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**Opportunities and risks for Douglas fir
in a changing climate**

- Abstracts -

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OPPORTUNITIES AND RISKS FOR DOUGLAS-FIR IN A CHANGING CLIMATE

October 18 - 20, 2010

Freiburg, Germany

Time	<i>Sunday, October 17, 2010</i> <i>Forest Research Institute, Günterstalstraße 61</i>
<i>17:00</i>	<i>Registration</i>
<i>19:00</i>	<i>Icebreaker</i>

Time	<i>Monday, October 18, 2010</i> <i>Forest Research Institute, Wonnhaldestr. 4</i>
<i>08:00</i>	<i>Registration (continued)</i>
<i>08:30</i>	<u>Welcome addresses</u> (<i>Moderator: Konstantin von Teuffel</i>) <i>Max Reger; Konstantin von Teuffel</i>
<i>09:00</i>	<u>Keynote speech</u> The dynamics of Douglas-fir stands (<i>Bruce Larson, Canada</i>)
<i>09:40</i>	<u>Keynote speech</u> Douglas-fir in France: history, recent economic development and overviews for the future (<i>Jean Louis Ferron, France</i>)
<i>10:20-10:50</i>	<i>Coffee break</i>
<i>10:50</i>	SESSION 1 (<i>Moderator: Konstantin von Teuffel</i>) Mapping Douglas-fir current and future abundance and potential site productivity in western United States (<i>Aaron R. Weiskittel, Nicholas L. Crookston, Gerald E. Rehfeldt, Phillip J. Radtke, USA</i>)
<i>11:15</i>	Going the distance: Testing seed transfer of coast Douglas-fir within its native range (<i>Peter Gould, Constance Harrington, Brad St. Clair, USA</i>)
<i>11:40</i>	Sustainable cultivation of Douglas-fir on dry and acid sandy soils in the old-glacial lowlands of eastern Germany – aspects of nutrient and humus dynamics (<i>Thomas König, Alexander Tischer, Franz Makeschin, Sven Martens, Germany</i>)
<i>12:05-13:35</i>	<i>Lunch</i>
<i>13:35</i>	SESSION 2 (<i>Moderator: Jürgen Bauhus</i>) <u>Keynote speech</u> Douglas-fir and the management of forests as complex, adaptive systems (<i>Klaus J. Puettmann, USA</i>)
<i>14:15</i>	Climatic and regional patterns in Douglas-fir climate-growth relationships in British Columbia, Canada (<i>Hardy P. Griesbauer, D. Scott Green, Canada</i>)
<i>14:40</i>	Douglas-fir – a substitute species for Scots pine in dry inner-Alpine valleys? (<i>Britta Eilmann, Andreas Rigling, Switzerland</i>)
<i>15:05</i>	Impact of Douglas-fir on the N cycle: Douglas-fir promotes nitrification? (<i>Bernd Zeller, Sitiraka Andrianarisoa, Jean-Huques Jussy, Etienne Dambrine, Jacques Ranger, France</i>)
<i>15:30-16:00</i>	<i>Coffee break</i>

<p>16:00</p> <p>16:40</p> <p>17:05</p> <p>17:30</p>	<p>SESSION 3 (<i>Moderator: Jürgen Bauhus</i>)</p> <p><u>Keynote speech</u></p> <p>Tree-ring analysis of adaptation to drought in Douglas-fir (<i>Philippe Rozenberg, France</i>)</p> <p>Tree-ring growth of West-German Douglas-fir under changing climate conditions (<i>Stefanie Fischer, Burkhard Neuwirth, Jörg Löffler, Matthias Winiger, Germany</i>)</p> <p>Impact of water availability on wood density patterns in Douglas-fir tree rings (<i>Bela Johannes Bender, Heinrich Spiecker, Germany</i>)</p> <p>Findings from long-termed forest growth inventory data from 14 trial sites in the II. International Douglas-fir progeny trials established in 1961 in north-western Germany (<i>Andreas Weller, Germany</i>)</p>
<p>17:55- 18:00</p>	<p style="text-align: center;"><i>Break</i></p>
<p>18:00</p> <p>(1)</p> <p>(2)</p> <p>(3)</p> <p>(4)</p> <p>(5)</p> <p>(6)</p> <p>(7)</p> <p>(8)</p> <p>(9)</p> <p>(10)</p> <p>(11)</p> <p>(12)</p>	<p>POSTER SESSION</p> <p>Bud burst and damage by spring frost of Douglas-fir seedlings in the south of Sweden (<i>Cecilia Malmqvist, Sweden</i>)</p> <p>Effects of surface humidity and light regime on germination success and seedling development of Douglas-fir (<i>Pseudotsuga menziesii</i> Mirb. Franco) – a greenhouse experiment (<i>Franka Huth, Angelika Körner, Christine Lemke, Antje Karge, Jörg Wollmerstädt, Sven Wagner, Martin Hartig, Dietrich Knoerzer, Germany</i>)</p> <p>Survival and growth of Douglas-fir seedlings of different provenances; results after one growing season (<i>Kristina Wallertz, Sweden</i>)</p> <p>Drought tolerance of native and non-native tree species in the Alps – results from a large scale dendroecological study (<i>Mathieu Lévesque, Britta Eilmann, Andreas Rigling, Peter Brang, Switzerland</i>)</p> <p>Nutrient removal by wood harvesting in Douglas-fir stands for different silvicultural treatments and varying harvesting intensities (<i>Joachim Block, Julius Schuck, Thomas Seifert, Germany</i>)</p> <p>The commercial development of Douglas-fir controlled mycorrhization in France: an emerging tool for a new sylviculture (<i>Jean Garbaye, Daniel Bouchard, Jean-Louis Churin, François Le Tacon, Vincent Naudet, Bruno Robin, France</i>)</p> <p>Douglas-fir forests in Rhineland-Palatinate – structural diversity and future perspectives (<i>Ulrich Matthes, Germany</i>)</p> <p>Where has the Douglas-fir – <i>Pseudotsuga menziesii</i> – been first discovered, in Canada or in the U.S.A.? (<i>Rémy Claire, France</i>)</p> <p>Effects of climate change on growth and vitality of Douglas-fir plantations in Caspian Forest (Iran)? (<i>Farshad Yazdian, Iran</i>)</p> <p>Production and environmental functions of Douglas-fir on the School Training Forest Kostelec nad Černými lesy territory (<i>Vilém Podrázský, Jiří Remeš, Czech Republic</i>)</p> <p>Growth performance and reaction to biotic factors of Douglas-fir provenances in northwest Germany (<i>Mirko Liesebach, Germany</i>)</p> <p>Douglas-fir in beech forest ecosystems - diversity of two strict forest reserves (<i>Patricia Balcar, Germany</i>)</p>
<p>19:00</p>	<p style="text-align: center;"><i>Individual Program</i></p>

<i>Time</i>	Tuesday, October 19, 2010 <i>Forest Research Institute, Wonnhaldestr. 4</i>
08:30-	SESSION 4 (<i>Moderator: Philippe Rozenberg</i>) <u>Keynote speech</u> Review of present and potential insect pests affecting Douglas-fir in Europe in a context of global change (<i>Alain Roques, France</i>)
09:10	Vulnerability of Douglas-fir in a changing climate: study of decline in France after the 2003 drought (<i>Anne-Sophie Sergent, Philippe Rozenberg, Benoît Marçais, Yves Lefèvre, Jean-Charles Bastien Leopoldo Sanchez, Louis-Michel Nageleisen, Nathalie Bréda, France</i>)
09:35	Impact of the 2003 heat wave on Douglas-fir in France: comparison of dead and surviving trees for juvenile and mature traits (<i>Manuela Ruiz-Diaz, Sara Marin, Alejandro Martinez-Meier, Leopoldo Sanchez, Guillermina Dalla-Salda, Philippe Rozenberg, France</i>)
10:00	Storm damage of Douglas-fir and Norway spruce in Southwest Germany: Stability of Douglas-fir and the impact of silviculture on the vulnerability of conifers (<i>Axel Albrecht, Ulrich Kohnle, Marc Hanewinkel, Jürgen Bauhus, Germany</i>)
10:25- 10:55	<i>Coffee break</i>
10:55	SESSION 5 (<i>Moderator: Philippe Rozenberg</i>) Interactions between Douglas-fir and European beech – what do growth parameters indicate? (<i>Martin Haßdenteufel, Rebekka Bögelein, Willy Werner, Frank M. Thomas, Germany</i>)
11:20	Growth, allocation of space and competition in mixed stands of Douglas-fir and European beech (<i>Lutz Hilbrig, Germany</i>)
11:45	Douglas-fir growth response to variation in soil water holding capacity and precipitation patterns in the Siskiyou Mountains of southwestern Oregon (<i>Douglas A. Maguire, David W. Hann, Douglas B. Mainwaring, USA</i>)
12:10- 13:40	<i>Lunch</i>
13:40	SESSION 6 (<i>Moderator: Ulrich Kohnle</i>) <u>Keynote speech</u> Douglas-fir - a look into the genetics (<i>Monika Konnert, Germany</i>)
14:10	Adaptation of Douglas-fir provenances to drought stress (<i>Ingo Ensminger, Moritz Heß, Thomas Müller, Henning Wildhagen, Karl Schmid, Germany</i>)
14:35	Genetic value of a Douglas-fir natural regeneration in France (<i>Alain Valadon, Ouzna Boussaid, Jean-Charles Bastien, France</i>)
15:00	Photoprotective isoprenoids as physiological markers for the adaption of Douglas-fir to drought stress in context of climate change (<i>Laura Junker, Henning Wildhagen, Ingo Ensminger, Anita Rott, Jürgen Kreuzwieser, Germany</i>)
15:25- 15:55	<i>Coffee break</i>

	SESSION 7 (<i>Moderator: Ulrich Kohnle</i>)
15:55	Genetic investigation on Douglas-fir seed stands by means of isozyme and microsatellite markers (<i>Barbara Fussi, Monika Konnert, Germany</i>)
16:20	Ecophysiological isotope tools for characterising the drought sensitivity of Douglas-fir (<i>Pseudotsuga menziesii</i> (Mirb.) Franco) (<i>Jakob Sohrt, Kirstin Jansen, Arthur Gessler, Germany</i>)
16:45	Planted forests of Douglas-fir in New Zealand: challenges for the breeding programme with climate change (<i>Heidi Dungey, Charlie Low, Michal Watt, Ian Hood, Jeff Stone, Mark Kimberley, New Zealand</i>)
17:10	Root system response of naturally regenerated Douglas-fir (<i>Pseudotsuga menziesii</i>) after complete overstory removal (<i>Nathan Briggs, Christian Kühne, Jürgen Bauhus, Germany</i>)
17:35	<u>Summary</u> <i>Heinrich Spiecker, Germany</i>
18:00- 18:05	<i>Break</i>
18:05- 18:45	POSTER SESSION (<i>continued</i>)
20:00	<i>Joint Dinner</i>

Time	<i>Wednesday, October 20, 2010</i>
08:00- 18:00	<i>Fieldtrip to Kandern, Black Forest</i> <i>Departure: Forest Research Institute, Wonnhaldestr. 4</i>

PREFACE

Douglas-fir's importance for forest management is not restricted to its sweeping natural North American range, where Douglas-fir is among the most important tree species. The species has been successfully introduced in many forests around the world including Europe and New Zealand. Since the introduction of the first "exotic" Douglas-fir individuals in Europe in the 19th century, the species has received increasing interest as a forest tree. It has rapidly developed into the most widespread non-indigenous tree species of major economic importance in Germany and France. The reasons behind this amazing track record are the species' tremendous growth potential, its valuable timber, and robustness.

In spite of the species' potential for timber production, (large-scale) cultivation of Douglas-fir outside its natural range is subject to controversial discussion. In general, the introduction of non-indigenous species is considered to be fraught with a variety of considerable risks. Among these are for example concerns about detrimental effects on native ecosystems and their biodiversity, or unpredictable problems with respect to pests and diseases. For example in Germany, these concerns have resulted in rather severe restrictions on Douglas-fir cultivation in the context of close-to-nature silviculture systems.

However, in the context of climate change Douglas-fir is again receiving increased attention in Germany. Quite a number of tree species currently present in Central Europe display the potential to cope successfully with increasingly warmer and drier climatic conditions. Among these species, the economic potential of Douglas-fir is unrivalled. This renders the species a major issue in the current discussions about forest management strategies mitigating climate change effects.

This conference is intended to provide a platform for the exchange of state-of-the-art knowledge on Douglas-fir in particular dealing with opportunities and risks related to European climate change issues. This includes the species' potential for adaptation, growth, biotic disturbance factors, and effective silvicultural management strategies.

The conference proceedings consist of six keynote speech abstracts, 22 further abstracts of oral presentations and 11 poster abstracts. The conference program is also included.

Freiburg, October 2010

Ulrich Kohnle
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Konstantin von Teuffel