



INTERNATIONAL CONFERENCE ON ADAPTATION OF FORESTS AND FOREST MANAGEMENT TO CHANGING CLIMATE WITH EMPHASIS ON FOREST HEALTH: A REVIEW OF SCIENCE, POLICIES AND PRACTICES

Book of Abstracts and
Preliminary Programme

Umeå, Sweden
25-28 August, 2008

**FOREST
ADAPT
ATION
2008**



Swedish University of
Agricultural Sciences



Adaptation of Forests and Forest Management to Changing Climate with Emphasis on Forest Health: A Review of Science, Policies and Practices

Umeå, Sweden
25-28 August 2008

Book of Abstracts and Preliminary Programme

Organized by

Swedish University of Agricultural Sciences (SLU)
Food and Agriculture Organization of the United Nations (FAO)
International Union of Forest Research Organizations (IUFRO)

Supporting organizations and sponsors

Canadian Forest Service
Food and Agriculture Organization of the United Nations
Swedish University of Agricultural Sciences
USDA Forest Service
United States Geological Survey
International Union of Forest Research Organizations
Royal Swedish Academy of Agriculture and Forestry
Seoul National University

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Distinguished guests, colleagues, ladies and gentlemen,

It is a great pleasure for me, as Vice-chancellor of SLU, to welcome you to Umeå, the city of birches. SLU is Sweden's main centre for research and higher education in forestry and natural resource management. SLU has four main campuses in the country and whilst the Faculty of Forest Sciences is located here, forest research also takes place in our Uppsala and Alnarp campuses as well.

This Conference on "Adaptation of Forests and Forest Management to Changing Climate with Emphasis on Forest Health" is a joint venture between SLU, FAO and IUFRO - three organizations which are deeply involved in research and development of forests all around the world. The Conference is conveniently taking place in a country of forests. Swedish forests belong to the boreal forest zone of the northern hemisphere. In an evolutionary perspective our forests are young, following in the foot steps of the melting ice some ten thousand years ago. They have been utilized by man since pre-historic times. Initially, agriculture and mining industries and later lumber and pulp industries have shaped almost all of the present Swedish landscape. Today, forests cover about 50% of Sweden's land area and account for more than 10% of the national export.

Forest systems are impacted by multiple uses and influenced by global drivers. The multiple-use character of forests means that many different and sometimes conflicting goals exist regarding their management. Wide-ranging effects on the condition of forest ecosystems and their services are to be expected based on factors such as global market changes, increasing per capita income, demographic change, changes in consumption patterns, urbanization, globalization of the economy and new technology.

Climate change will influence forest ecosystems around the world and the chain of causality is currently difficult to understand. Projected changes in the climatic system will affect natural and social systems globally, increasing their vulnerability and affecting their ability to supply goods and services to meet an ever increasing demand. For forestry and other natural resources management, the major challenges are in developing best practises for adaptive measures to maintain ecosystem resilience, and to reduce vulnerability under various climate change scenarios.

The main purpose of this Conference is to unite our forces in order to meet the challenges that forests are facing. Today it is more evident than ever before how important forests are. Not only do they have the ability to sequester carbon dioxide, forests are also the planet's largest and most important terrestrial ecosystem. They have a profound influence on the structure and function of the human habitat, both locally and globally. Forests are also the largest reservoir of plants and animals on land. They sustain much of the world's diversity of life with its body of genetic information developed over evolutionary time.

Forests and trees will continue to play a major role in the future and I am proud that SLU, together with FAO and IUFRO, has decided to launch this Conference in order to encourage all of you, researchers and practitioners, to address relevant issues within the theme of this Conference. For as was stated by the Brundtland Commission in 1987 - "Since the answers to fundamental and serious concerns are not at hand, there is no alternative but to keep on trying to find them".

A handwritten signature in black ink, appearing to read 'Lisa Sennerby Forsse', is written over a light-colored background.

Lisa Sennerby Forsse
Vice-chancellor, SLU



Dear Conference Participants,

On behalf of FAO, it is my pleasure to welcome you to the Conference on “Adaptation of Forests and Forest Management to Changing Climate with Emphasis on Forest Health”. Forests are large, dynamic and diverse ecosystems upon which we rely for provision of a wide range of forest products and social and environmental services. We are most familiar with the function of forests in providing wood, fibre, fuel, food, fodder, medicines and other goods that support livelihoods, whether for subsistence use or commercial trade. However, there are indirect, less tangible, but critically important social and ecosystem services that are increasingly being valued. These include the roles of forests in maintaining and rehabilitating soils and nutrient cycles, watershed protection and water balances, conservation of biodiversity, sequestering and storing of carbon, recreation and landscape aesthetics and diversity.

Forests are also resilient in that they have, over millions of years, advanced and retreated with glaciers, changed in extent and composition, but have always been there as an integral part of the global balance. Currently, however, the resilience of forest ecosystems around the world is being challenged like never before, as we are modifying our living environments at local and global scales, and doing so at unprecedented rates.

We recognize that global change, of which climate change is one important component, is inexorably changing forest ecosystems which impact peoples’ lives and livelihoods around the world. We need to be aware of the nature of these changes, the rates at which they are taking place and their impacts on forests and forest management. Forest health was the initial FAO emphasis for this event, and remains the cornerstone of adaptation to climate change. We need to understand the impacts of a changing climate on forests and forest management, including health, productivity, biodiversity and sustainability in maintaining flows of goods and services in ecosystems and to society in the future. We need to be able to forecast these changes in order to adapt scientific research programmes, review forest policies and embrace more adaptive forest management practices.

FAO is delighted to co-host this Conference with IUFRO and SLU and to acknowledge the generous support from the Canadian Forest Service, USDA Forest Service, United States Geological Survey, Royal Swedish Academy of Agriculture and Forestry, and the Seoul National University.

As scientists, policy makers, planners, managers and academics representing a wide range of socio-economic, ecological and institutional contexts from around the world, you have the expertise and experience to view the challenges from your different perspectives and to channel this diversity into making this conference a success. It is proposed that the Conference outputs will feed into the work of the Collaborative Partnership on Forests, including into the Joint Initiative Report on Adaptation of Forests to Climate Change.

An interesting programme is in place for you to exchange, contribute and learn. Good luck for a productive event.

Jan Heino
Assistant Director-General
Forestry Department
Food and Agriculture Organization of the United Nations



Distinguished guests and participants,

It is a great honor to welcome you all to the International Conference on the “Adaptation of Forest and Forest Management to Changing Climate with Emphasis on Forest Health”, in Umeå, Sweden, from 25 to 28 August 2008. The relationship between forests and climate is, needless to say, a complex one. We know that climate has a profound impact on the way forests grow, function, regenerate, and interact with the natural world around them.

Since the release of the IPCC’s Fourth Assessment Report, there has been increased certainty that climate change is an inevitable consequence of past and present human activities on this planet. We must evaluate the ongoing effects and implications of climate change on forests and tailor our research, policies and practices accordingly in order to plan for and manage healthy and productive forests. It is critical that the importance of forests, as a sink and absorber of carbon, as well as a mechanism for greenhouse gas reduction, be recognized and acknowledged on the global level. Forests absorb carbon twenty four hours a day, three hundred and sixty five days a year. Overlooking their importance, and not acting upon it, would be a fatal error on our part.

This Conference will focus on the current state of knowledge and understanding surrounding climatic patterns and changes in various regions around the world. We will discuss the need for changes to research, policies and practices to enable us to plan and manage healthy and productive forests worldwide.

I, as the IUFRO President, sincerely hope that this Conference will serve as a successful venue for the active exchange of scientific and technical information among countries and regions and will help seek for better partnerships and collaborations. Many thanks are given to our sponsors and organizers for making this possible. I am very certain that this event will provide a meaningful chance for all the participants to identify new approaches and strategies for sustainable forest management and to address the relationship between climate change and forest management.

A handwritten signature in black ink, appearing to read "Don K. Lee". The signature is fluid and cursive, with a prominent initial "D".

Don K. Lee
IUFRO President

Week at a Glance - The Schedule

This schedule offers a schematic view of time allocation for the full conference week. If you want to see when your preferred session is taking place, see “Week at a Glance: Programming the Sessions”. If you want to see the preliminary day-by-day programme, see “Preliminary Detailed Programme”. If you want to see the session contents, see “Preliminary Session Contents”.

Hour	Min	Monday	Tuesday	Wednesday	Thursday
8	0	Registration and poster installation	Keynotes	Keynotes	Keynotes
	10				
	20				
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9	0	Opening welcome and addresses	Coffee and posters	Coffee and posters	Coffee and posters
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10	0	Keynotes	Period 3	Period 6	Period 8
	10				
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11	0	Lunch	Lunch	Lunch	Lunch
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12	0	Period 1	Period 4	Period 7	Period 9
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13	0	Coffee and posters	Coffee	Reception at SLU	Conclusion of conference: poster awards, summaries and closure
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14	0	Period 2	Period 5	Reception at SLU	Conclusion of conference: poster awards, summaries and closure
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15	0	Informal poster session	Banquet	Banquet	Banquet
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16	0	Walking dinner party	Banquet	Banquet	Banquet
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Week at a Glance - Programming the Sessions

This schedule offers a schematic view of session placement for the full conference week during the periods (P) allocated for the technical sessions. If you want to see a schematic view of the week's schedule, including when these periods are, see "Week at a Glance – the Schedule". If you want to see the preliminary day-by-day programme, see "Preliminary Detailed Programme". If you want to see the session contents, see "Preliminary Session Contents".

#	Session title	Monday		Tuesday			Wednesday		Thursday	
		PM		AM	PM		AM	PM	AM	PM
		P1	P2	P3	P4	P5	P6	P7	P8	P9
1	Physiological responses of trees to climate change	S1								
2	Climate induced changes in forest ecosystems						S2			
3	Impacts of altered regime of extreme abiotic events	S3								
4	Impacts of climate change on forest growth			S4						
5	Forest health: effects of air pollution, forest pests and pathogens			S5						
6	Silviculture and production of wood and non-wood forest goods						S6			
7	Biodiversity, conservation and protective functions of the forest								S7	
8	Socio-economic functions and livelihoods			S8						
9	Innovative management and policy approaches								S9	
10	Climate Change and Forest Sector Adaptive Capacity	S10								
11	Tropical Forest Management and Climate Change Adaptation						S11			
12	Genetic and physiological adaptation to changing climate								S12	
13	Forest dieback and mass mortality: Assessments and Early Warning	S13								
14	Forest dieback and mass mortality: monitoring and mitigation of consequences						S14			
15	Scenarios and modelling for forest management planning			S15						
16	The "Swedish Model" as a Tool for Global Carbon Mitigation						S16			
17	Opportunities for combining adaptation and mitigation objectives								S17	
18	Wood as a green building material						S18			

Preliminary Detailed Programme

Sunday 24 August

16.00 – 18.00 hours: Registration and poster installation

Monday 25 August

08.00 – 10.00 hours: Registration, poster installation and coffee

10.00 – 11.00 hours: Opening welcome and addresses

- Ms. Lisa Sennerby Forsse - Rector, SLU
- Mr. Jan Heino - Assistant Director-General, Forestry Department, FAO
- Mr. Don K. Lee - President, IUFRO

11.00 – 12.00 hours: Keynote addresses

- Ms. Abigail R. Kimbell - *Managing forests in an era of climate change: Perspectives from the U.S. Forest Service*
- Michael Wood - *Sweden and the United States: Partners in Solving the Problem of Global Climate Change*
- Risto Seppälä - *Increasing Knowledge about Adaptation of Forests to Climate Change: An Expert Panel Approach*

12.00- 13.00 hours: Lunch

13.00 – 15.00 hours: Parallel technical sessions (Part 1)

- Physiological Responses of Trees to Climate Change
- Impacts of Altered Regimes of Extreme Abiotic Events
- Climate Change and Forest Sector Adaptive Capacity
- Forest Dieback and Mass Mortality: Assessments and Early Warning

15.00 – 16.00 hours: Coffee break and **poster session**

16.00 – 17.00: Parallel technical sessions (Part 2)

- Physiological Responses of Trees to Climate Change
- Impacts of Altered Regimes of Extreme Abiotic Events
- Climate Change and Forest Sector Adaptive Capacity
- Forest Dieback and Mass Mortality: Assessments and Early Warning

17.00 – 18.00 hours: Informal poster session

18.00 hours: Social and walking dinner party

Tuesday 26 August

08.00 – 09.30 hours: Keynote addresses

- Jacques Régnière - *Predicting insect continental distributions from the physiology of individuals.*
- Brent Larson - *Phytosanitary issues related to climate change, invasive alien species and trade: How to use the framework of the International Plant Protection Convention for the management of forest health.*
- Dieter Schoene - *Forest health and adaptation of forest management: Perspectives from the IPCC's Fourth Assessment Report (AR4)*

09.30 – 10.30 hours: Coffee break and **poster session**

10.30 – 12.00 hours: Parallel technical sessions (Part 1)

- Impacts of Climate Change on Forest Growth
- Forest Health: Effects of Air Pollution, Forest Pests and Pathogens
- Socio-Economic Functions and Livelihoods
- Scenarios and Modelling for Forest Management Planning

12.00- 13.00 hours: Lunch

13.00 – 14.30 hours: Parallel technical sessions (Part 2)

- Impacts of Climate Change on Forest Growth
- Forest Health: Effects of Air Pollution, Forest Pests and Pathogens
- Socio-Economic Functions and Livelihoods
- Scenarios and Modelling for Forest Management Planning

14.30 – 15.00 hours: Coffee break

15.00 – 17.00 hours: Parallel technical sessions (Part 3)

- Impacts of Climate Change on Forest Growth
- Forest Health: Effects of Air Pollution, Forest Pests and Pathogens
- Socio-Economic Functions and Livelihoods
- Scenarios and Modelling for Forest Management Planning

Wednesday 27 August

08.00 – 09.30 hours: Keynote addresses

- Doug Konkin - *Learning to deal with climate change and catastrophic forest disturbances*
- Balgis Osman Elasha – *Assessment of Impacts and Adaptation to Climate Change and the Links to Sustainable Development in Africa*
- Nur Masripatin - *Mainstreaming Climate Change Adaptation Issues into Forest Policies and Management Practices: A Way to Bring Concepts into Actions*

09.30 – 10.30 hours: Coffee break and **poster session**

10.30 – 12.00 hours: Parallel technical sessions (Part 1)

- Climate-Induced Changes in Forest Ecosystems

- Silviculture and production of wood and non-wood forest goods
- Tropical Forest Management and Climate Change Adaptation
- Forest Dieback: and Mass Mortality: Monitoring and Mitigation of Consequences
- The "Swedish Model" as a Tool for Global Carbon Mitigation

12.00- 13.00 hours: Lunch

13.00 – 15.00 hours: Parallel technical sessions (Part 2)

- Climate-Induced Changes in Forest Ecosystems
- Silviculture and production of wood and non-wood forest goods
- Tropical Forest Management and Climate Change Adaptation
- Forest Dieback: and Mass Mortality: Monitoring and Mitigation of Consequences
- Wood as a Green Building Material

15.30 hours: Bus departure for *Reception at SLU*

18.00 hours: Banquet

Thursday 28 August

08.00 – 09.30 hours: Keynote addresses

- Malik Amin Aslam - *Development of the Carbon Market in Pakistan – Issues and Opportunities for Sustainable Forestry*
- Catherine Potvin - *Reducing Emissions from Deforestation and Forest Degradation: Negotiations and Methodological Issues*
- Hans R. Heinimann - *Precision Forestry - A Key Concept to Make Adaptive Management Operational?*

09.30 – 10.30 hours: Coffee break and **poster session**

10.30 – 12.00 hours: Parallel technical sessions (Part 1)

- Biodiversity, Conservation and Protective Functions of the Forest
- Innovative Management and Policy Approaches to Climate Change Adaptation
- Genetic and Physiological Adaptation to a Changing Climate
- Opportunities for Combining Adaptation and Mitigation Objectives

12.00- 13.00 hours: Lunch

13.00 – 14.30 hours: Parallel technical sessions (Part 2)

- Biodiversity, Conservation and Protective Functions of the Forest
- Innovative Management and Policy Approaches to Climate Change Adaptation
- Genetic and Physiological Adaptation to a Changing Climate
- Opportunities for Combining Adaptation and Mitigation Objectives

14.30 – 15.00 hours: Coffee Break

15.00 – 17.00 hours: Conclusion of the Conference: Poster Awards, Summaries and Closure

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Preliminary Session Contents

Session 1 – Physiological Responses of Trees to Climate Change

Oral Presentations:

- **Reaction of Growth and Litterfall of *Fagus sylvatica* to Climatic Variability** - Eichhorn Johannes, Dammann Inge and Paar Uwe
- **Stand Level Variation in Leaf Area to Sapwood Area Ratio along an Aridity Gradient in the Jarrah Forest of South-Western Australia** - Pekin Burak, Boer Matthias, Macfarlane Craig and Grierson Pauline
- **Experimental Frost and Drought Affect Fine Root Dynamics and Carbon Input to the Soil in a Spruce Forest** - Gaul Dirk, Hertel Dietrich, Leuschner Christoph
- **Unraveling the Influence of Temperature, Latitude and Local Environment on the Reproduction of Six Forest Herbs along a Latitudinal Gradient** - De Frenne P., Kolb A., Verheyen, K., Hermy, M. and Graae B. *et al.*
- **Effects of Climate Change on Wood Properties: Overview of Current Knowledge** - Kostianen Katri, Kaakinen Seija, Saranpää Pekka and Vapaavuori Elina
- **Simulated Regional Effects of Climate Change on Net Primary Production for Forests in Sweden** - Bergh J., Nilsson U. and Karlsson M.
- **Analysis of the Shifting of Phenophases of Common British Wild Plants in Response to Climate Change** - Faisal Arif M., Davy Anthony J. and Sparks Tim
- **Mediterranean Forest Under Climate Change Scenarios: the Response to Increase of Drought** - Ripullone F., Borghetti M., Raddi S. and Magnani F.
- **Drought Responses of Different Tree Species in Bavaria: Evidence from Tree Ring Growth and Wood** - Zang Christian, Rothe Andreas and Pretzsch Hans

Associated Posters:

- **Mathematical Analysis of Change in Forest Carbon Use Efficiency With Stand Development: A Case Study on *Abies veitchii*** - Kazuharu Ogawa
- **Plant Water Relation and Growth Response of *Cordia africana* Lam. Seedlings of Three Seed Sources Exposed to Different Water Regimes** - Seyoum Yigremachew and Fetene Masresha
- **Monitoring the Masting Behaviour of Beech (*Fagus sylvatica*) in Flanders (Belgium)** - Sioen G., Roskams P., Verschelde P, Van der Aa B. and Verstraeten A.
- **Responses to Flooding of Poplar Clones Planted in the Paraná River Delta, Argentina** - Luquez V.M.C., Achinelli F.G., Cortizo S. and Guiamét J.J.
- **Simulation of Photosynthetic Production of Beech (*Fagus crenata*) Trees Affected by Temperature Oscillation Amplitude** - Chiba Y., Migita C. and Han Q.
- **Photosynthesis Rate and Antioxidant Enzyme Activities in Polluted and Non-Polluted Areas in The Philippines** - Woo S.Y., Lee D.K., Lee Y.K., Ryang S.Z., Lee S.H., Je S.M., Cheng C.H., Baek S.G. and Lee E.D.
- **Fruit Dormancy in *Ceriops decandra*: An Adaptation to Overcome Climate Adversary?** - Nagarajan B., Krishnamoorthy M. and Pandiarajan C.
- **A Phenology Model to Predict Spring Canopy Onset of Vegetation in Korea Using MODIS** - Kim Sohee, Kang Sinkyu and Lim Jong-Hwan
- **Phenological Response to Changing Environmental Conditions of Western Ghats, Southern India** - Krishnamurthy Yelugere L., Nanda, A. and Prakasha Hiregouja M.
- **Flowering Calendar of a Protected Forest: a Case Study of Arabuko Sokoke Forest, Kenya** - Sande Susan, Nicolson Sue and Gordon Ian
- **Effect of Soil Temperature Fluctuations on Root Respiration Under Global Warming** - Je S.M., Woo S.Y., Ryang S.Z., Park J.H. and Sung J.H.

Session 2 – Climate-induced Changes in Forest Ecosystems

Oral Presentations:

- **An Indicator of Tree Migration in Forests of the Eastern United States** - Woodall C.W., Oswalt C.M., Westfall J.A., Perry C.H. and Nelson M.D.
- **Present Vulnerability and Future Trends of Changes for *Pinus cembra* L. in the Alps** - Casalegno S. and Reithmaier L.M.
- **Disturbance-Driven Land Cover Changes in Western Canada Under Observed and Projected Climate Change** - Wang Xianli and Hamann Andreas
- **A Conceptual Model for Studying the Effects of Landscape Connectivity on Ecosystem Adaptation to Climate Change in Central America** - Locatelli Bruno and Imbach Pablo
- **Forest Trees Composition, Fisheries and Wildlife Status of Omo Biosphere Forest Reserve, Ogun State, Nigeria** - Akegbejo-Samsons Y., Alegbeleye W.O. and Ojo L.O.
- **Major Conifers Distribution in Russia in a Warming Climate** - Tchebakova N.M. and Parfenova E.I.
- **Impact of Future Droughts on Forested Mountain Catchments: Carbon Storage and Hydrology** - Wolf A. and Bugmann H.
- **Persistence of the Fog-Dependent Fray Jorge Forest in Semi-Arid Chile during the Past Two Centuries** - Gutiérrez Alvaro G., Barbosa Olga, Christie Duncan A., del-Val Ek., Ewing Holly A., Jones Clive G., Marquet Pablo A., Weathers Kathleen C. and Armesto Juan J.
- **Effect of Global Climate Change on Rare Trees and Shrubs in the Southern United States** - Devall, M.S.
- **Impact of Climate Change on Indian Forests: A Short- and Medium-Term Assessment** - Chaturvedi Rajiv Kumar and Tiwari Rakesh
- **Disturbance in Sudanian Savanna Woodlands and Ecological Responses under Climate Change: The Contribution of Long-term Ecological Research on Fire, Grazing and Selective Tree Cutting** - Zida Didier, Savadogo Patrice, Tiveau Daniel, Dayamba Djibril, Sawadogo Louis, Tigabu Mulualem and Odén Per Christer
- **Studies on Population Structure and Regeneration of Woody Species in Dry Afromontane Forest, South Eastern Ethiopia** - Girma A. and Mosandl R.

Associated Posters:

- **Examination of Tree Mortality in Semi-Arid Central Anatolian Region of Turkey during the Last Six-Year Period (2002-2007)** - Semerci A., Sanlı B.N., Sahin O., Çelik O., Balkız B., Ceylan S. and Argun N.
- **Climate Change Impact on Spruce (*Picea Abies* L.) and Beech (*Fagus sylvatica* L.) Growth Potential in Slovakia** - Baláž Peter and Hlásny Tomáš
- **National Inventory of Landscapes in Sweden (NILS) as a Platform for Monitoring Impacts of Climate Change in the Swedish Mountain Areas** - Heiskanen J., Olsson H., Sundquist S., Nilsson B., Allard A., Moen J., Holm S. and Mäki A.-H.

Session 3 – Impacts of Altered Regimes of Extreme Abiotic Events

Oral Presentations:

- **Sensitivity of Tropical Dry Forests to Climate Variability: Results of an 18-Year Study from Mudumalai, Southern India** - Suresh H.S., Dattaraja H.S. and Sukumar R.
- **The Future of Forest Fires in Central America Under Climate Change and Socio-Economic Scenarios** - Locatelli Bruno, Imbach Pablo, Guillermo Molina Luis, Palacios Elena
- **The Effect of Environmental Changes on Forest Disturbances in South Korea** - Park P.S., Lee K.H., Jung M.H., Shin H., Jang W., Bae K. and Lee J.
- **The Risk of Abiotic Forest Damages will Alter Under the Climate Change in the Boreal Conditions** - Kellomäki S., Kilpeläinen A. and Peltola A.
- **Burning Regimes and Dynamics of The Sudanian Savanna Ecosystems: The Case Study of Katioli, Côte d'Ivoire** - Koné M., Bassett T. J. and Nkem J.N.
- **Tree-Ring Analysis Used for Climate Reconstruction and Fire Frequency in Mongolia** - Baatarbileg Nachin
- **Impacts of Frost on Beech (*Fagus sylvatica* L.) Susceptibility to Scolytine Ambrosia Beetles** - La Spina S., De Cannière C., Sawadogo A.-K., Mayer F., Molenberg J.-M. and Grégoire J.-C.
- **Changes in Liana and Tree Community Structures as Consequence of Increased Hurricane Frequency in Tropical Forests in Cozumel, Mexico** - Pérez-Salicrup, D. R. and Patiño-Conde, P.
- **Climate Change and the Probability of Wind Damage in Two Swedish Forests** - Blennow Kristina, Andersson Mikael, Sallnäs Ola and Olofsson Erika

Associated Posters:

- **Influence of Surface Fires on Vegetation Diversity in Hemiboreal *Pinus sylvestris* Forests Under Climate Change Conditions** - Marozas Vitas, Racinkas Jonas and Bartkevicius Edmundas
- **Modelling forest fire ignition and propagation for two fire-prone regions in Switzerland** - Weibel P., Reineking B., Conedera M. and Bugmann H.
- **Estimate of Forest Damage Using the “Potential Level of Forest Destruction by Fire” Methodology** - Sant’Anna C.M. and Pedroso D.O.
- **Fire Impact on Components of Forest Ecosystems of Central Siberia, Russia** - Ivanova G., Bogorodskaja A., Krasnoshekova E, Kovaleva N., Perevosnikova V., Conard S. and McRae D.

Abstracts accepted but not presented:

- **Evaluating Future Wildfire Risk Using the Keetch-Byram Drought Index** - Liu Yongqiang, Stanturf John and Goodrick Scott

Session 4 – Impacts of Climate Change on Forest Growth

Oral Presentations:

- **Elasticity of Tree Radial Growth to Environmental Stress** - Kahle Hans-Peter
- **Quantifying the Height Growth-Temperature Relationship of Plantation Taiwan Spruce** - Guan Biing T., Chung Chih-Hsin and Lin Shu-Tzong
- **Climate-Sensitive Modeling of Site-Productivity Relationship** - Albert M. and Schmidt M.
- **Simulating Tree Growth Under Climate Change Using Altitudinal Shift as Proxy** - Huber M. and Sterba H.
- **Utility of Biological Expansion Factors for Estimating Above Ground Component Biomass of *Picea abies* L. Karst.** – Albaugh Timothy J., Linder Sune, Nilsson Urban, Lundmark Tomas, Bergh Johan, Allen H. Lee, Flower-Ellis Jeremy
- **Climate Change Impact on Soil Salinity and Tree Growth of Tidal Freshwater Forested Wetlands of the Southeastern United States** - Krauss Ken W., Doyle Thomas W., Conner William H., Day Richard H. and Duberstein Jamie A.
- **Long-Term Trends and Fluctuations of Common Beech and Sessile Oak Growth in France during the 20th Century and their Compared Climatic Interpretations** - Bontemps Jean-Daniel, Hervé Jean-Christophe, Dhôte Jean-François
- **Predicting the Impacts of Pest Attack on Forest Productivity Under Changing Climate** - Pinkard Libby and Battaglia Michael
- **Potential Forest Productivity Impacts of Climate Change on Forests of the United States Pacific Northwest** - Latta Gregory, Temesgen Hailemariam, Adams Darius and Barrett Tara
- **New Zealand’s Potential Forest Responses and Threats Under Climate Change - An Overview of Related Research** - Paul T.S.H., Watt M.S. and Kirschbaum M.U.F.
- **Climate Change Effects on Site Index Estimation in Mediterranean Maritime Pine Forests** - Bravo-Oviedo A., Gallardo-Andrés C., del Río M. and Montero G.
- **Dealing With Error: Will Climate Change Have a Significant Effect on Predictions from Empirical Growth and Yield Models?** - Coulombe S., Bernier P.Y. and Raulier F.

Session 5 – Forest Health: Effects of Air Pollution, Forest Pests and Pathogens

Oral Presentations:

- **Forest Health in North America: Current Conditions, Historic Trends, and Future Risks** - Tkacz Borys, Moody Ben, Villa Castillo Jaime and Fenn Mark E.
- **Effects of Climate, Air Pollution, Pests and Pathogens on Forest Health – An Integrative Perspective of IUFRO** - Bytnerowicz A., Wingfield M., Paoletti E., Laflamme G. and Liebhold A.
- **Climate Change, Pollutant Deposition and the Ozone Situation Worldwide: Implications for, and the Role of, Forests** - Kuylenstierna Johan
- **Forest Monitoring and Critical Loads Assessments as a Scientific Basis for Air Pollution Control in Europe** - Lorenz M., Nagel H.D., Granke O. and Kraft P.
- **How to Protect Forests Against Aggressive Biotic Factors Under Changing Climate Scenarios?** - Skorupski M. and Magowski W.
- **Climate Change Impacts on Forest Health: Insect Pests, Diseases and Invasive Alien Species** - Moore Beverly A. and Allard Gillian B.
- **Mountain Pine Beetle Attack in Immature Lodgepole Pine Stands in Central British Columbia, Canada** - Hawkins Chris and Runzer Kyle
- **Does Climate Change Promote Insect Outbreak Situations and Altered Forest Ecosystem Functions?** - Le Mellec Anne, Vogt-Altena Holger, Reinhardt Annett, Gerold Gerhard and Michalzik Beate
- **Foliage Browsing Insect Outbreaks in Ukraine: Incidence, Duration and Severity** - Meshkova Valentyna
- **Climate Change Impacts on Population Dynamics of *Ips typographus* (L.) Using Fine Scale Climate Change Scenario** - Hlásny Tomáš, Turčáni Marek, Bucha Tomáš and Sitková Zuzana
- **Potential Effects of Climate Change on Herbivores and Pathogens – A Review and an Example** - Netherer S., Lindner M., Garcia-Gonzalo J. and Schopf A.
- **Perspectives on Boreal and Tropical Tree Pathology with a Changing Climate** - Barklund Pia, Njuguna Jane, Gure Abdella, Nyeko Philip and Stenlid Jan
- **Resistance of Introduced *Pinus contorta* and Native *P. sylvestris* to *Gremmeniella abietina* (Ltt, European Race) in Sweden** - Bernhold A., Hansson P., Rioux D., Simard M. and Laflamme G.
- **Was the Latest Outbreak of *Gremmeniella abietina* in Sweden Caused by Certain Climatic Sequences?** - Hansson P. and Ottosson-Löfvenius M.
- **Can Long Distance Gene Flow Contribute to Adaptation of Fungal Pathogen Populations to Changing Climate?** - Müller Michael M. and Hantula Jarkko

Associated Posters:

- **Local Community's Perception about *Lantana camara* Wide Spread in Uganda Woodland Forests** - Ssetenda Peter
- **On the Rise - Plant Invasions into Mountain Forests** - Parks C.G. and MIREN
- **Possibilities and Limitation in Changing of Species Composition – Tree Disease Phenomena in Poland** - Zachara Tadeusz and Gil Wojciech
- **Occurrence and Effects of Two Micromycetes in a Relict European Beech Forest in Southern Italy** – Sicoli G., Bruno G., Boncaldo E. and Luisi N.
- **Tree Mortality, Increment Loss and Foliage Recovery in Middle-Aged *Pinus sylvestris* following Defoliation by *Gremmeniella abietina* and Subsequent Attack by *Tomicus piniperda*** - Bernhold A. and Witzell J.
- **Climatic Factors Affecting the Needlecast Epidemics Caused by *Lophodermium seditiosum*** - Vuorinen Martti
- **Forests and Climate Change - Lessons From Insects** - Nomi Frederick Nubed

Abstracts accepted but not presented:

- **Will Adoption of Carbon-Lean Management Practices Lead to Increased Pest Incidence?** – Bertin Sophie, Perks Mike, Straw Nigel, Mason Bill, Grace John and Mencuccini Maurizio

Session 6 – Silviculture and Production of Wood and Non-Wood Forest Goods

Oral Presentations:

- **Effects of Forestry on the Winter Grazing Resources of Semi-Domesticated Reindeer (*Rangifer tarandus*) in Sweden** - Moen Jon, Kivinen Sonja and Berg Anna
- **Positive Effect of Thinning on Throughfall as Possible Way for Adaptation of Young Scots Pine Monocultures to Changing Climate** - Novák Jiří, Slodičák Marian and Dušek David
- **Forest Regeneration and Changing Climate** - Jõgiste Kalev and Metslaid Marek
- **Trees for Energy: A Better Bet for Biofuels** - Eav B., Barbour J. and White R.
- **Climate Change and Non-Timber Forest Products in Ghana: Impacts, Vulnerability and Adaptations** - Blay D., Idinoba M., Nkem J. and Kalame F.
- **Can Intensive Thinning Regimes Mitigate Drought Effects on Norway Spruce?** - Kohler M., Nägele G. and Bauhus J.
- **A Cognitive Mapping Approach to Estimate Current and Future Functionality of Non-Timber Forest Products and Services** - Wolfslehner Bernhard and Vacik Harald
- **Modelling the Dynamics of Vegetation Diversity Under Different Forest Management Regimes and Climate Change Scenarios** - Khanina L., Bobrovsky M., Komarov A., Mikhailov A., Shanin V. and Bykhovets S.
- **Impacts of Harvesting and Thinning on Carbon Dynamics in a Balsam Fir Ecosystem in New Brunswick, Canada** - Lavigne M.B., Foster R.J. and Goodine G.K.
- **Modelling Soil Organic Matter Dynamics and Forest Nutrition Under Climate Change** - Komarov A., Mikhailov A., Shanin V., Bykhovets S.
- **Evaluating Macroscopic Effects of Impregnation with Hydrophobic Oil on Norway Spruce (*Picea abies* L. Karst) Mature Sapwood Structure** - Ulvcrona Thomas

Associated Posters:

- **Ecological Sustainability of Community Forest Management – A Case Study from the Midhills of Nepal** - Baral S.K. and Katzensteiner K.
- **Modeling Diameter Growth in Open Oak Woodlands Using Gamma Regression** - Gea-Izquierdo G. and Cañellas I.
- **Spanish Experimental Long-Term Network for Sustainable Forest Management** - Cañellas I, del Río M, Calama R, Pardos M, Sixto H, Roig S, Mutke S, Bravo-Oviedo A., Chambel R, Alía R, Montero G.
- **Biomass Equations for *Eucalyptus globulus* in Portugal: An Assessment of Carbon Involved in Forest Harvesting** - Fontes L., Tomé M. and Coelho M. Baptista

Abstracts accepted but not presented:

- **Expanded Silvicultural Approaches to Sustainable Bioenergy Plantations to Mitigate Climate Change** - Stanturf J.A., Stokes B.J., Buford M.A. and Perdue J.H.

Session 7 – Biodiversity, Conservation and Protective Functions of the Forest

Oral Presentations:

- **Mapping Biologically Important Forests - Towards the Restoration of a Trans-European Forest Mega-corridor** - Kostovska Diyana
- **Biodiversity Conservation, Forest Management and Climate Change Adaptation in Bolivia Under the Current Political Context: Implications for Policies and Conservation** - Peredo-Videa Bernardo
- **Impacts of Climate Change on Forests in Europe – A Review of the State of Knowledge in Different European Regions** -Lindner Marcus, Garcia-Gonzalo Jordi, Kolström Marja, Netherer Sigrid and Schopf Axel
- **Nurturing Water and Protecting Soil Through Forest Cover – A Case Study from India** - Sharma S. K.
- **Impacts of Climate Change on Hydrological Ecosystem Functions in Mesoamerica** - Imbach Pablo, Locatelli Bruno and Guillermo Molina Luis
- **Climate Change Impacts on Goods and Services of European Mountain Forests – A Review** - Maroschek M., Seidl R., Lindner M., Garcia-Gonzalo J. and Lexer M.J.
- **Protection Forest and their Vulnerability in Europe: A First Approach for Harmonized Large Area Mapping in Alpine Area** - Reithmaier L.M., Casalegno S. and Fernández-Rosa V.L.
- **Impacts of Climate Change on Landslides and Using Vegetation as an Adaptation Option to Reduce the Landslide Risk** - Santoso Heru, Hairiah Kurniatun, Tohari Adrin, Soedradjat Gatot M., Herawati Hety

Associated posters:

- **Valorisation of the Fauna Communities in the Algerian Forests: Case of the National Park of Belezma (Algeria, North Africa)** – Chenchouni Haroun, Righi Yassine, Si Bachir Abdelkrim and Hamchi AbdelHafidh
- **Forest Conservation in the Climate Change: The Case Study of Puglia Region – Italy** - Carella Rocco
- **Genetic Consequence of Human Impact on Diversity and Response to Climate Change in Two Tropical Tree Species with Contrasting Successional Status** - Akinnagbe A., Gailing O. and Finkeldey R.
- **Analyses of Adaptation Strategies of Forest-Forming Tree Species and Forest Stands Based on Reconstruction of Their Post-Fire Successions** - Nazimova D.I., Drobusheskaya O.V., Kofman G.B. and Konovalova M.E.
- **Managing True Mangroves: Are Bird Pollinated Taxa the Most Vulnerable to Climate Changes?** - Nagarajan B., Pandiarajan and Krishnamoorthy M.
- **Climate Change and *Araucaria angustifolia* Bert O. Ktze Conservation Strategy** - Silveira Wrege Marcos, Victoria Higa Rosana Clara, Miranda Britez Ricardo, Aparecida de Sousa Valderês, Caramori Paulo Henrique, Braga Hugo José and Radin Bernadete
- **Studying the relationship of forest cover and run off volume from precipitation Geographic Information System (GIS)** - Maskani Jifroudi Hamid Reza, Meraji Ali, Haghyghy Khomami Maryam, Dazeh Leila, Hossein Firoozan Amir

Abstracts accepted but not presented:

Restoration for the Future: The Challenge from Global Change - Stanturf J.A., Madsen Palle, Löff Magnus and Liu Yongqiang

Session 8 – Socio-Economic Functions and Livelihoods

Oral Presentations:

- **Factors Affecting the Role of Urban and Peri-Urban Forests in Adaptation to Changing Climatic Conditions in Khartoum State, Sudan** - Rahamtalla Hamad Ibrahim
- **Climate Change, Non-Timber Forest Products and Rural Livelihood: A Study in the Drought-Prone District of West Bengal** - Basu Jyotish Prakash
- **Integrated Forest Management for Restoration of Ecosystem Services and Rural Livelihood Security in Himalaya, in View of Impacts of Climate Change** - Tiwari Prakash C.
- **Balancing Livelihoods Needs for Adaptation and Reducing Carbon Emissions from Forests: Case Study of Community Forestry in the Cameroon Forest Policy Reform** - Bele M.Y., Jum C. and Nkem J.
- **Mitigation and Adaptation Potential of Agroforestry: Adaptation Implications and Policy Options for Meeting Challenges of Sustainable Livelihoods and Environmental Sustainability** - Saxena Vivek
- **Impacts of Climate Change on Forest Recreation and Tourism and the Livelihoods of Communities that Depend on this Industry** - Dimond Alison T., Brown Perry and Freimund Wayne
- **Adaptation of Forest Management among Small-Scale Private Forest Owners** - Blennow Kristina
- **Effects of Land-Use and Climate Changes on the Mount Marsabit's Forest Ecosystem, Kenya** - Adano Wario R.
- **Role of Community-Based Forest Management to Address Climate Change Problem: A Case of Nepalese Community Forestry** - Dhakal M. and Masuda M.
- **Land-Use/Land-Cover Change, Deforestation and Food Insecurity in Ethiopia** - Garedeew E., Sandewall M. and Söderberg U.
- **Climate Variability and Change in North-Western Bangladesh: Role of Smallholder Agroforestry in Adaptation to Desertification** - Alam M.
- **Contribution of Farmer-Managed Tree Natural Regeneration to Environmental and Climatic Risks Minimization in the Sahelian Part of Niger (West Africa)** - Larwanou M., Illiassou M. and Moustapha M.A.
- **Towards Developing Options and Indicators on Community-Based Sustainable Management of Forest Resources in the Era of Climate Change - Case Study From Orissa, India** - Ojha Nabaghan

Associated Posters:

- **Community-Based Forest Management: A Case Study of Wuda-Taye Forest Reserve, Nigeria** - Aneni T.I. and Okali D.U.
- **Finding the Deforestation, Energy and Food Security Nexus: Is a PCD Approach to Adaptation the Link?** - Muller J. and Sparks D.
- **The Socio-Economic Impact of Industrial Plantation Programmes on Rural Livelihood: A Case Study of Communities in Forest Reserves in Nigeria** - Afolabi O.R. and Onyekwelu, J.C.
- **Community-Based Activities in Disaster-Prone Upland Areas as a Means of Adapting to a Changing Climate in The Philippine Countryside** - Sanchez P.A.J. Lasco R.D. and Espaldon M.V.O.
- **Climate Change, Resettled Communities, Forest Resources Conservation and Livelihood Options around Kafta-Sheraro Forest Reserve, Tigray Region, Ethiopia** - Eniang Edem A., Mengistu Genet F. and Yidego Teshale
- **A Battlefield for Forests: An Actor-Oriented Analysis for Studying Local Institutions and the Deployment of Ecosystem Services in Central Argentina** - Rodríguez-Bilella P.
- **Impact Assessment of Climate Change on Fuelwood Production and Utilization in Ghana: An Essential Tool for Adaptation** - Tekpetey S.L., Frimpong-Mensah Nana K. and Idinoba M.

Session 9 – Innovative Management and Policy Approaches to Climate Change Adaptation

Oral Presentations:

- **Adapting Forest Ecosystems to Climate Change: Implications for Participatory Learning and Action Research Platforms in Bridging Forest Science-Policy-Practice Interfaces** - Idinoba P.A., Defoer T., Idinoba M.E. and Nkem J.
- **Adaptation to Climate Change in Certified Forests – The International Trade in Timber and Adaptive Forest Management** - Nsoh Walters
- **Mainstreaming Climate Change Adaptation in Forest and Natural Resources Management in The Philippines: The Role of Local Governments** - Lasco R., Jaranilla-Sánchez P., Delifino R. and Rangasa M.
- **“Forest Development Types”- Developing Adaptive Forest Management in a Science-Stakeholder Dialogue** - Larsen J. Bo
- **Alternatives for Deforestation Reduction in the Legal Amazonian** - Shiota Montandon Erika and Simões Andre Felipe
- **Possibility of Adopting REDD Principle in the Context of Nepal** – Oli Bishwa Nath
- **Adapting to Climate Change on National Forests in the United States** - Blate Geoffrey M.
- **Forest Policies: Vulnerability and Adaptation in the Forest Sector in India** - Murthy I. K. and Ravindranath N. H.
- **Role of Protected Forest Areas in Adaptation to Climate Change: WWF’s Perspective** - Mansourian Stephanie and Belokurov Alexander

Associated Posters:

- **Sustainable Forest Management Systems within Rural Communities of the North-West Province of Cameroon, Strong Strategic Approaches for Climate Change in Sub-Saharan Africa** - Achu Awa Walters
- **Guideline for Climate Change Vulnerability Assessment of Forest Ecosystem Services in Adaptation of Water Resources in West Africa** - Coulibaly Yacouba Noël, Idinoba Monica, Verbeeten Elke and Nkem Johnson
- **Counteracting Desertification and Bushfires Through Reforestation: The Case of Zion Hill, Saint-Vincent and The Grenadines** - Poyer Joel and Ramessar Candice R., MSc.
- **Adaptation to Climate Change in Forest Ecosystems Affected by the Poor** – Robledo Carmenza, Blaser Jürgen and Clot Nicole
- **Italian Forestry Measures Introduced through the New Challenges of the European Silviculture** - Romano Raoul and Cilli Stefano

Session 10 – Climate Change and Forest Sector Adaptive Capacity

Oral Presentations:

- **Adapting to Change: Forest Tenure in Canada’s Boreal Plains Ecozone** - Hesseln Hayley, Johnston Mark, Weseen Simon and Williamson Tim
- **Adaptation Measures to Changing Climate in Different EU Countries** - Kolström Marja, Lindner Marcus, Garcia-Gonzalo Jordi, Delzon Sylvain and Kremer Antoine
- **Canada’s Forest Sector Capacity to Adapt: The Need for Increased Levels of Innovation** - Van Damme Laird, R.P.F.
- **Adaptive Capacity in Publicly Owned Forest Landscapes: Forestry Institutions in Canada** - Johnston Mark, Williamson Tim and Hesseln Hayley
- **Adaptive Capacity in Forest-Based Communities** - Williamson Tim B.
- **Sustainable Development through Building Adaptive Capacity: The Model Forest Circumboreal Initiative** - Svensson Johan and Majewski Przemyslaw

Abstracts accepted but not presented:

- **New Institutional Analysis and the Adaptive Management of Climate Change: Implications for the Forestry Industry and Forestry-Based Communities** – Matthews Ralph
- **Resilience and Adaptation in Communities in Alaska** - Kruger Linda E.

Session 11 – Tropical Forest Management and Climate Change Adaptation

Oral Presentations:

- **The TroFCCA Policy Research Framework on Actors, Decision-Making and Policy Networks** - Brockhaus M., Vignola R., Santoso H., Sanchez P., Siagian Y. and Lasco R.
- **Impacts of and Adaptation to Climate Change of Forest Biodiversity in The Philippines** - Pulhin Florencia B. and Lasco Rodel D.
- **Using Forest Ecosystem Goods and Services for Climate Change Adaptation in Burkina Faso and Ghana: Policy Gaps and Constraints** - Kalame Fobissie B., Brockhaus Maria, Nkem Johnson, Idinoba Monica and Kanninen Markku
- **Tropical Forest Values and Vulnerability to Climate Change** - Nkem J.N. and Locatelli B.
- **Estimating Deforestation and Forest Degradation in Sri Lanka – A Pilot Project of a Potential REDD Mechanism** - Mattsson Eskil, Ostwald Madelene, Nissanka S.P. and Achard Frédéric
- **Impact of Climate Change on Distribution and Performance of Tropical Pine Species in Central America and Southeast Asia** - van Zonneveld M. J., Jarvis A., Dvorak W., Koskela J., Vinceti B. and Snook L.
- **Climate Change Considerations in Management of Mangrove Forests: Review and Recommendation for Sundarbans Reserve Forest, Bangladesh** - Khan M.S.I.
- **The River Between: Innovative Fringing Forest Management in Response to Climate Change by Two Communities Lying Across the White Volta River** - Atibila J. M.
- **A Framework for Vulnerability Assessment of Non-Timber Forest Goods for Planning Adaptation to Climate Change and Variability in West Africa** - Idinoba M.E., Nkem J., Kalame F. and Coulibaly Y.
- **The Use of Indigenous Knowledge in Monitoring and Prediction of Climate Change and Seasonal Cycles among the Local Communities in Kenya** - Mhando Nyangila Jacob
- **Exploring Forest Management Solutions in Traditional Knowledge System to Address Climate Change Issues** - Rijal Arun
- **Coping with Climate Change: How Local Communities Use Traditional Knowledge in Rural Ghana** - Gyampoh, B. A., Amisah, S. and Idinoba, M.

Associated Posters:

- **Forest Assessment for Improved Mangrove Forest Management in Kenya** - Lang'at J.K.S., Kirui B., Kairo J.G. and Bosire J.O.
- **Traditional Knowledge on Adaptation to Climate Change with Reference to Woody Species Composition and Socio-Economic Roles of Traditional Agroforestry Practices in South Eastern Langano, Oromiya, Ethiopia** - Asfaw Biruk, Lemenih Mulugeta and Achalu Negussie
- **Climate Change and Indigenous Coping Responses in West Africa** – Cobbinah J.R.
- **Assessing Indigenous Knowledge for Evaluation, Propagation and Conservation of Indigenous Multipurpose Fodder-Trees Towards Enhancing Climate Change Adaptation in Northern, Ethiopia** - Eniang Edem A. and Balehegn Mulubrhan

Session 12 – Genetic and Physiological Adaptation to a Changing Climate

Oral Presentations:

- **Genetic Structure of *Albizia gummifera*: Implications for Restoration in East Africa and Madagascar** - Nantongo J.S., Okullo J.B.L., Eilu G. and Cavers S.
- **Tree Breeding In A Changing Environment: Genetic Gain and Environmental Canalization** - Waldmann Patrik
- **Use of Genetic Variation in Forest Trees to Adapt to Changing Climate** - Wang Tongli, Hamann Andreas, Aitken Sally, O'Neill Greg, Yanchuk Alvin and Spittlehouse Dave
- **The Impacts of Tree Improvement Programmes on Forest Health: The Past Models, and Future Approaches Needed in Changing Climates** - Yanchuk Alvin and Allard Gillian
- **Chilling Requirements of Ash (*Fraxinus excelsior* L.) and Climate Change** - Clark J.R., Cahalan C., Boshier D., Gosling P. and McCarten D.
- **Temporal and Spatial Variation of Flowering Among *Pinus nigra* Arn. Clones Under Changing Climatic Conditions** - Alizoti P.G., Kilimis K. and Gallios P.
- **Effect of Warm Winter Temperatures and Genotype on Budburst of Douglas-Fir** - Harrington C.A., St. Clair J.B. and Gould P.J.
- **Increasing the Resiliency and Carbon Sequestration Potential of Gulf Coast Forests in the United States** - Johnsen K.H., Butnor J.R., Kush J.S., Nelson C.D. and Schmidting R.C.
- **Genotype X Silviculture Interactions on Productivity and Carbon Allocation in Young Loblolly Pine Plantations** - Maier C.A., Johnsen K.H., Pritchard S., Tyree M., Seiler J. and Dougherty P.
- **Approaches to Determining Appropriate Provenances for Future Climates** - St. Clair J. Bradley, Howe Glenn T. and Wang Tongli

Associated Posters:

- **Immediate Genetic Changes in Tree Deployment and Breeding Because of Global Warming** - Lindgren D.
- **Winter Temperature Rising in Cold Mediterranean Areas: a New Chance for the Evergreen Oak Species?** - Corcuera L., Peguero-Pina J.J. and Gil-Peigrín E.
- **Chloroplast DNA (cpDNA) Variation of *Shorea leprosula* in Indonesia Assessed by PCR-RFLP** - Siregar I.Z., Resmisari R.S. and Siregar U.J.
- **Early Response to Drought of *Pinus pinaster* Aiton Clones** - Velasco-Conde T., Feito I., Aranda I., Alía R. and Majada J.

Session 13 – Forest Dieback and Mass Mortality: Assessments and Early Warning

Oral Presentations:

- **The Challenges of Assessing Climate Change Vulnerability Using an Ecosystem Approach** - Murdiyarsa Daniel, Santoso Heru and Idinoba Monica
- **Early-Warning Detection and Assessment of Drought-Induced Dieback and Mortality of Aspen (*Populus tremuloides*) Forests in Western Canada** - Hogg E.H. (Ted), Michaelian M., Hall R.J. and Arsenault E.J.
- **Monitoring Vegetation Phenology and Biophysical Variables Using MODIS Products** - Kang Synkyu, Jang Keunchang, Kim Sohee and Lee Bora
- **Wildland Threat Assessment and Monitoring Systems on National Forests in the USA** - Beatty J.S. and Ager A.A.
- **Monitoring Insect Defoliation of Forests by Means of Laser Scanning and Hyperspectral Imagery** - Lyytikäinen-Saarenmaa P. and Holopainen M.
- **Climate Change in the Congolese Dense Forest** - Tsalefac M. and Manetsa R.V.
- **The Deterioration of the Atlas Cedar (*Cedrus atlantica*) in Algeria** - Chenchouni Haroun, Si Bachir Abdelkrim and Briki Athmane
- **Increased Decline of Korean Fir Forest Caused by Climate Change in Mountain Halla, Korea** - Lim J.-H., Chun J.H., Woo S.Y. and Kim Y.K.

Associated Posters:

- **Relationships Between Forest Fine and Coarse Woody Debris Carbon Stocks Across Latitudinal Gradients in the United States as an Indicator of Climate Change Effects** - Woodall C.W. and Liknes G.C.
- **Carbon Pools and Fluxes for United States Forest Ecosystems and Products: Results of the USDA Forest Service National Sustainability Report** - Woodall C.W., Skog K.E., Heath L.S., Smith J., Perry C.H. and Piva R.
- **Locating Forest Field Experiments According to Present and Future Climate** - Karlsson, K.
- **Bioclimatic Classification for Climate Change Impact Assessment: Implication for Forest Conservation** - Kim T.K., Yoo B.H., Kim M., Lee J.H., Lee S.M and Lee S.J.
- **Estimation of Evapotranspiration Using MODIS Products at Flux Measurement Sites in Northeast Asia** - Jang Keunchang, Kang Sinkyu and Kim Joon
- **Climate Change and Forest in Morocco: Case of the Decay of the Cedar in the Atlas Mountains** - Adil Said
- **Extensive Mortality of Spruce Forests in Arkhangelsk Region: Satellite Image Analysis** - Kauhanen H., Wallenius T., Kuuluvainen T., Aakala T. and Mikkola K.

Session 14 – Forest Dieback and Mass Mortality: Monitoring and Mitigation of Consequences

Oral Presentations:

- **Climate-Induced Forest Dieback: A Global Overview of Emerging Risks** - Allen Craig D.
- **Means of Combating Forest Dieback – EU Support for Maintaining Forest Health and Vitality** - Requardt Aljoscha, Köhl Michael and Schuck Andreas
- **Monitoring Large-Scale Tree Mortality in the United States of America** - Tkacz Borys
- **Canadian Experiences in Large-Scale Monitoring of Climate-Related Disturbances Causing Forest Dieback and Mortality** - Hogg E.H. (Ted) and Kurz Werner A.
- **Assessment and Management of High Conservation Value Forests in the Context of Mass Forest Mortality** - Shchegolev A.A.
- **National Programmes on Monitoring and Minimization of Consequences of Forest Mortality** - Kobelkov Mikhail

Session 15 – Scenarios and Modelling for Forest Management Planning

Oral Presentations:

- **Identifying Forests Susceptible to Climate Change by GIS-Based Forest Site Classification** - Asche Norbert and Schulz Rainer
- **Sustainable Forest Management under Climate Change: Adaptation Strategies Based on a Comprehensive Vulnerability Assessment** - Seidl R., Rammer W. and Lexer M.J.
- **A Decision Support System to Deal with the Effects of Climate Change on Forests in Southwest Germany** - Hanewinkel Marc and v. Teuffel Konstantin
- **Climate Change Adaptation for Forestry in Western Canada: A Sensitivity Analysis of Model Predictions** - Mbogga Michael and Hamann Andreas
- **Projected Forested Landscapes Uncertainties and Their Sources of Uncertainty** - Gertner George and Xu Chonggang
- **European Scale Forest Resource Modelling at High Resolution Based on Inventory Data** - Nabuurs V., van den Wyngaert V., Hengeveld G. and Schelhaas M.J.
- **Modelling Impacts and Assessing the Willingness to Adapt to the Impacts of Climate Change in Western Canada** - Innes J.L., Nitschke C.R. and Ogden A.E.
- **Climate Change Scenarios for Argentinian Forest and Protected Areas** - Fernández L.C. and Alcobé F.
- **Regional/Country Scale Forest Resource Simulation in a Changing Environment** - Tomé Margarida, Barreiro Susana, Tomé José, Marto Marco, Soares Paula, Faias Sónia
- **Combining Species Suitability Models and Expert Knowledge to Underpin Policy Development for Scottish Forests in a Changing Climate** - Ray D. and C. P. Quine C.P.
- **How to Integrate Natural Risks into a Simple Decision Model for Forest Production** - Staupendahl Kai and Möhring Bernhard
- **Designing Adaptive Strategies for Forests Under Climate Change Using Risk Management** - Hanewinkel M. and Hummel S.
- **Adaptation of Forest Management in Brandenburg: Challenges in a Climate Change ‘Hotspot’ of Germany** - Spathelf P. and Bolte A.
- **The Role of Pest Insect Damages in the Development of Regional Forest Resources Under Changing Climate** - Matala J., Niemelä P. and Nuutinen T.

Associated Posters:

- **Sketching Future Semi-Evergreen Forest of Bangladesh Considering Climate Change Scenarios and Adaptation** - Al-Amin M. and Khanam C. Sultana
- **Adjustment of an Empirical Growth and Yield Model to Account for Effects of Climate Change on Forest Production** - Freeman M., Wikström P. and Elfving B.O.
- **Using Resilience Theory to Understand and Manage Pine Ecosystem Dynamics in an Era of Rapid Climate Change** - Campbell E.M., Haeussler S. and Nitschke C.R.
- **Impact of Land-Use and Climatic Changes on Pulpwood Production and Carbon Sequestration Sustainability at the Landscape Level** - Soares P., Tomé M., Borges P., Marques S. and Borges J.G.
- **Forecasting Mangrove Forest Response of the Florida Everglades to Sea-Level Rise Under Climate Change** - Doyle Thomas W. and Krauss Ken W.
- **Using GFIS and Other New Technologies for Effective Communication and Sharing of Forestry Information Across Disparate Networks in the Global Community** - McCracken R.D., Stanturf J.A. and Mikkola E.
- **Continuous Tree Cover Forests and Continuous Cover Forestry in Sweden** - Axelsson Robert

Session 16 – The “Swedish Model” as a Tool for Global Carbon Mitigation

Oral Presentations:

- **Can Experiences of Carbon Sequestration in Swedish Forests over the Past Century Be Replicated?** - Holmgren Peter
- **Swedish Forests – Historical Development and Plausible Scenarios for the Next Century** - Ståhl Göran
- **The Potential for Global Carbon Uptake by Using Swedish Forestry Practice** - Örländer Göran
- **Uptake of Carbon in Swedish Forest Ecosystems** - Olsson Matts

Session 17 – Opportunities for Combining Adaptation and Mitigation Objectives

Oral Presentations:

- **Integration of Climate Adaptation and Mitigation Measures is Co-Beneficial for Forest Development** - Gevorgyan Artur
- **Tropical Forests, Water and Carbon Sequestration: Exploring the Opportunities to Link Mitigation and Adaptation to Climate Change** - Murdiyarto Daniel, Malmer Anders and Ilstedt Ulrik
- **Prospects of Afforestation and Reforestation (A/R) Projects in India for Mitigating Climate Change** - Haque M.S. and Karmakar K.G.
- **Optimizing Timber Supply and Carbon Sequestration Planning for Future Spruce Budworm Outbreaks in New Brunswick, Canada** - Hennigar Chris R. and MacLean David A.
- **Biomass Energy and Carbon Sequestration Potential of Wastelands in India** - Ostwald M., Ravindranath N.H., Palm M. and Berndes G.
- **Can Forest Mitigation Strategies also Address Adaptation Objectives?** - Kurz Werner A.
- **Guyana's Proposal for Global Climate Change Adaptation and Mitigation: The Jagdeo Climate Change Initiative** - Caesar John C.
- **Impact of Carbon Trading on Forest Management in New Zealand** - Manley Bruce and Maclaren Piers

Associated Posters:

- **The Forestry Sector of Bangladesh in Global Warming Mitigation: The Future Approach to Forestry Practice** - Miah Md. Danesh and Shin Man Yong
- **Reduced Emissions from Deforestation and Degradation (REDD): A Revenue Source for Natural Forest Management by Communities in Vietnam** - Neupane P.R.
- **Carbon Sequestration in Broad-Leaved and Korean Pine Mixed Forests by Different Harvesting Practices in Changbai Mountain, Northeast China** - Dai L.M., Zhong L., Zhou L. and Yu D.P.
- **Yield and Carbon Sequestration Potential of Wheat-Poplar Based Agri-Silvicultural System** - Chauhan S.K., Sharma S.C., Beri V., Ritu, Yadav S. and Gupta N.
- **Chances and Challenges for a Resource-Depending Society to Mitigate Negative Impact of Forest Loss Through Climate Change (REDD) Support Mechanisms** - Weyerhaeuser Horst, Phengvichith Vanthong and Badenoch Nathan
- **Developing Community Forestry Management For Mitigating Climate Change Impact In Indian Himalayan Region** - Tewari Ashish, Singh Vishal, Tewari Pankaj and Phartyal Pushkin
- **Improving Soil Carbon Accumulation through Integrated Soil Fertility Management** - Yeboah E. and Sohi S.P.
- **Promoting the Plantation of Trees with Low-Density Wood as a Strategy to Reduce Forest Degradation in Indonesia** - Karlinasari L. and Nugroho N.
- **Modelling Carbon Assimilation for An Ontario Boreal Spruce Plantation – Canadian Carbon Program (CCP)** - Reynolds Phillip E. and Brand Gordon
- **Modelling Carbon Assimilation for Boreal Jack Pine Plantations – Ontario Long-Term Soil Productivity (LTSP) Study** - Reynolds Phillip E. and Brand Gordon
- **A Strategic Approach to Ensure Sustainable Management of Forest Resources of Cameroon to Climate Change** - Ngonu Grégoire
- **Climate Change Mitigation: Influence of Genetic Stock and Spacing on Carbon Sequestration** - Amanulla B.K.M., Vidyasagar G. and Ramakrishna Hegde

Session 18 – Wood as a Green Building Material

Oral Presentations:

- **The Convenient Truth** - Labbé Sylvain
- **LCA Analysis of Timber House Construction in Japan Focusing on Calculating LCCO₂ in Basic Materials** - Kawanabe A., Akita N., Seike T., Iijima Y. and Tarata K.
- **Why Wood Is Key to Green Building** – Beauregard Robert, Morency Pierre-Olivier and Bouthillier Luc
- **A New Zealand Supply Chain Research Strategy for Green Buildings and the Potential Impact on Climate Change** – Nebel Barbara and Love Simon
- **Project MIKADO – Documenting the Environmental Properties of Wood Products (in Norway)** – Svanæs J., Folvik K. and Wærp S.
- **Low-Energy Wood-Framed Buildings Heated with Bio-Based CHP Plants** - Gustavsson Leif and Sathre Roger

