LTER-D, *list of FOREST sites*

Habitat	Biogeographical unit	LTER site	Biogeo-chemistry	Biodiv.	Socio-economy
Forest	**Intermed. mountain ranges**	**Solling**	**yes**	**yes**	**yes**
Forest	Intermed. mountain ranges	NP Hainich	yes	yes	no
Forest	Intermed. mountain ranges	NP BayWald	yes	yes	yes
Forest	Intermed. mountain ranges	Fichtelgeb.	yes	no	no

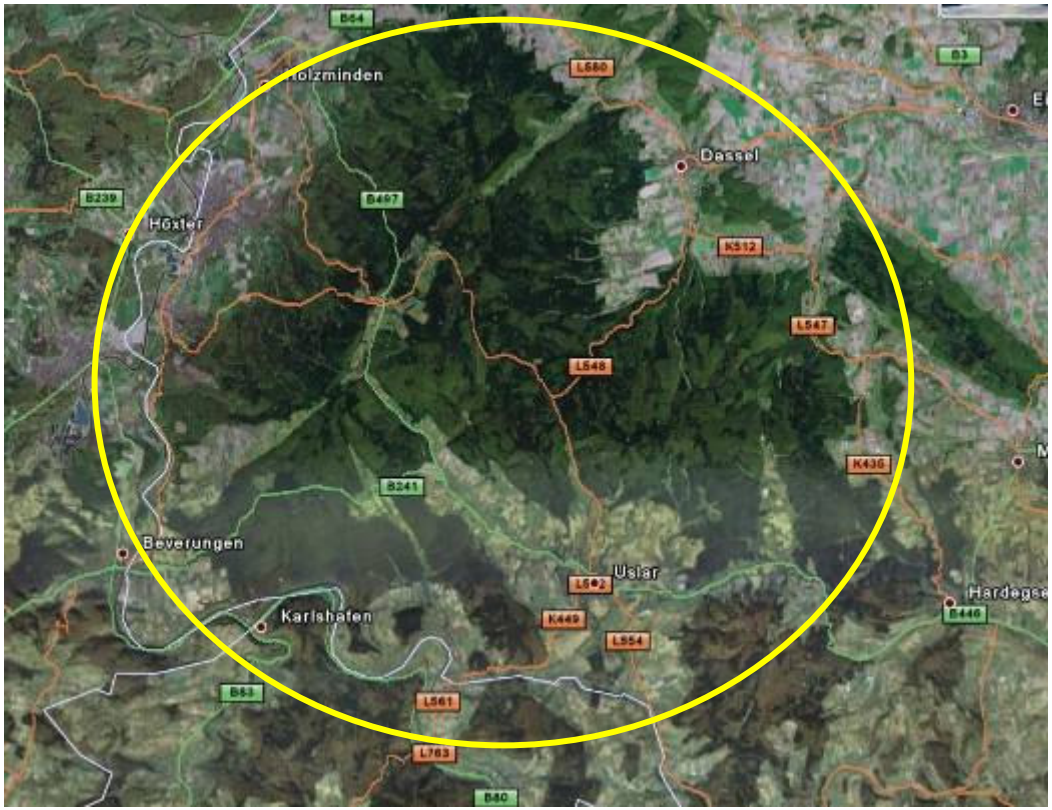
Source: Schubert, 2006: LTER-D (Germany) Status and Statutes
*www.i**lter**net.edu/meetings/ UPLOAD/15-Schubert-Germany.pdf*

History

The idea to build a german LTER was initiated by M. Bredemeier (Göttingen) and F. Mueller (Kiel) at a workshop on long-term ecological research projects of Germany held at Duderstadt in spring 2004.

Solling (Solling-Vogler Nature Reserve)

Hilly region (up to 528m above sea level) in northern Germany, relatively close to Göttingen; structured landscape with different ecosystem types, pure and mixed stands, mainly beech and spruce, and a 40-year long history of ecosystem monitoring and research.



Solling-Vogler Nature Reserve, Germany

- 1966: Start of ecosystem monitoring. (Ellenberg et al., 1986, report on two decades of ecosystem monitoring and research).
- In 1989, an interdisciplinary project was initiated on ecosystem dynamics.
- 1994: ICP Forest Level II Program (Intensive Monitoring of European Forest Ecosystems)
- Beginning in 1990, genetic inventories in several beech stands. Spatial dynamics of genetic variation in pure and mixed beech stands after natural regeneration.
- LTER-D (German network for long-term ecological and ecosystem research)

http://www.nmw.ac.uk/change2001/Abstracts/dec2001_meesenberg.htm

The importance of long-term monitoring for detecting changes in forest ecosystems: the Solling project

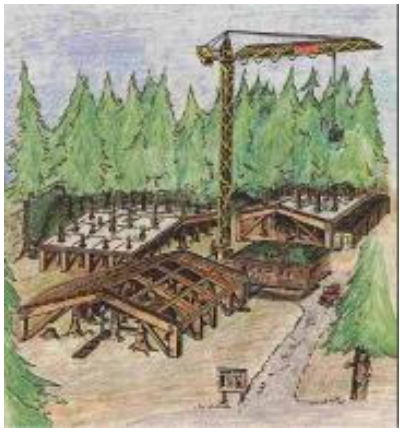
Henning Meesenberg & Karl Josef Meiwes, Forest Research Institute, Göttingen, Germany

***Science and Society,* 17-20 July 2001, London, UK**

For more than 30 years monitoring of indicators related to various functions of forest ecosystems have been conducted at spruce and beech stands at Solling, Germany. ……

The **major findings** of the monitoring program are related to acidification induced by atmospheric deposition, eutrophication by nitrogen deposition and effects of climatic change and elevated CO_2. ……Sulfur deposition at Solling increased until about 1975 and decreased by more than 70 % since then. …..Nitrogen deposition increased until the end of the 70th and decreased slightly since then, but is still well above the demand for forest growth….

Research in a beech stand stand



Solling "roof project" (responsible: M. Bredemeier, ALTER-Net) The Solling Roof Project is integrated into two projects supported by the European Community (EXMAN = EXperimental MANipulation of forest ecosystems in Europe, and NITREX = NITRogen saturation EXperiments)

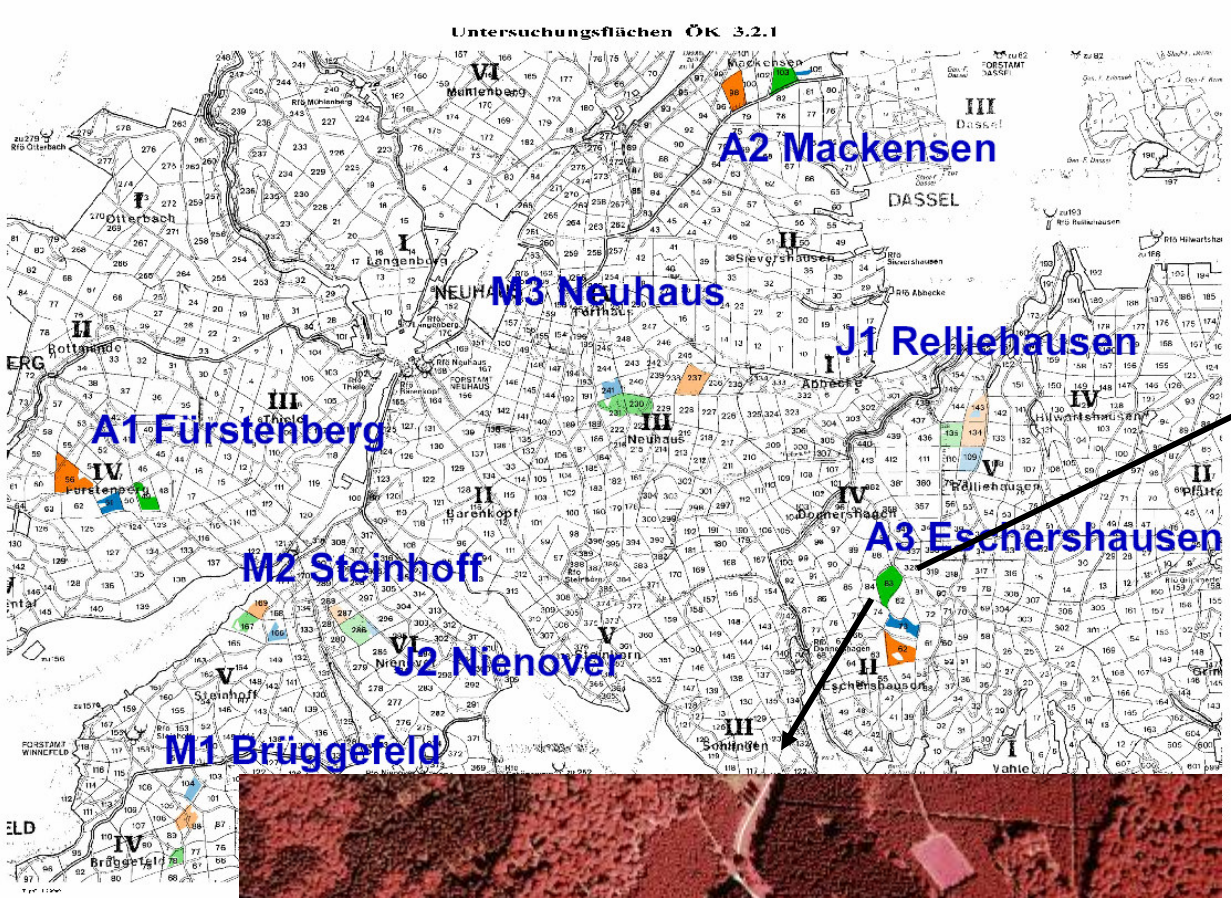
http://www.wsl.ch/lm/publications/archiv/infoV78_12-en.ehtml
For. Snow Landsc. Res. 78, 1/2: 33–52 (2004)

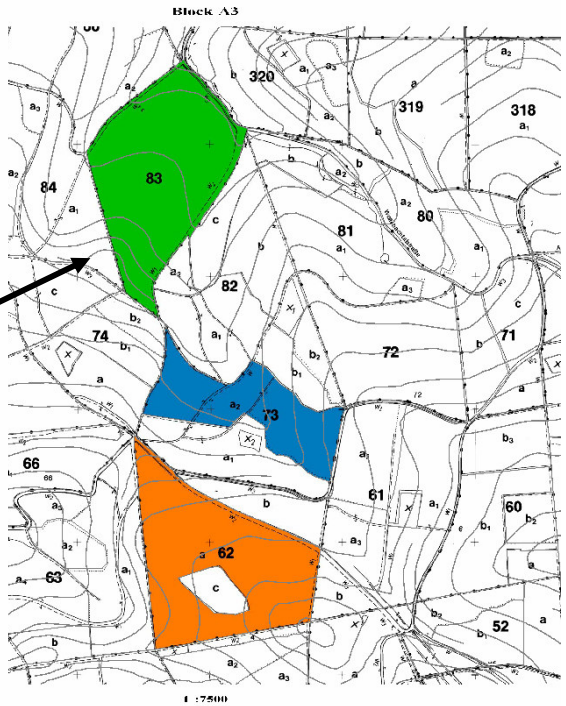
Interdisciplinary forest ecosystem experiments at Solling, Germany – from plot scale to landscape level integration

Martin Jansen and Michael Bredemeier
Institute of Soil Science and Forest Nutrition, University of Göttingen, Büsgenweg 2,

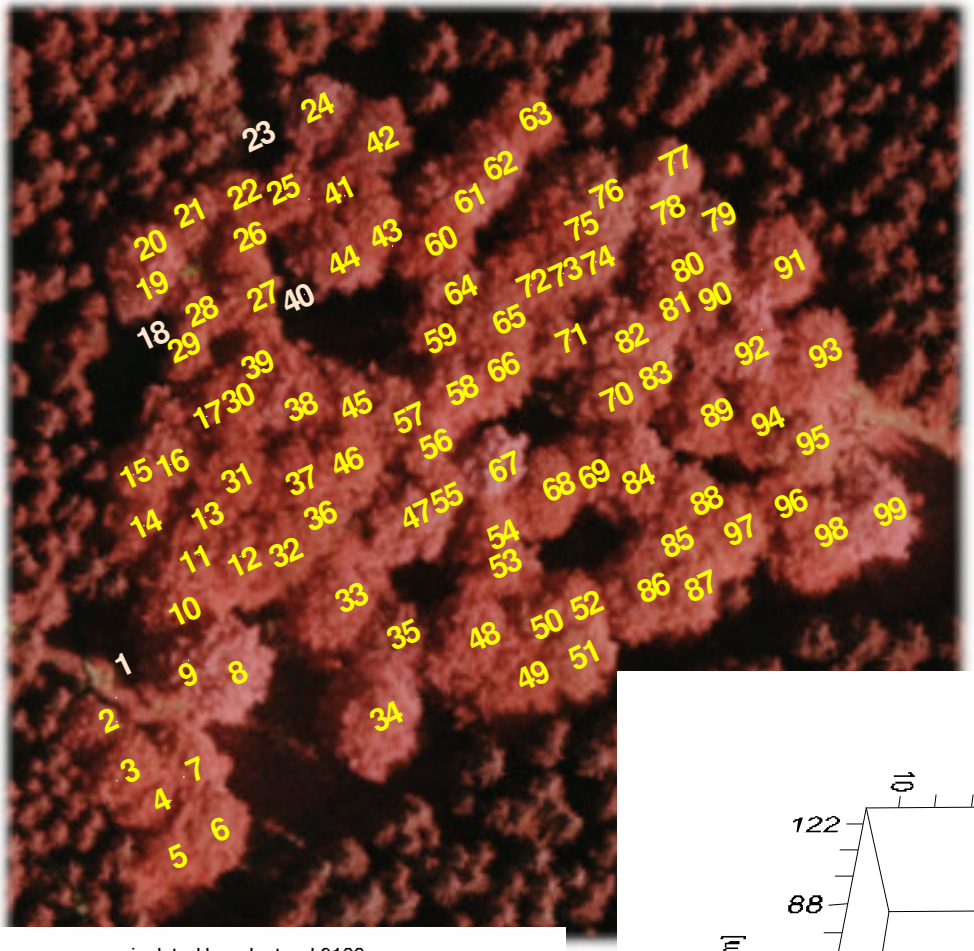
The Solling, … has been the location of interdisciplinary forest ecosystem research from the early 1960s on. **The methodology developed and employed there was** novel and **pioneering at that time.** It enabled the **quantitative description of matter and energy budgets for entire ecosystems and the connection of such process rates to ecosystem structures such as species composition, age, and biotic communities.** The flux monitoring methodology developed at Solling and other early case studies is nowadays routinely applied at forest monitoring sites worldwide, e.g., in the European Level-II network of ICP Forests (International Co-operative Programme on Assessment and Monitoring of Air Pollution Effects on Forests). **Solling holds the longest complete and continuous biogeochemical flux records in forest ecosystems worldwide.**

Recently the scope of forest ecosystem research at Solling has been expanded from the plot scale to the entire forest landscape. …**GIS-based models provide spatially explicit estimates of important indicators** such as diversity of forest stand types ….



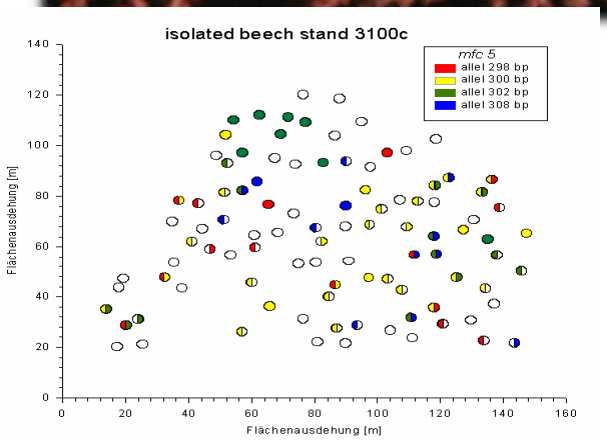


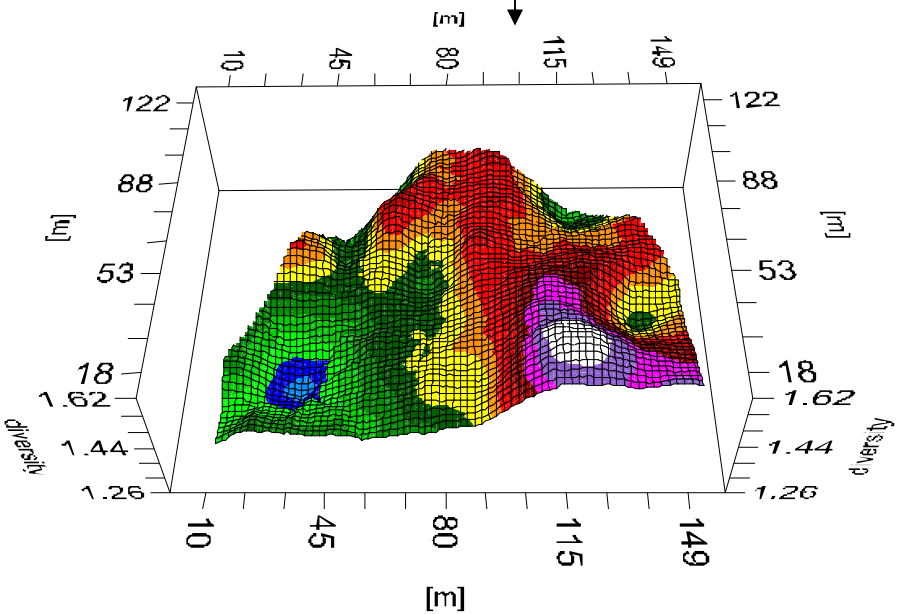
Mixed stand
of beech and spruce

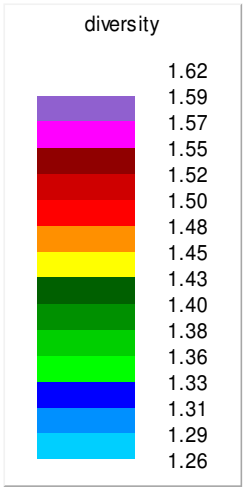


Abt. 3100c Solling

Gene diversity among beech nuts collected from the ground (1998/99)







Scientific value

- According to the existing long term data for the Solling, contrasting site types with different environmental characteristics and stands with EVOLTREE target species (beech, spruce) are identified. These and their data are of interest for JERA2, JERA3, and JERA4 to evaluate the biodiversity (including genetic diversity) as well as the community structure and the corresponding dynamics and spatial variation under different aspects (e.g. effects of global change).
- Results on response to abiotic and biotic selection pressure are derived for the target species beech (e.g. beech scale) and spruce (e.g. roof project with drought experiments) and include basic information for JERA1. For insects and mycorrhizal fungi, competent institutes and scientists from Göttingen are also involved.