

Tree and stand growth dynamics under climate change. Introduction.

Hans Pretzsch

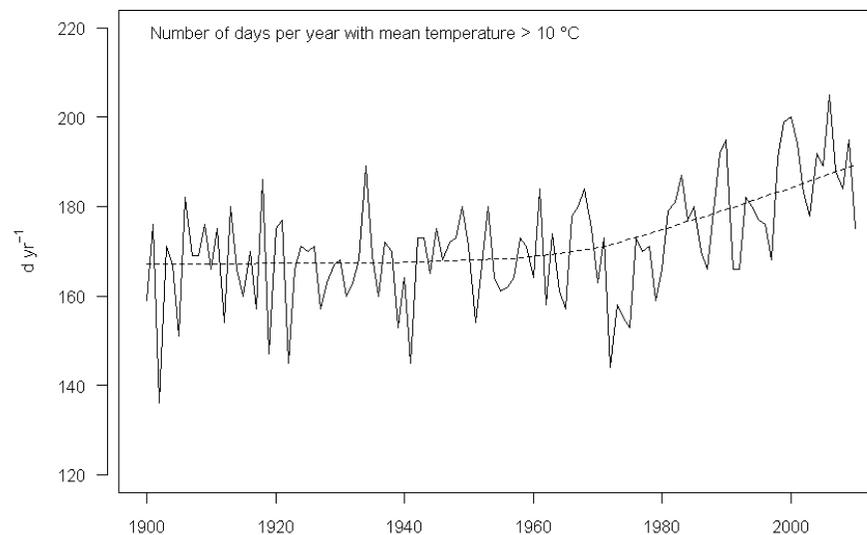
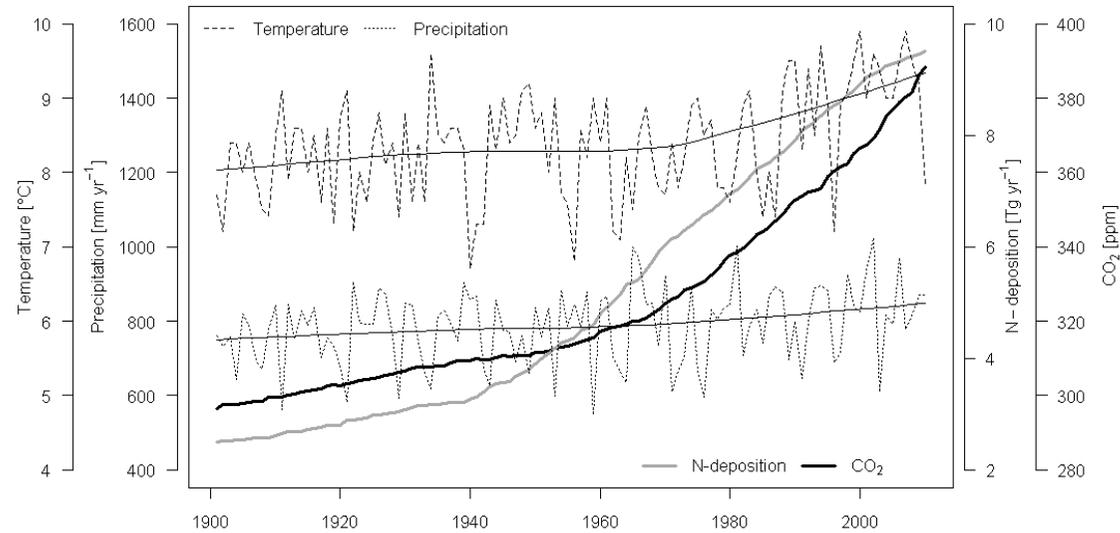
Chair for Forest Growth and Yield Science

Technische Universität München

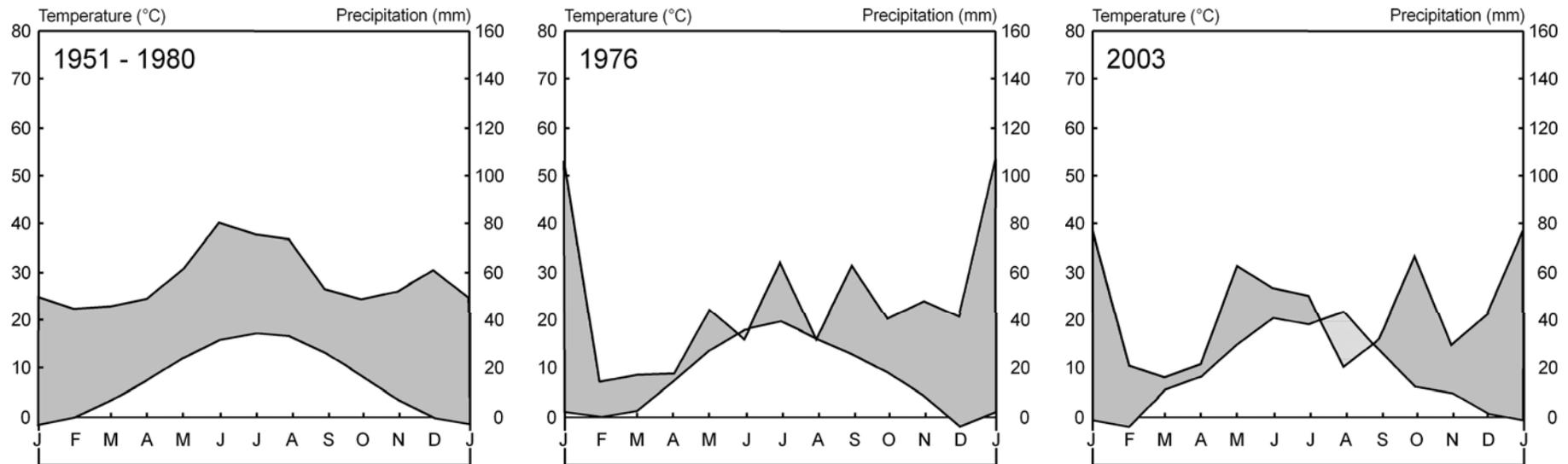
<http://www.wwk.forst.wzw.tum.de/info/presentations/>



Main components of climate change in Central Europe



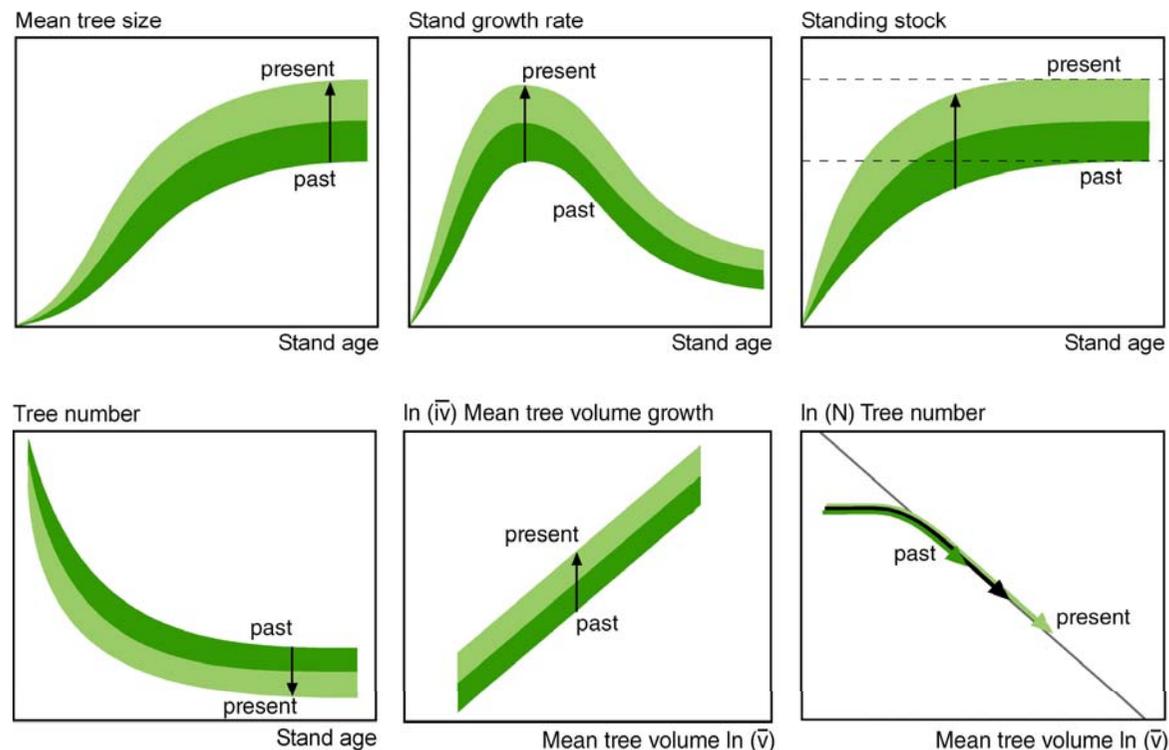
Climate diagrams for Northern Bavaria in the period 1951-1980 and the drought years 1976 resp. 2003



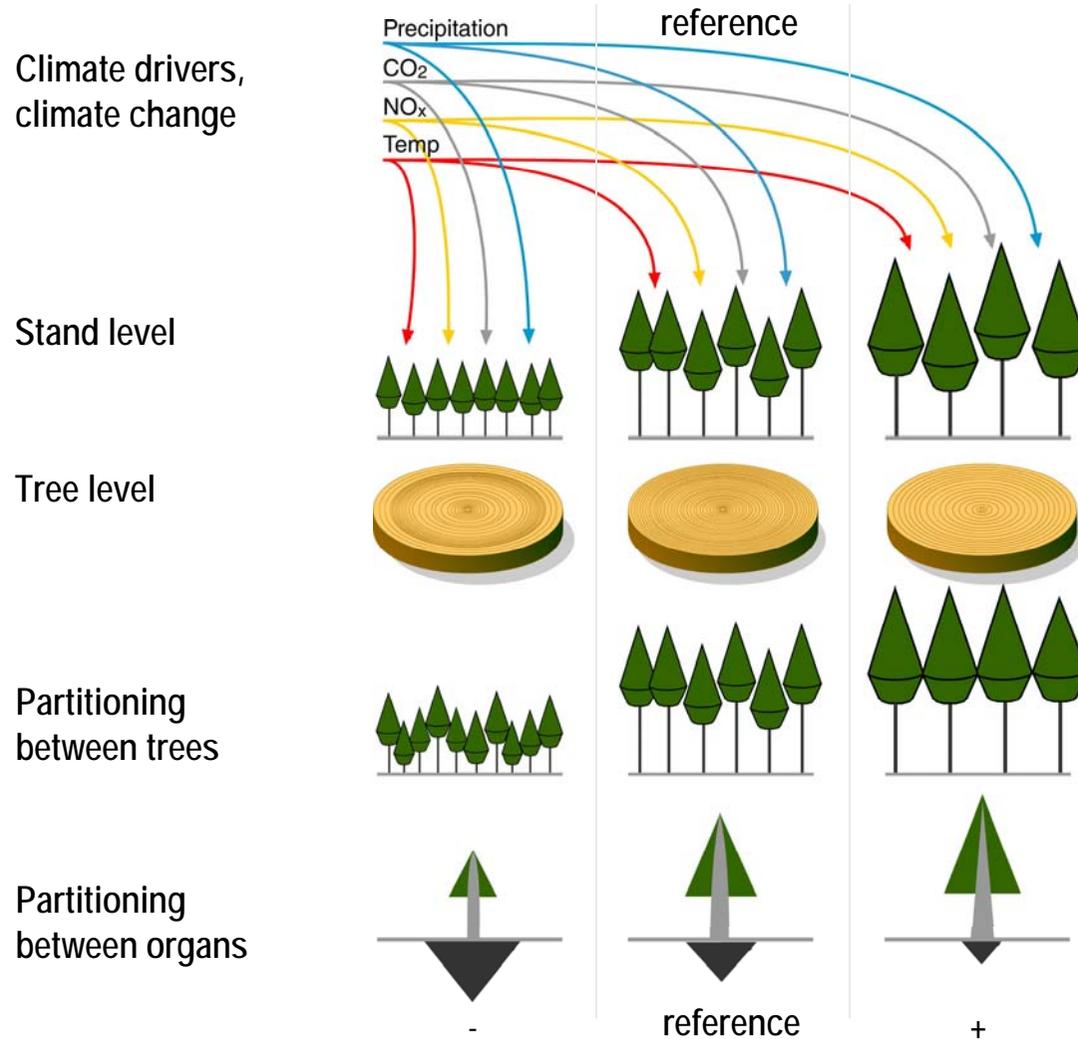
Means based on the following stations: Amberg, Bamberg, Hof, Kahl, Kissingen, Kronach, Nürnberg, Oberviechtach, Regensburg, Reimlingen, Rothenburg T., Schlüsselfeld, Teuschnitz, Weiden, Weissenburg, Würzburg

Forest stand growth dynamics in Central Europe have accelerated since 1870

Facts from long-term observational plots:
Changes in forest stand dynamics from 1870 (past) to 2010 (present)



Effect of climate change on growth and yield at the stand, tree, and organ level



Tree and stand growth dynamics under climate change. Overview of publications

Stand level

Pretzsch, H., Biber, P., Schütze, G., Bielak, K., 2014: Changes of forest stand dynamics in Europe. *Forest Ecology and Management* 316: 65-77.

Pretzsch, H, Biber, P., Schütze, G., Uhl, E., Rötzer, Th., 2014: Forest stand growth dynamics in Central Europe have accelerated since 1870, *Nat. Commun.* 5:4967 doi:10.1038/ncomms5967

Tree level

Pretzsch H, Schütze G, Uhl E 2012: Resistance of European tree species to drought stress in mixed versus pure forests: evidence of stress release by inter-specific facilitation. *Plant Biology*, 15(3): 483-495

Seifert, Th., Seifert St., Seydack, A., Durrheim, G., von Gadow, K. 2014: Competition effects in an afrotemperate forest, *Forest Ecosystems*, 1:13

Partitioning between trees

Pretzsch H, Dieler J, Seifert T, and Rötzer, T 2012: Climate effects on productivity and resource use efficiency of Norway spruce (*Picea abies* [L.] Karst.) and European beech (*Fagus sylvatica* [L.]) in stands with different spatial mixing patterns, *Trees Structure and Function*, 26(4): 1343-1360

Partitioning between organs

Pretzsch H, Biber P, Uhl E, Hense, P., 2012: Coarse root-shoot allometry of *Pinus radiata* modified by site conditions in the Western Cape Province of South Africa, *Southern Forests* 74(4): 237-246

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