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

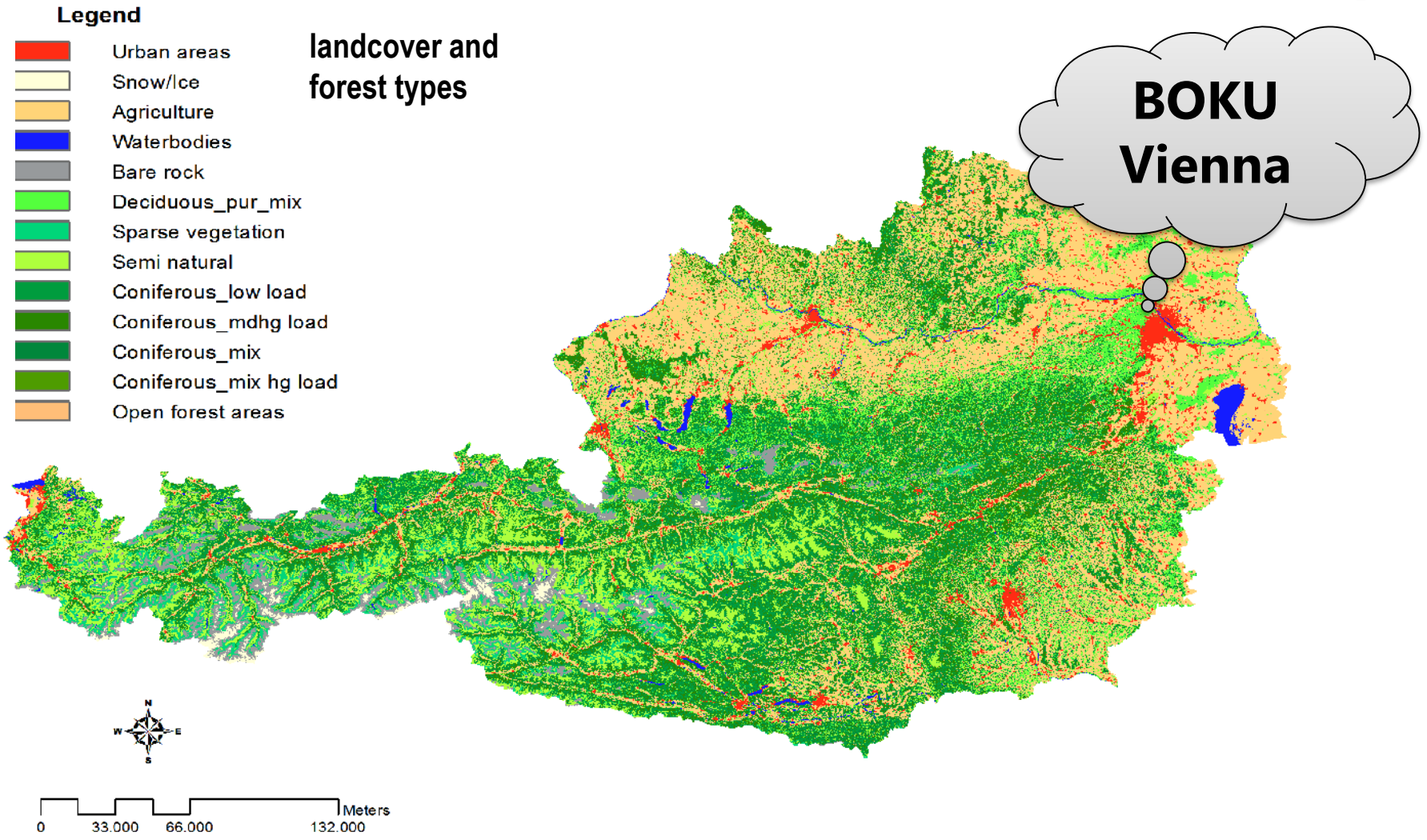
Research and Education in Forest Science
Universität für Bodenkultur Wien (BOKU)
University of Natural Resources and Life Sciences, Vienna

Introduction - Msc European Forestry
16th of January 2020

Ao.Univ.-Prof. DI Dr. Harald Vacik
Department of Forest and Soil Sciences
Institute of Silviculture

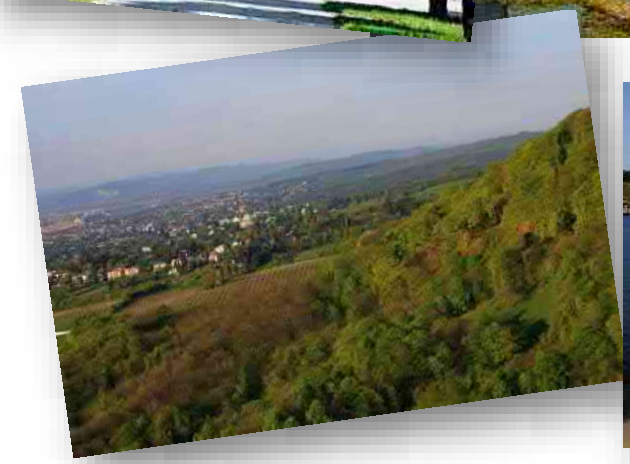
Austria – Vienna

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



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

City of Vienna



Tourist attractions (i)

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

City Hall

Parliament

Burgtheater

State Opera

Hofburg

Tourist attractions (ii)

Universität für Bodenkultur Wien
University of Natural Resources
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St. Charles‘s Church

Schoenbrunn Palace

Belvedere Palace

St. Stephen‘s Cathedral

Giant Wheel

Traditional food

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

Universität für BOdenKUltur (BOKU)

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

BOKU – themes and competences

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

Soil and terrestrial ecosystems

Water – Atmosphere - Environment

Living space and landscape

Development of the living space

Management natural resources

Resources and societal dynamics

Securing nutrition and health

Renewable raw materials, resources oriented technologies

Nano sciences and technology

Biotechnology

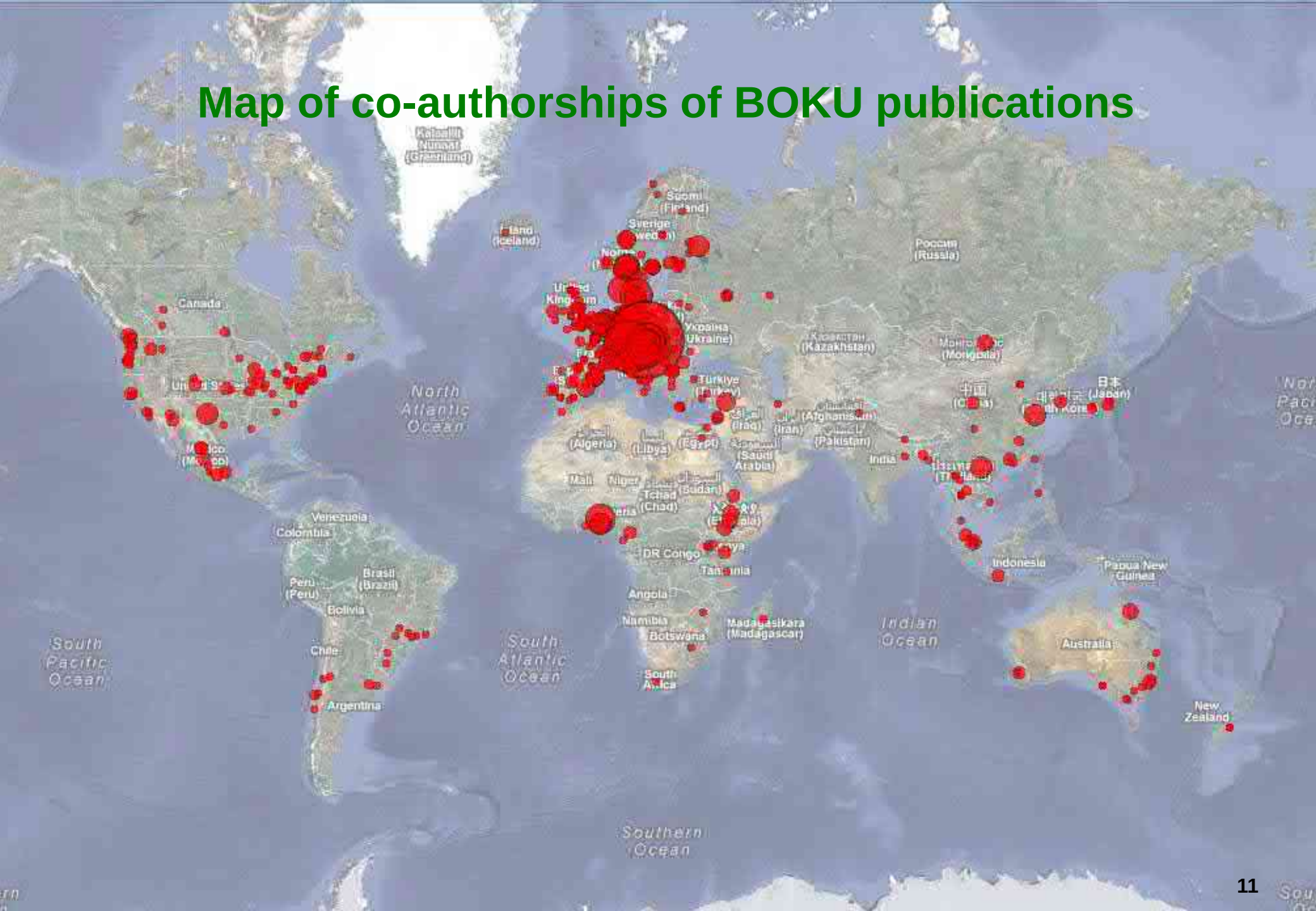
Food – nutrition - health

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

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

- Founded in 1872
- ~ **12.000 students** in 8 Bachelor, 26 Master (+ several double degree programms; 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

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

- 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

Universität für Bodenkultur Wien
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BOKU Site Muthgasse

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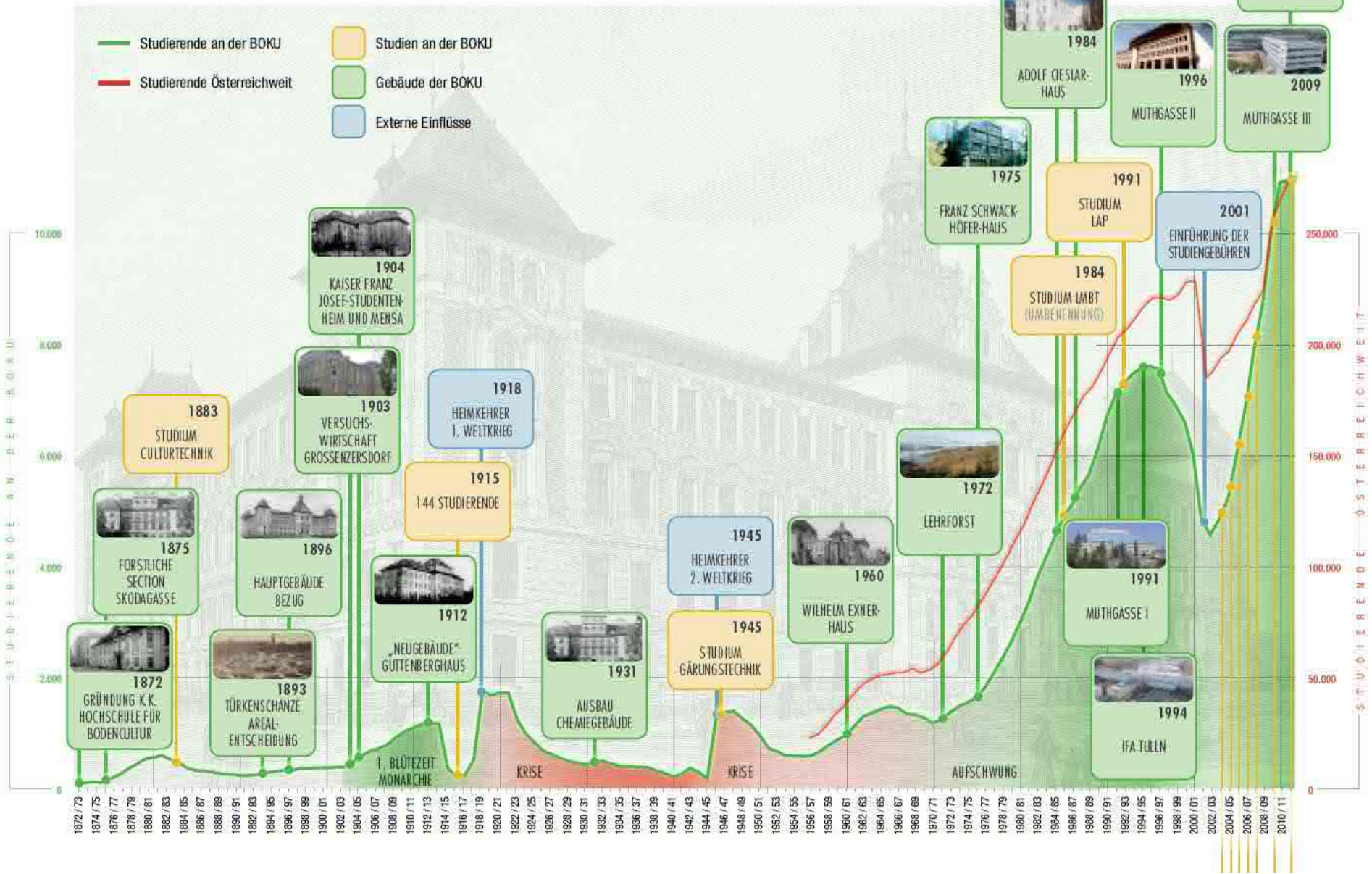
BOKU Site Tulln

Research farms and forests

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



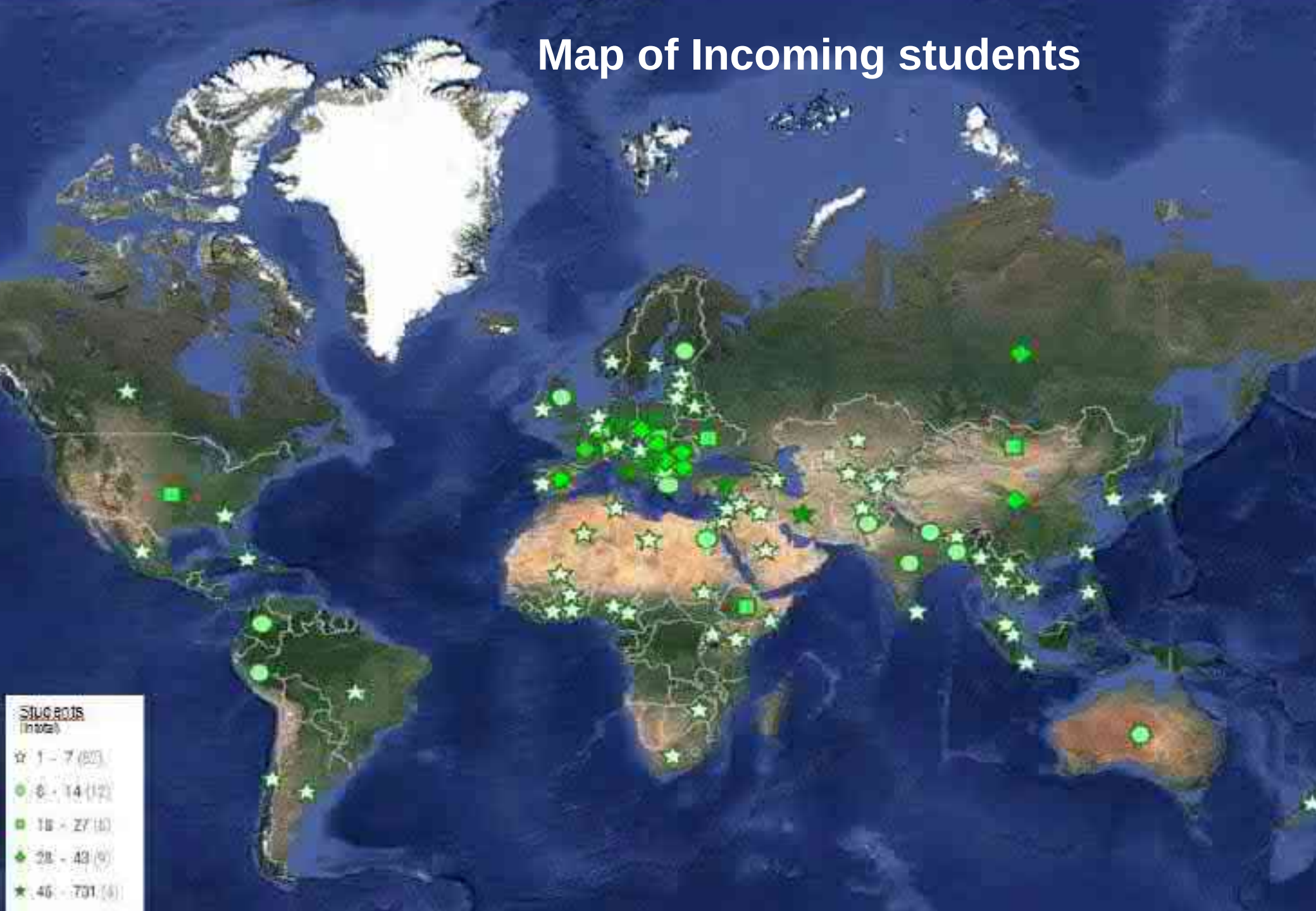
BOKU - international master programs

Further information : www.boku4you.at

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

- 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 managemen
- integrate aspects of engineering, socio-economics and natural sciences
- strengthen interdisciplinary approaches in forestry

Learning Outcomes of Mountain Forestry

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- 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

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

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

Selected courses of Msc Mountain Forestry program

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University of Natural Resources and Life Sciences, Vienna

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) *Biodiversity and conservation of mountain forests (2)* *Air pollution effects on forest ecosystems (3)* *Chemistry for forestry (1)* *Specific methods on soil analysis (1)* *Physical and selected chemical methods of soil analysis (4,5)* *Forest and water (3)*
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) *Economics of multiple use forestry (1,5)* *Innovations for Sustainable Forest Management (4)* *Applied development research I (3)* *Applied development research II (3)* *Organisational behaviour and gender issues (3)* *Forest products, marketing and strategy (3)*

Free selection of courses from modules of Msc Mountain Forestry program

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

Center for International Relations (CIR)

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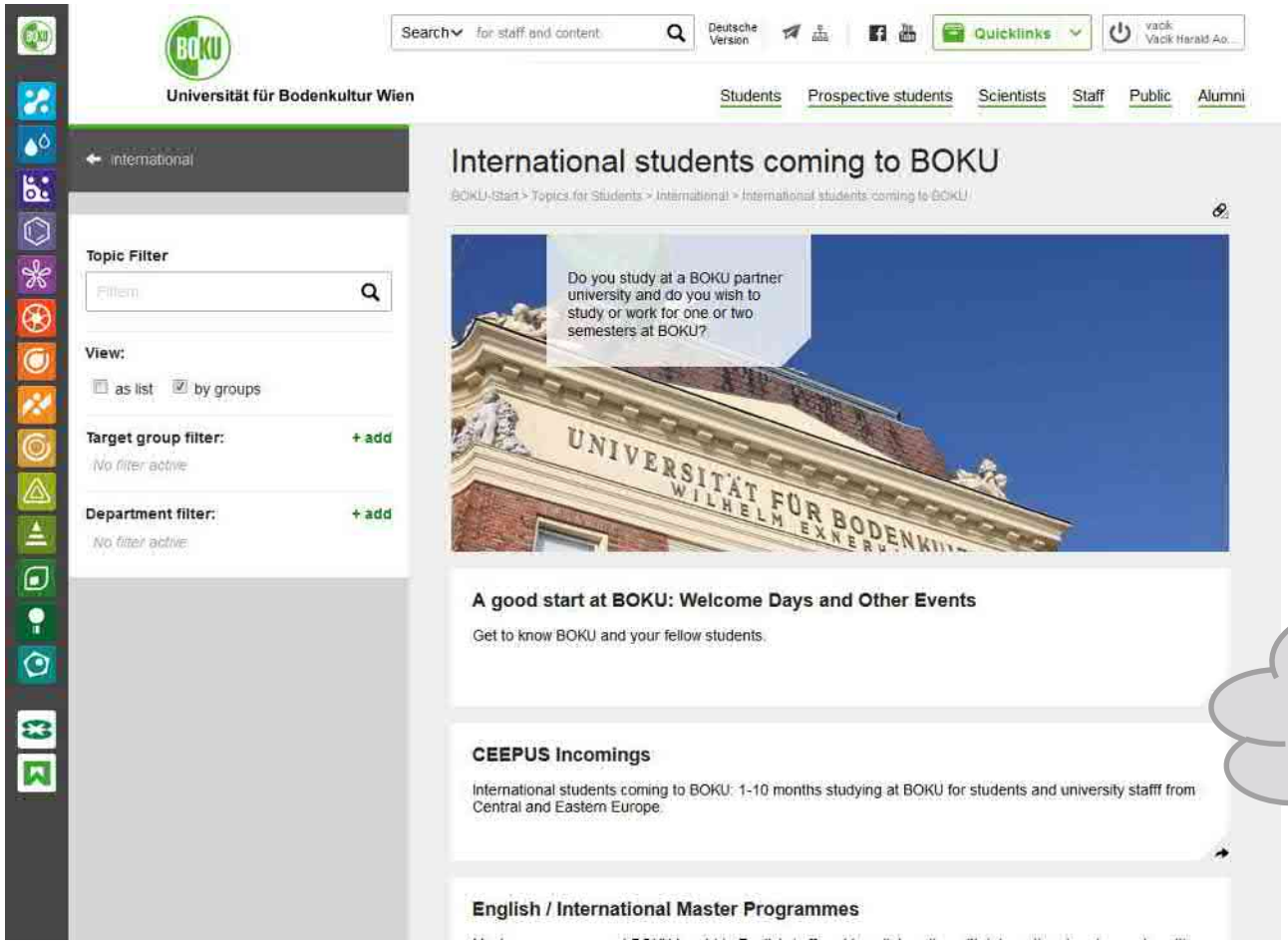

All information online

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

Department of Forest- and Soil Sciences

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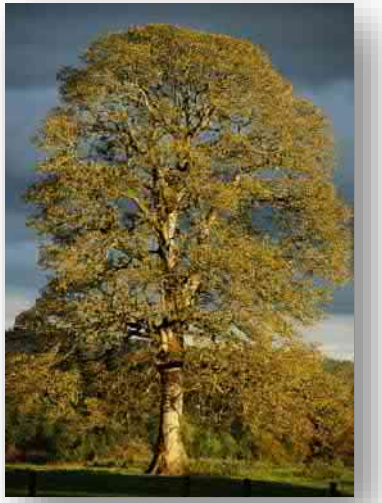
Research and scientific education in (forest-) ecosystems analysis, ecosystem modeling and management, soil use and soil protection organized by:



- 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

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- 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”

Sustainable Forest Management

Non Wood Forest Products and Ecosystem Services

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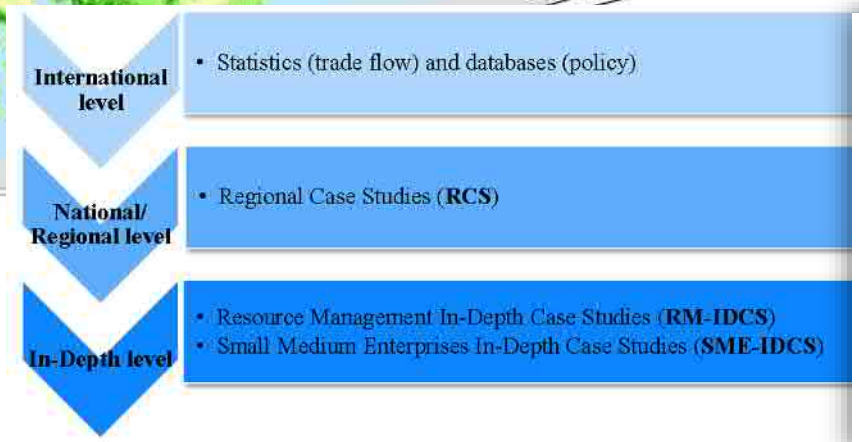
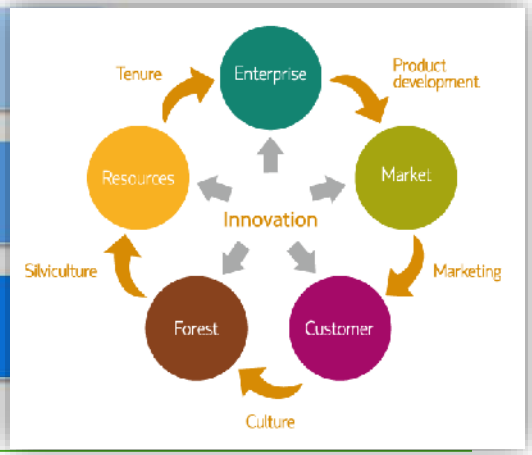
d Life Sciences, Vienna





Forest management planning and decision support systems

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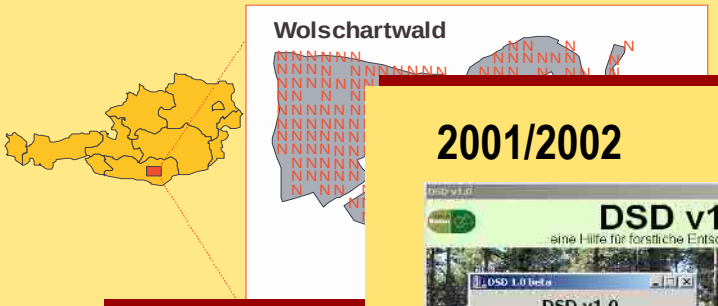
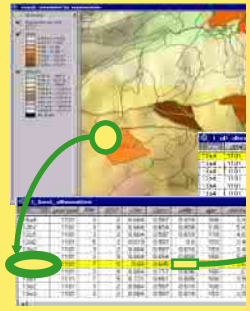
1998



1999



SDSS Wildal

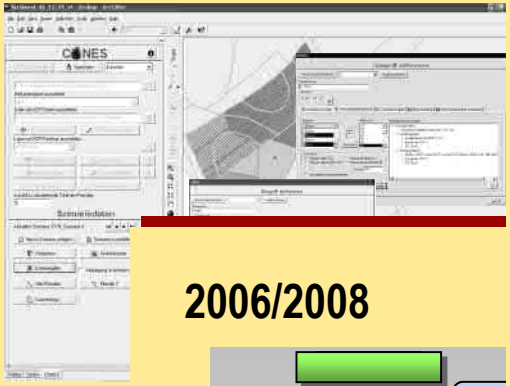
Regeneration planning for a sustained water yield

2001/2002

Decision Support Dobrova

DSD v1.0 – scots pine forests

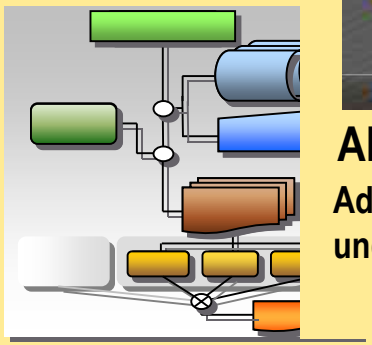
2002/2005



CONE

timber h
in steep

2006/2008



ClimChalp

Adaption of forest management for coniferous forests under climate change

2010/2013

AFM - Toolbox

Adaptive forest management under climate change

Research in natural reserves

to understand forest dynamics and maintain biodiversity

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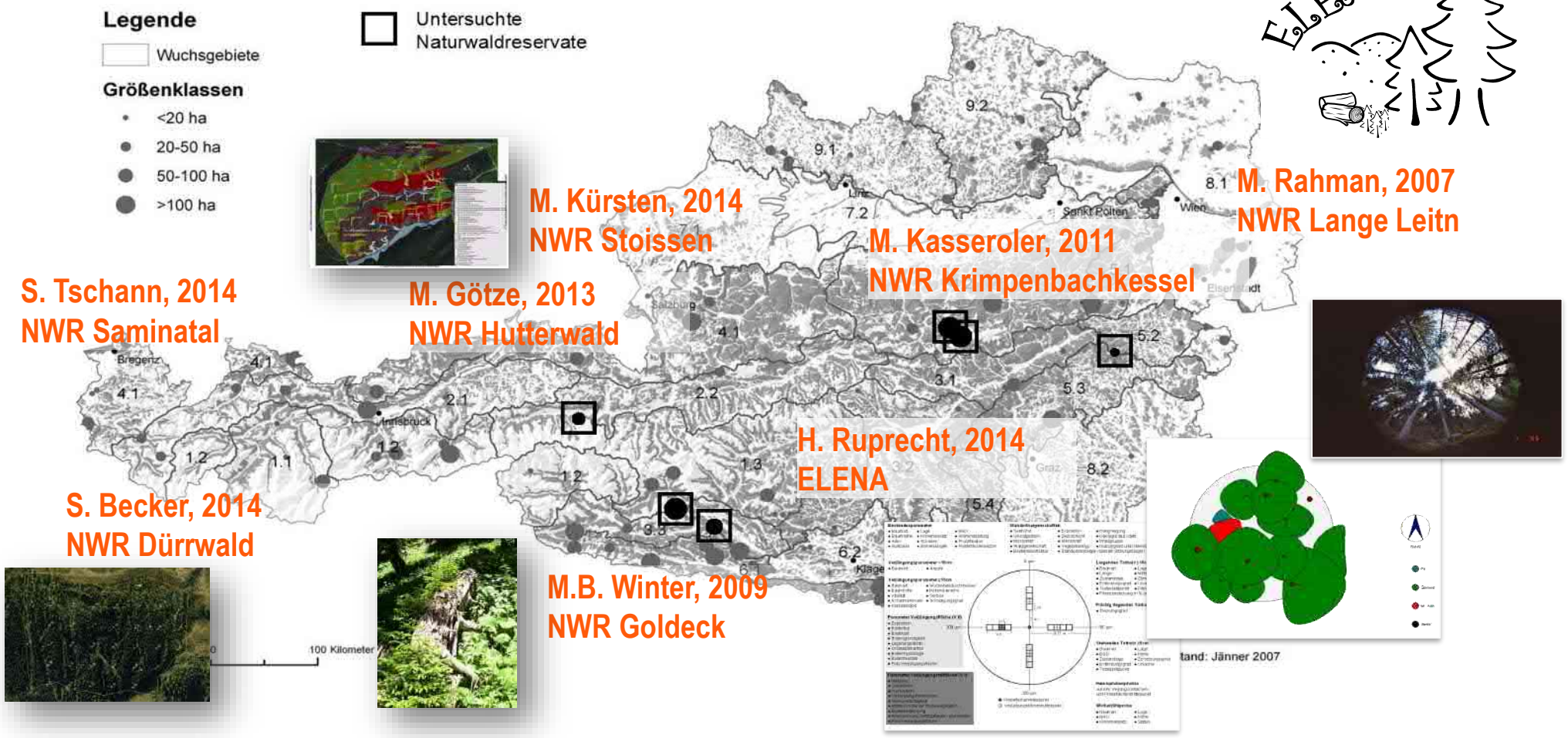

Forest Fire Research in mountain ecosystems

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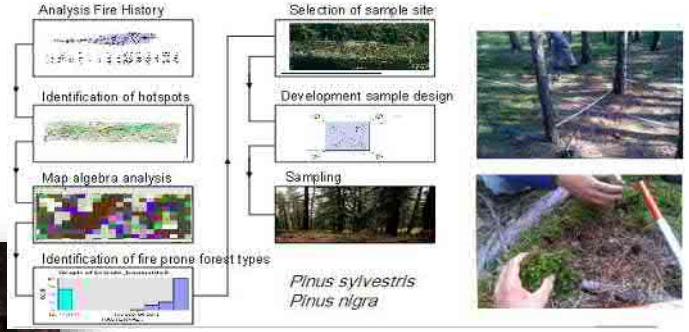
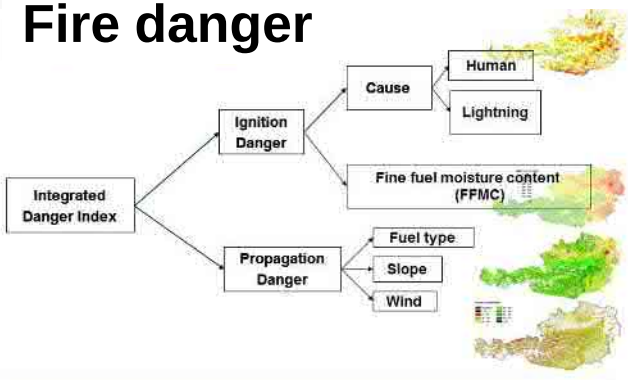
Wildfire database

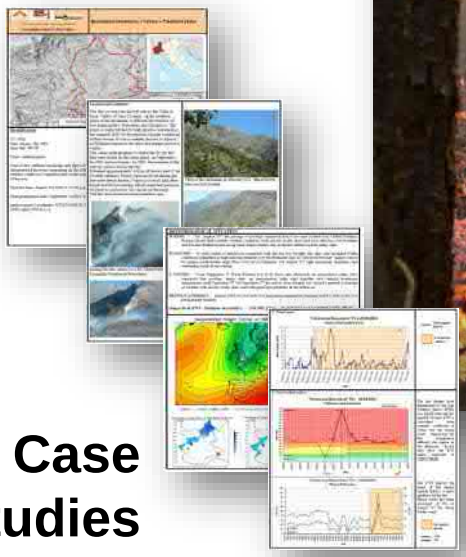
Fuel models



Fire danger



Case studies



ALP FFIRS
Alpine Forest Fire Warning System

AFFRI
AUSTRIAN FOREST FIRE RESEARCH INITIATIVE

FIRIA

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University of Natural Resources
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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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