



Inter-annual variability in carbon fluxes related to tree growth and fruit production in an old-growth mixed beech forest

M. Mund (1), W. L. Kutsch (1), C. Wirth (1), A. Knohl (2), M. V. Skomarkova (3), and E.D: Schulze (1)

(1) Max-Planck-Society, MPI Biogeochemistry, Jena, Germany (wkutsch@bgc-jena.mpg.de), (2) ETH Zurich, Institute of Plant Sciences, Zurich, Switzerland , (3) Institute of forest SB RAS, Akademgorodok, Krasnoyarsk, Russia

The explanation of inter-annual variability of carbon fluxes in terrestrial ecosystems by inter-annual variability of climatic factors often shows strong limitations. It seems that particularly forest ecosystems buffer even extreme climatic situations but reveal unexpected 'outliers' in years with average climate. In this presentation based on measurement in an old-growth beech forest at the Hainich site in Central Germany we show that internal processes of carbon storage and allocation in trees may explain the sometimes weak correlation between net ecosystem production of a forest stand measured by eddy covariance on one hand and by forest inventories or tree ring studies on the other. Furthermore, we will show how tree internal processes drive productivity, e.g. by inter-annual variability in allocation to foliage resulting in variation in leaf area index that may overrule inter-annual variability of climate as driving factor.