



Universität für Bodenkultur Wien
University of Natural Resources
and Life Sciences, Vienna

Research and Education in Forest Science

Universität für Bodenkultur Wien (BOKU)

University of Natural Resources and Life Sciences, Vienna

Introduction - Msc European Forestry
21st of January 2021

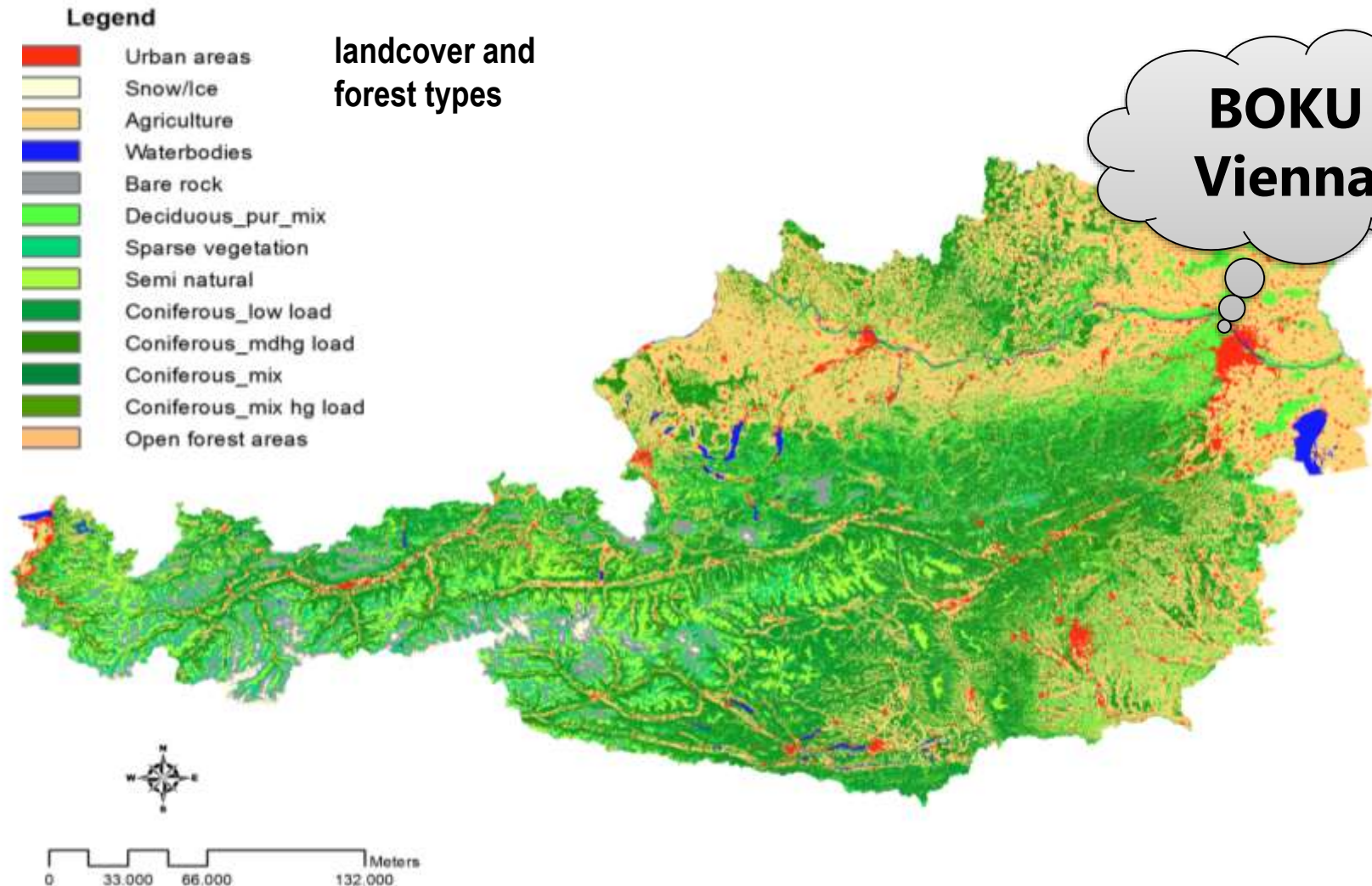
Harald Vacik
Department of Forest and Soil Sciences
Institute of Silviculture





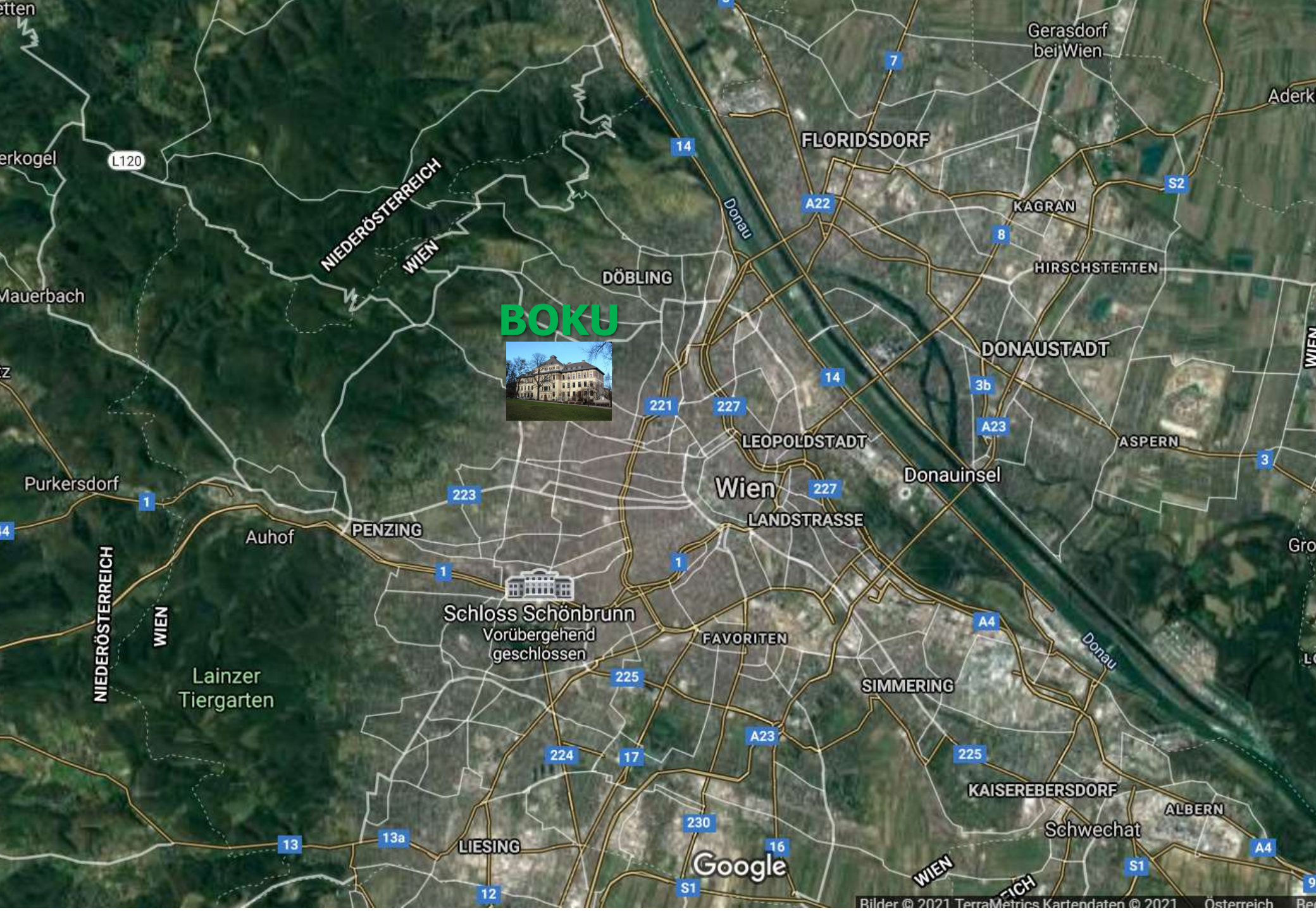
Foto: SPÖRK

Austria – Vienna



European Beach forest in the Vienna Woods (Wienerwald)





BOKU



Schloss Schönbrunn
Vorübergehend geschlossen

Google

City of Vienna



Tourist attractions (i)



City Hall



Parliament



Burgtheater



State Opera

Hofburg



Tourist attractions (ii)



St. Charles's Church



Belvedere Palace



St. Stephen's Cathedral



Schönbrunn Palace



Giant Wheel

Traditional food

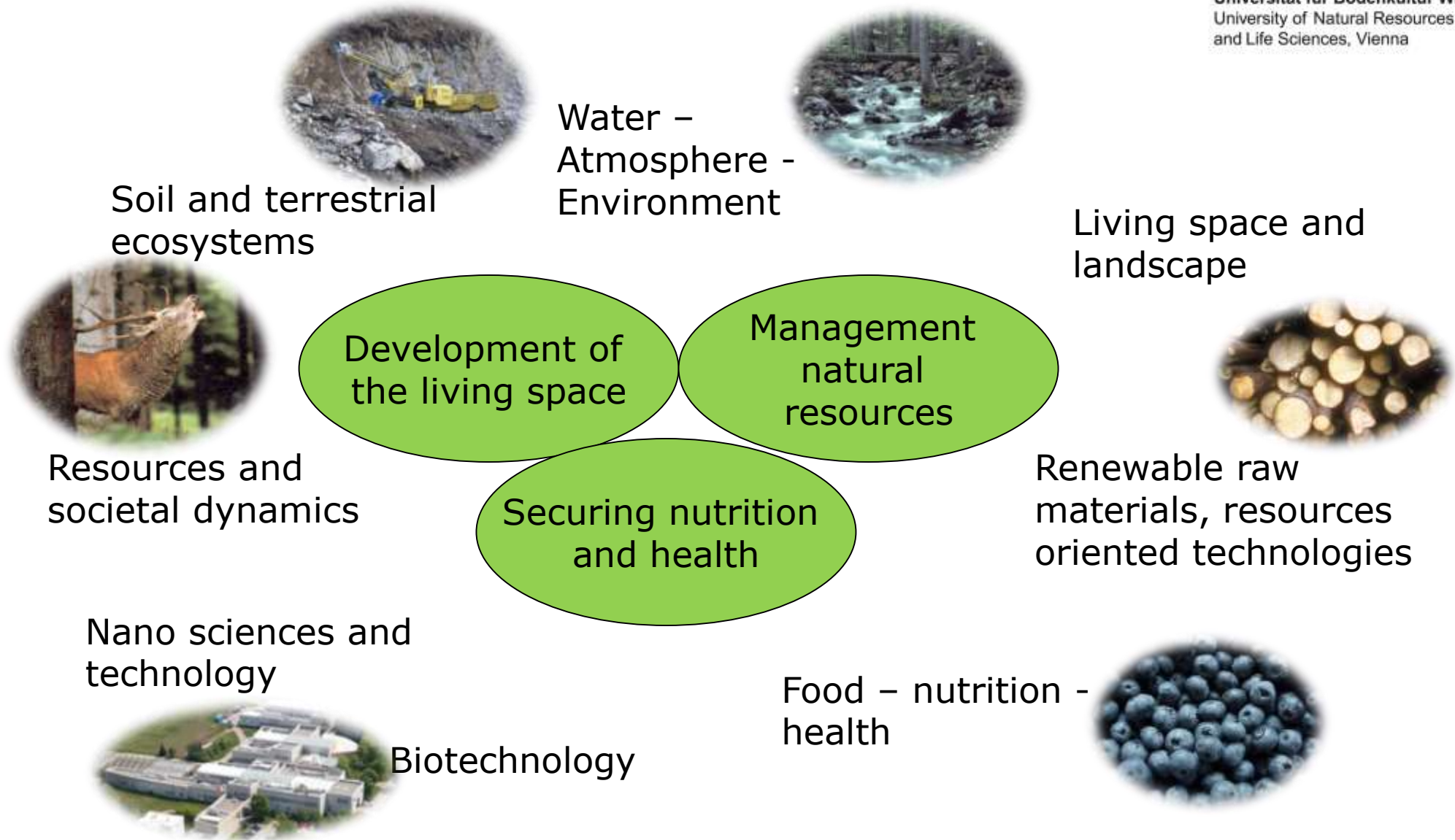
- Wiener Schnitzel
- Tafelspitz
- Apfelstrudel
- sweet pancakes
- Sachertorte
- ...and many more ;-)



Universität für **B**oden**K**ultur (**BOKU**)



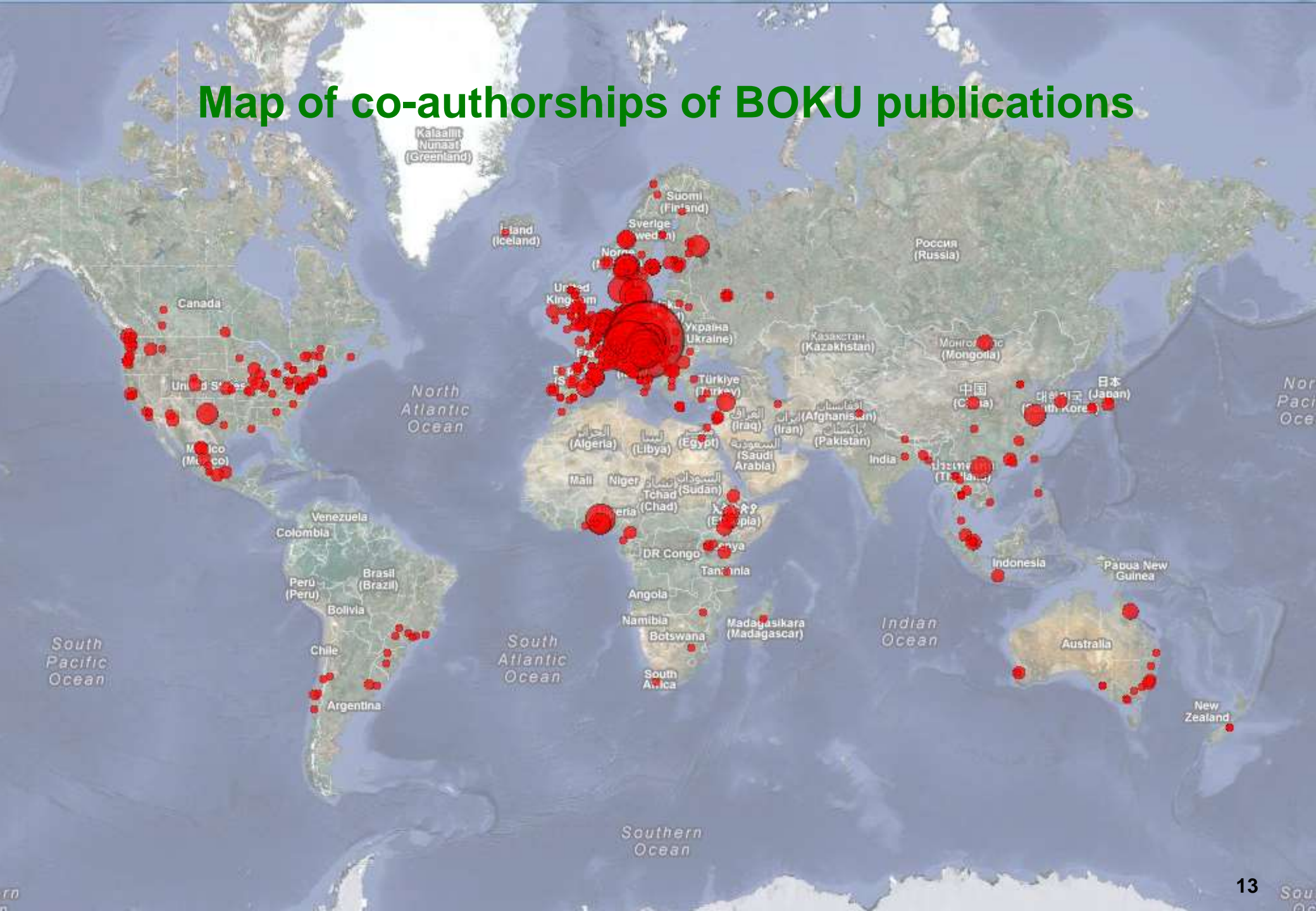
BOKU – themes and competences



BOKU – University of Natural Resources and Life Sciences Vienna – Facts and figures

- Founded in 1872
- ~ **12.000 students** in 8 Bachelor, 26 Master (+ several double degree programmes; 11 Master programs in English) and several PhD programs (~ 800 students); **1550 graduates** per year; students satisfaction: top ranked in Austria; 20% foreign students; Greenmetric University ranking: no. 8 world wide, 2 in education; QS World University Ranking by Subject: Rank 33
- ~ 1600 employees (full time equivalent), **2550 employees** (head count); ~700 scientists employed on a project basis; ~ 74 full professors (1/3 non Austrians), ~ 130 Assoc. Profs
- ~ **700 ongoing projects**, ~ 100 EU projects, ~ 110 FWF projects, participation in several excellence projects (FWF, COMET, Christian Doppler, Laura Bassi, WWTF, Marie Curie,...)
- ~ 100 Mio € GUF, **42 Mio € external resources** (projects; basis 2013)
- ~ **2500 scientific publications** per year (~ 690 SCI), ~ 1400 presentations per year
- Organized in 15 departments

Map of co-authorships of BOKU publications



Sites of BOKU

- Türkenschanze / Gregor Mendel Straße
- BOKU Site Muthgasse
- BOKU Site Tulln
- „Fourth Site“ – Research farms and forests
 - Research Farm Groß-Enzersdorf
 - Landscape planning research Essling
 - Horticulture Research Jedlersdorf
 - Forest Nursery and Arboretum Knödelhütte
 - Research Forest Heuberg
 - Water Cluster Lunz

Site Türkenschanze



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BOKU Site Muthgasse



BOKU Site Tulln



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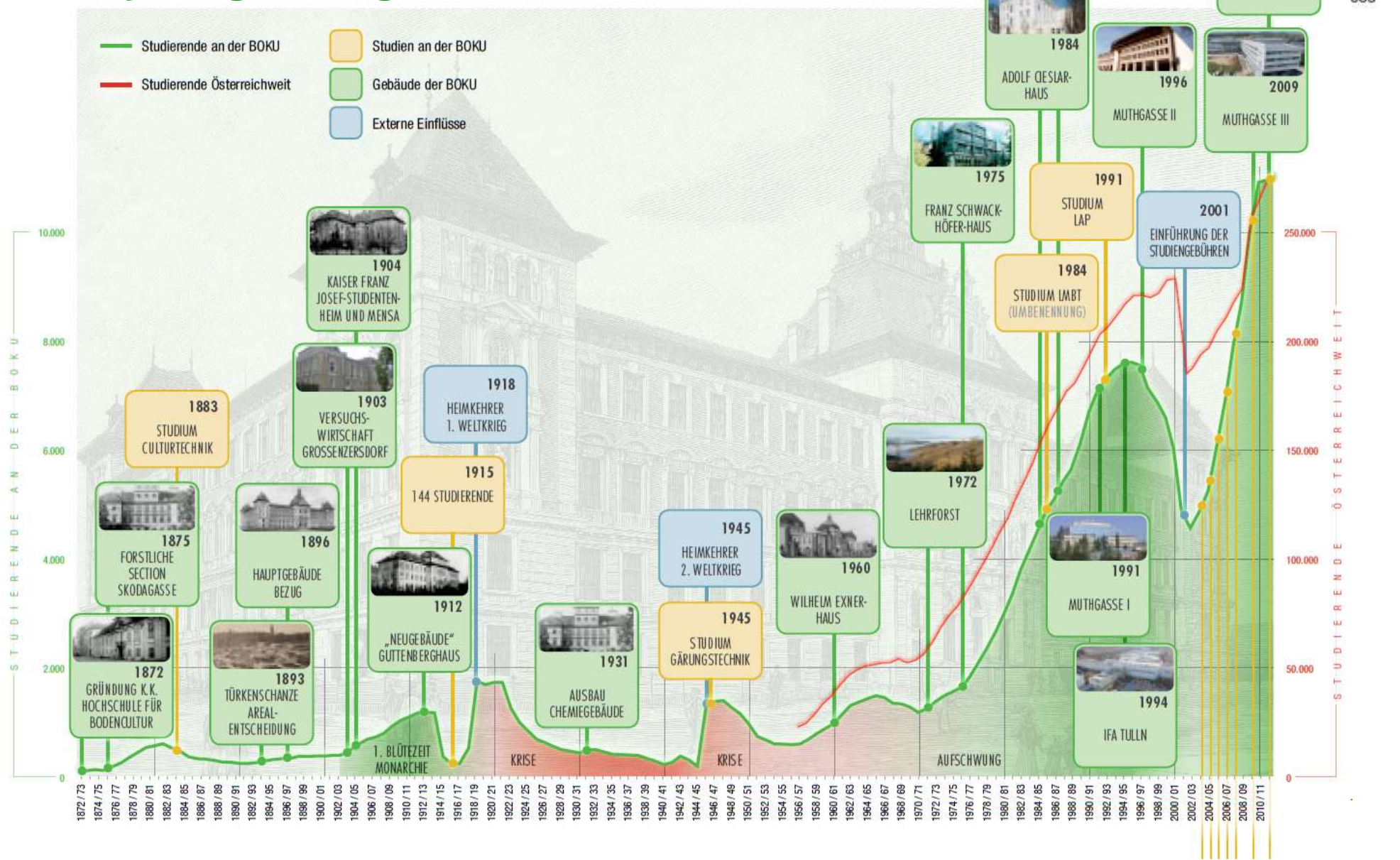
Research farms and forests



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Student numbers at BOKU from the very beginning 1872/73 – 2011/12



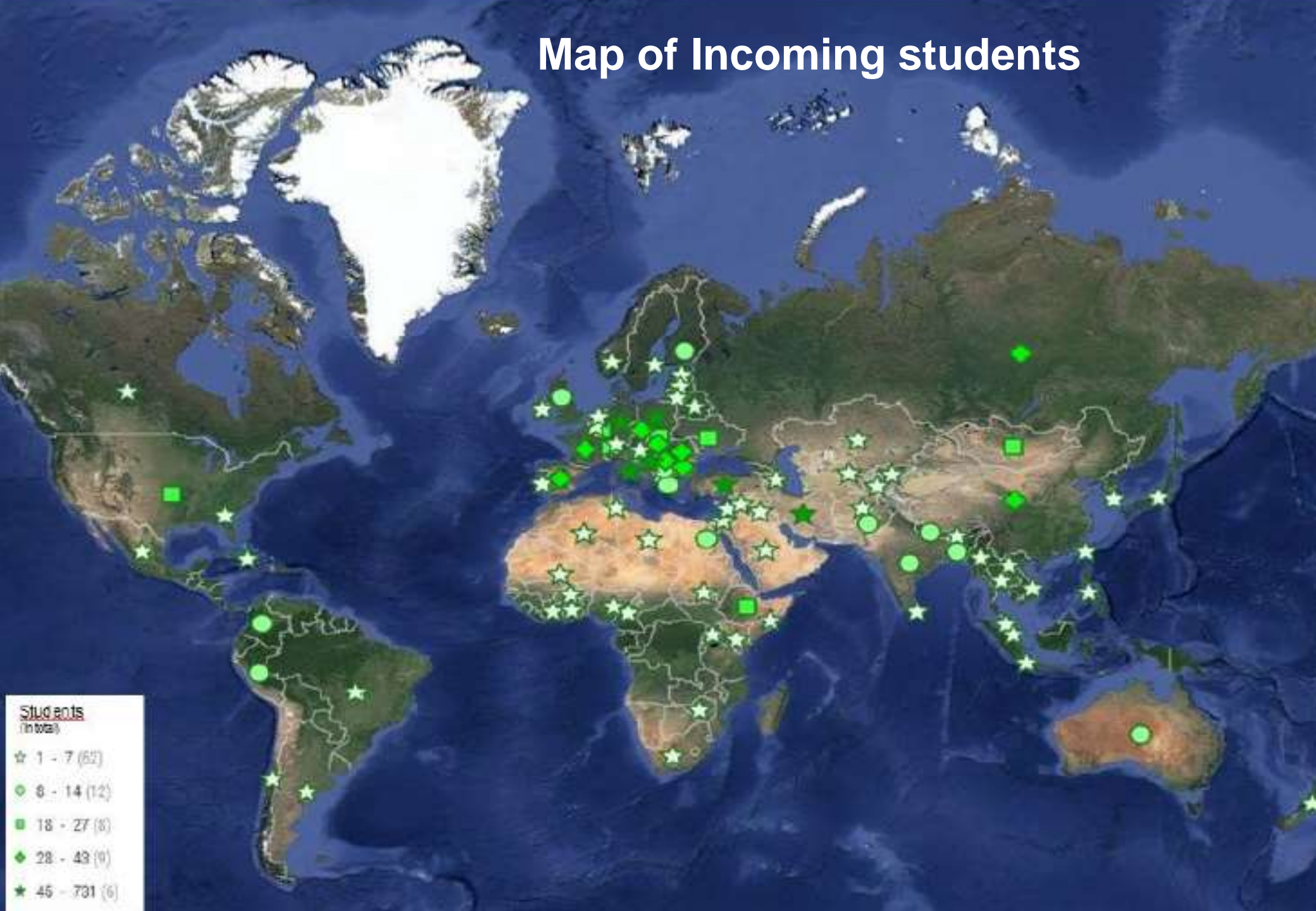
BOKU - international master programs

Further information : www.boku4you.at

- Animal Breeding and Genetics
- Applied Limnology – Wetland Management
- Environmental Sciences – Soil, Water and Biodiversity
- **European Forestry**
- Horticultural Sciences
- Material and thermal utilization of renewable raw materials (German)
- **Mountain Forestry**
- **Natural Resources Management and Ecological Engineering**
- Organic Agricultural Systems and Agroecology
- Safety in the Food Chain
- Sustainability in Agriculture, Food Production, Food Technology in Danube R.
- Viticulture, Oenology and Wine Economy (in German)
- Water Management and Environmental Engineering



Map of Incoming students



Joint Field Camp I & Field Camp III excursion

28 participants

5 continents: Africa, Asia, Europe, North America, Oceania

16 countries: Bangladesh, Belgium, Bhutan, Canada, China (incl. Hongkong), Ethiopia, France, Germany, India, Nepal, New Zealand, Pakistan, Rumania, Spain, Tanzania, USA



Master programs related to forestry at BOKU

- 
- provide a focused education in managing mountain forest resources with a global perspective
 - teach students to recognise and solve problems in mountain forest management and conservation
 - Focus on timber production within multifunctional management
 - integrate aspects of engineering, socio-economics and natural sciences
 - strengthen interdisciplinary approaches in forestry

Learning Outcomes of Mountain Forestry

- able to describe **ecological characteristics** of mountain forest ecosystems and identify site specific limiting ecological factors
- describe natural dynamics and identify the ecological **effects of management strategies** on mountain forest ecosystems based on these specific characteristics
- able to characterize the **role of specific social and economical settings** of sustainable natural resource management of mountain regions
- able to **apply scientific methods including participatory approaches** for analyzing social and economical characteristics of mountain regions
- recognize the **role of multiple stakeholder interests** for management of mountain forests and are able to integrate these into management strategies which they develop and / or implement.
- able to identify, **develop and implement suitable methods for resource inventories** and monitoring, thereby ensuring sustainability of resource use in forests
- able to identify, develop and implement adapted and **appropriate technological methods for sustainable management** of mountain forests.
- able to **integrate ecological, socio-economical characteristics** of mountain regions
- analyse interactions between these factors and **derive management strategies for sustainable provision of multiple ecosystem services**.

Selected courses in MSc EF study tracks

Decision support systems for resource management	Remote sensing and GIS in natural resource management	3	Autumn 2020
	Decision support systems	3	Autumn 2020
	Multiple criteria decision making in natural resource management	3	Autumn 2020
Resource management for ecosystem services	Natural resource management in mountain forests I, III	4+2	Spring 2021
	Agroforestry in mountain regions	2	Spring 2021
	Biodiversity and conservation of mountain forests	2	Spring 2021
	Natural resources management in mountainous areas III - wildlife problems	2	Spring 2021
Spatial and ecological modelling	Modelling of mountain forest ecosystems	2.5	Autumn 2020
	Adapting forest management to climate change	2	Autumn 2020
Resource economics and policy	Forest resource economics	4.5	Autumn 2020
	Innovations for sustainable forest management	4	Autumn 2020
	Economics of multiple use forestry	1.5	Spring 2021
	Mountain forest policy	4.5	Autumn 2020
Silviculture and engineering	Harvesting systems for mountainous regions	2	Autumn 2020
	Cable yarding project	1.5	Autumn 2020
	Road network planning	3	Spring 2021
	Field camp III - integrated forest management applications	3	Autumn 2020

Selected courses of Msc Mountain Forestry program

Introduction to mountain forestry and scientific skills	Field Camp I - Introduction to mountain forestry and forest sciences (2) Methods of data collection, management and analysis (2)
Ecology of Mountain Forests	Mountain forest dynamics and fire ecology (3) Mountain forest soils and forest nutrition (2,5) Field Camp II -Concepts and methods of site ecology, forest growth and yield (3) Mountain forest climatology and headwater hydrology (2,5) <i>Biodiversity and conservation of mountain forests (2)</i> <i>Air pollution effects on forest ecosystems (3)</i> <i>Chemistry for forestry (1)</i> <i>Specific methods on soil analysis (1)</i> <i>Physical and selected chemical methods of soil analysis (4,5)</i> <i>Forest and water (3)</i>
Economic and social dimensions in mountain forestry	Forest resource economics (4,5) Mountain forest policy (4,5) Participatory methods in development research and practice (3) Project management in development co-operation (2) <i>Economics of multiple use forestry (1,5)</i> <i>Innovations for Sustainable Forest Management (4)</i> <i>Applied development research I (3)</i> <i>Applied development research II (3)</i> <i>Organisational behaviour and gender issues (3)</i> <i>Forest products, marketing and strategy (3)</i>

Free selection of courses from modules of Msc Mountain Forestry program

Inventory and Monitoring	<p>Forest inventory (3)</p> <p>Modelling of mountain forest ecosystems (2,5)</p> <p>Remote sensing and GIS in natural resource management UE (3)</p> <p><i>Remote sensing and GIS in natural resource management VO (3)</i></p> <p><i>3P – Sampling (2)</i></p>
Forest Management for goods and environmental services	<p>Natural resource management in mountain forests (4)</p> <p>Agro forestry in mountain regions (2)</p> <p>The role of forests in mountain risk engineering (2)</p> <p>Forest protection (2)</p> <p><i>Protection and mitigation measures against natural hazards (3)</i></p> <p><i>Risk management and vulnerability assessment (3)</i></p> <p><i>Mountain hazard processes (6)</i></p> <p><i>Decision support systems (3)</i></p> <p><i>Multiple criteria decision making in natural resource management (3)</i></p> <p><i>Fire management in mountain forest ecosystems (2)</i></p> <p><i>Adapting forest management to climate change (2)</i></p> <p><i>Natural resources management in mountainous areas III -Wildlife problems (2)</i></p>
Forest Engineering	<p>Harvesting systems for mountainous regions (2)</p> <p>Field Camp III – Integrated forest management applications (3)</p> <p>Road network planning (3)</p> <p>Cable yarding project (1.5)</p> <p><i>Technology assessment (3)</i></p> <p><i>CAD - Computer aided design (1)</i></p> <p><i>Timber harvesting (1)</i></p>

Department of Forest- and Soil Sciences

Research and scientific education in (forest-) ecosystems analysis, ecosystem modeling and management, soil use and soil protection organized by:

- Institute of Soil Science
- Institute of Forest Ecology
- Institute of Silviculture
- Institute of Forest Growth and Yield Research
- Institute of Forest Engineering
- Institute of Forest Entomology, Forest Pathology and Forest Protection
- Forest Experimental and Training Centre



Institute for Silviculture - Fields of research

e.g. for conducting a master thesis

- Silvicultural techniques
- Management of Mountain Forests
- Sustainable Forest Management Approaches
- Forest Ecosystem Modeling
- Multi Criteria Decision Support Systems
- Biodiversity and Forest Genetics
- Forest Genetic and general Soil Lab
- More then 180 experimental sites
- Experimental garden and Tree Nursery
“Knödelhütte”

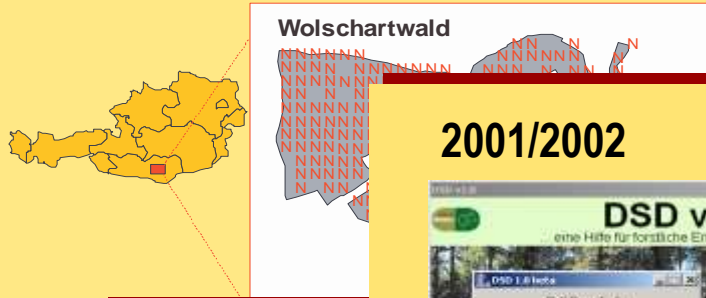


Forest management planning and decision support systems



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1998



Wolschartwald

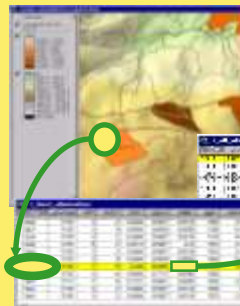


2001/2002



Decision Support Dobrova
DSD v1.0 – scots pine forests

1999

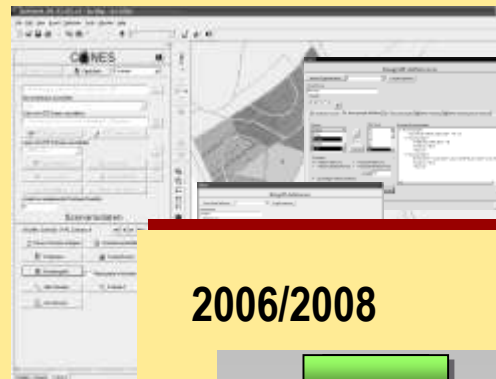


SDSS Wildal

Regeneration planning for a
sustained water yield

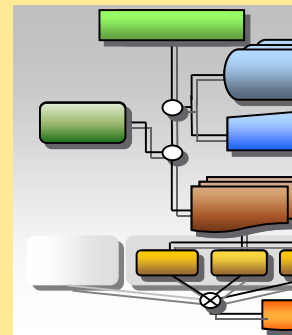
Deci
Conv

2002/2005



CONE
timber h
in steep

2006/2008



ClimChalp

Adaption of forest management
for coniferous forests under
climate change

2010/2015



AFM - Toolbox

Adaptive forest management
under climate change

Research in natural reserves to understand forest dynamics and maintain biodiversity



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Legende

Wuchsgebiete

Größenklassen

- <20 ha
- 20-50 ha
- 50-100 ha
- >100 ha

Untersuchte
Naturwaldreservate



M. Kürsten, 2014
NWR Stoissen

M. Kasseroler, 2011
NWR Krimpenbachkessel

M. Rahman, 2007
NWR Lange Leith

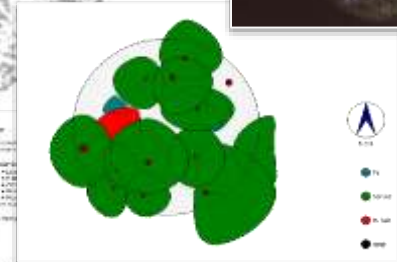
S. Tschann, 2014
NWR Saminatal

M. Götze, 2013
NWR Hutterwald

S. Becker, 2014
NWR Dürrwald

H. Ruprecht, 2014
ELENA

M.B. Winter, 2009
NWR Goldeck

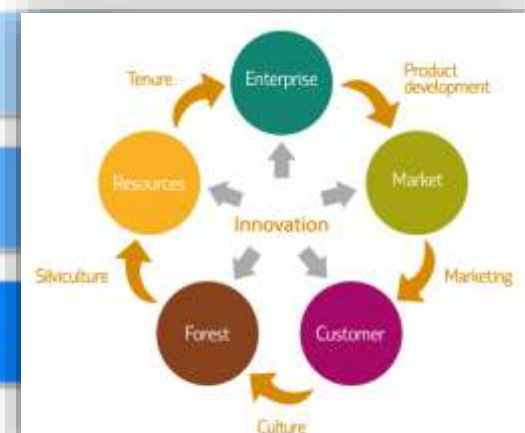
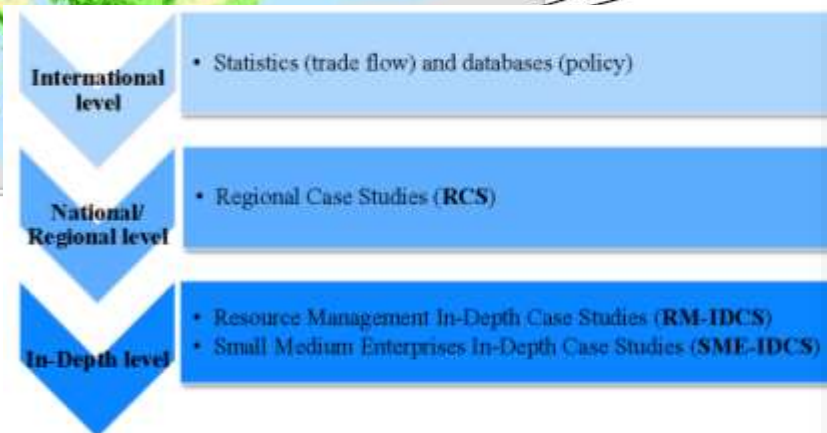
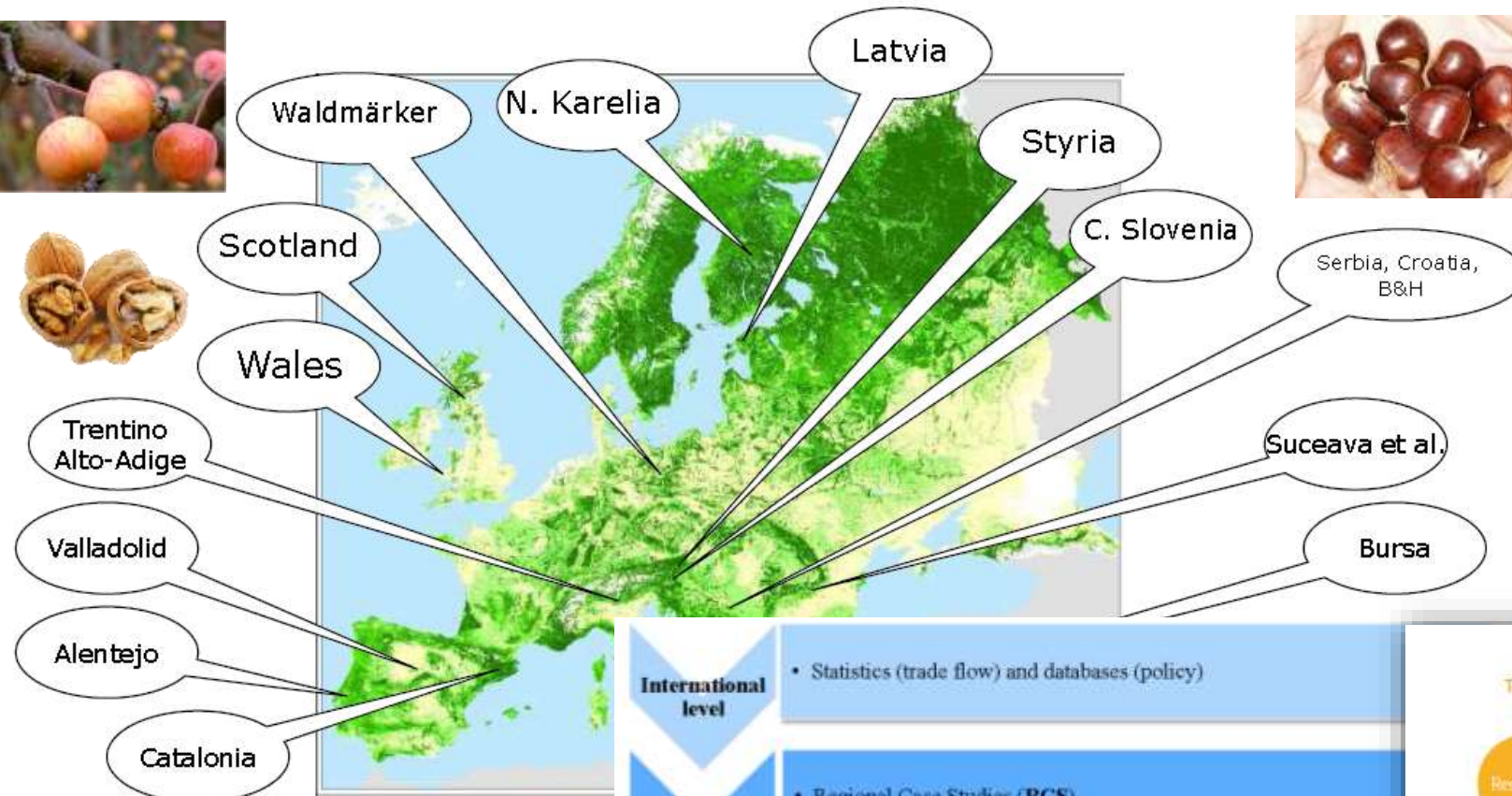


Sustainable Forest Management

Non Wood Forest Products and Ecosystem Services



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Forest Fire Research in mountain ecosystems

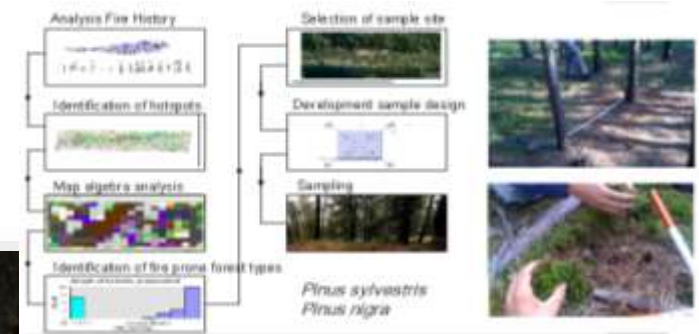


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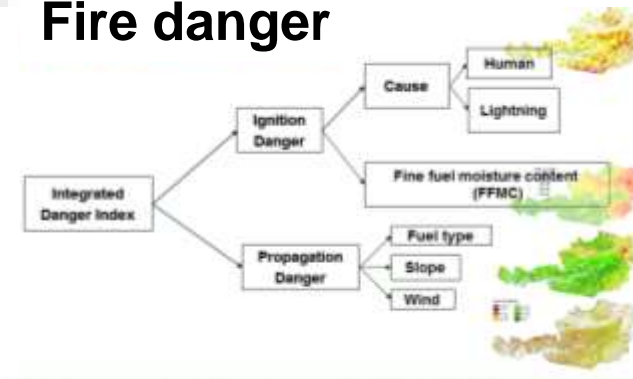
Wildfire database



Fuel models



Fire danger



Case studies

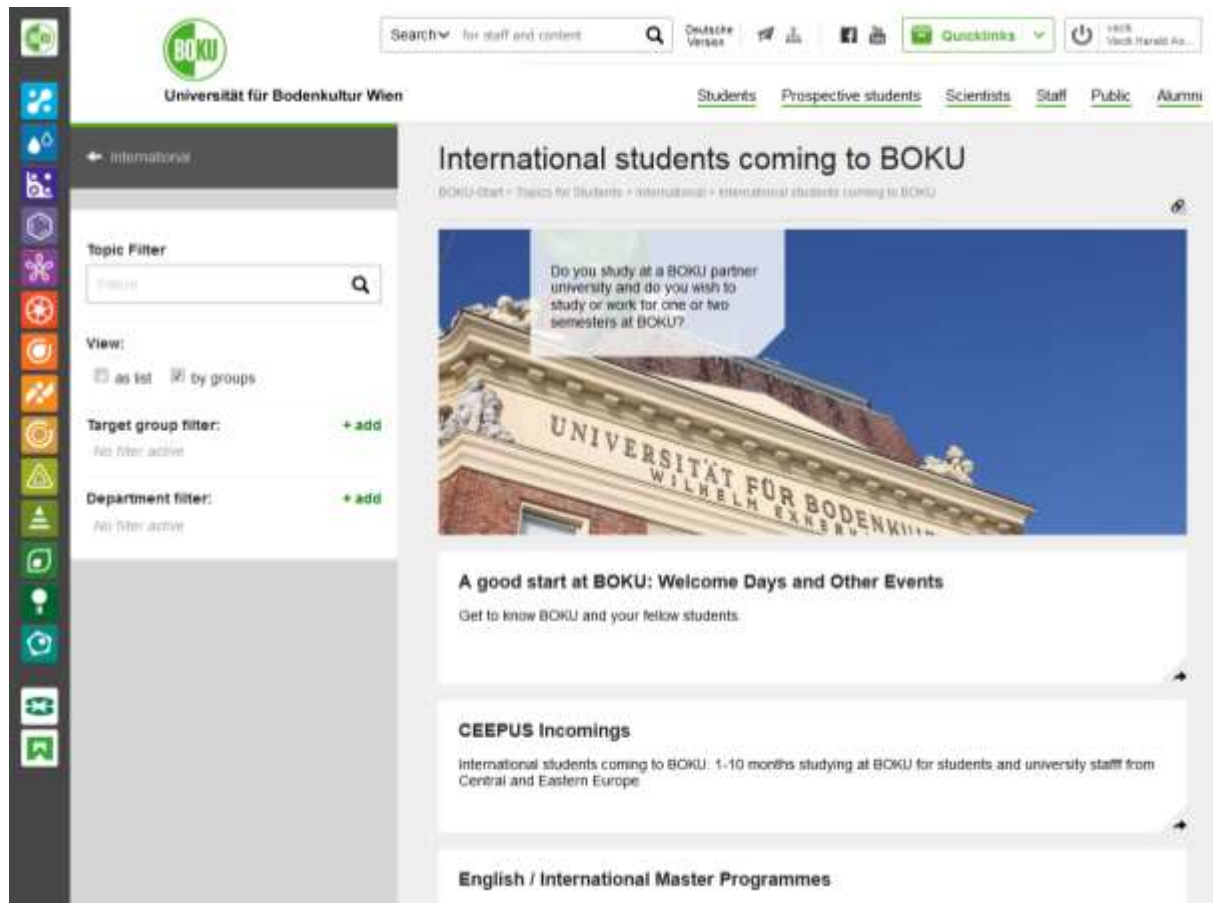


Any other issues

- Semester starts in October
- Welcome days offered by BOKU
- Introductory Field Camp allows to get to know other intern. students
- Offer of german language courses by CIR
- FIS – research database allows to finding a supervisor for master thesis topic – please contact me
- Networking with IFSA student association
- Support by OEAD housing services for finding a living place, more difficult to find private rooms/flats (montly rents 350 - 450)
- meals offered at mensa BOKU (new wooden building)
- good infrastructure regarding public transport in the city



Center for International Relations (CIR)



**Welcome days for
international students**

**find all information
regarding logistics
online**

<http://www.boku.ac.at/en/themen-fuer-studierende/internationales/international-students-coming-to-boku/>

Thanks for your attention!

**Institute of Silviculture
Department of Forest and Soil Sciences
University of Natural Resources and Life Sciences, Vienna**

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