Geophysical Research Abstracts
Vol. 18, EGU2016-14017, 2016
EGU General Assembly 2016
© Author(s) 2016. CC Attribution 3.0 License.

Tree height growth indicating drought and nitrogen deposition

Krisztina Gulyás and Imre Berki
University of West Hungary, Sopron, Hungary (gulyas.krisztina@emk.nyme.hu)

Several studies have been reported the increasing trends of forest growth in Europe in the last decades. Sites, where the water is not limiting factor, the increasing carbon dioxide (CO_2) concentration and high nitrogen deposition influenced accelerated tree height growth. However few researches show that the drying climate conditions and water deficit cause slow/not definite trend of tree height growth in forests.

The aim of our study presents the effects of drying climate and surplus nitrogen on height growth of sessile oak (Quercus petraea). Almost 50 sessile oak stands (with zonal site condition) have been measured along a humid-arid climatic transect in Hungary. Top heights of the trees are the best dendrometric parameter for indicating the changing site conditions. Observed top heights dates were compared with 50-years climate condition along the humid-arid climatic transect.

Tree height growth in the dry and mesic section of climatic gradient slowed at the last 4 decades, because of the increasing frequency of dry periods. Accelerated height growth were measured in the mesic and humid section of transect, where the nitrogen deposition due to local air pollution were higher than the background deposition.
These results draw attention to the importance of the drying climate and surplus nitrogen in the global changes.

Keywords: climate change impacts, drought periods, surplus deposition, tree height growth

Acknowledgements: Research is supported by the “Agroclimate.2” (VKSZ_12-1-2013-0034) EU-national joint funded research project.