a través de la Bio-Economía / Value through Circular Bioeconomy.***

Laurinsilta es director de alianzas estratégicas en UPM Tienen una robusta experiencia en desarrollo e innovación en el negocio forestal así como en la comercialización de tecnología en un amplio rango de industrias vinculadas a las ciencias biológicas. Su foco actual se encuentra en oportunidades en torno a la bio-economía y el desarrollo de alianzas tecnológicas.

Luego de las exposiciones se abrirá un espacio para preguntas y discusión.

La entrada es libre y gratuita.

La conferencia será transmitida por video conferencia a Facultad de Agronomía.

Montes del Plata



TECHNICAL TOUR
Punta Pereira pulpmill
and port facilities
Conchillas, Colonia

CULTURAL TOUR
VISIT TO
COLONIA DEL SACRAMENTO
UNESCO WORLD HERITAGE SITE

Montes
del Plata



TECHINT
Ingeniería y Construcción

ANDRITZ



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Canada



TEYMA



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MEETINGS MANAGEMENT

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