Universität Basel

Research Project

Swiss canopy crane (SCC): CO2-enrichment (2006-2009)

Third-party funded project

Project title Swiss canopy crane (SCC): CO2-enrichment (2006-2009)
Principal Investigator(s) Körner, Christian ;
Project Members Bader, Karl-Friedrich Martin ;
Organisation / Research unit
Departement Umweltwissenschaften / Pflanzenökologie (Körner)
Department
Project Website http://pages.unibas.ch/botschoen/scc/index.shtml
Project start 01.04.2006
Probable end 31.03.2009
Status Completed

In March 1999 a ca. 45 m tall crane was installed in a highly diverse, mature temperate forest at Hofstetten near Basel, 550 m above sea level. This research tool does enable canopy research in both adult conifers and deciduous trees typical for European forests. With a new type of Free Air COĆ Enrichment, called webFACE, part of this forest is exposed to 530 ppm COĆ since October 2000 (see Pepin and Koerner 2002). Tree genera include: Fagus, Quercus, Carpinus, Acer, Tilia, Prunus, Abies, Picea, Pinus, Larix. The forest has an age of 100 years and dominant trees vary between 32 m and 36 m in height. Except for Larix and Picea (which were introduced from slightly higher elevations) all species occur naturally. With the broad leaved evergreen Ilex aquifolium and Hedera helix in the understory the spectrum is ideal for a an assessment of functional aspects of forest biodiversity. Research will be strictly comparative in order to capitalize on this unique species richness. Topics attended by our team include canopy architecture and fuctional leaf attributes, reproductive dynamics and storage reserves in whole tree canopy COĆ-enrichment, sapflow and stable isotopes. After 4 years, we found an immediate and sustained enhancement of carbon flux, but there was no overall stimulation in stem growth and leaf litter production (Koerner et al. 2005). We cooperate with partners from other Swiss institutions (WSL, PSI and others) and colleagues from Germany and Austria. Internationally this project lines up with currently operative crane projects in Panama, Venezuela, Oregon, NE-Australia, and Japan, providing a global network which also includes animal sciences. With its sole emphasis on experimental and analytical work in the top of a mature forest, this is the first crane project in Europe, and one out of three globally in a temperate deciduous/mixed forest (the others are in Japan and in Germany). The SCC project first of all seeks to contribute to biodiversity research in forests.

Financed by
Swiss National Science Foundation (SNSF)

Add publication

Published results

462211, Bader, MKF; Siegwolf, R; Körner, Christian, Sustained enhancement of photosynthesis in mature deciduous forest trees after 8 years of free air CO2 enrichment, 0032-0935, Planta, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

462219, Bader, Martin K. -F.; Koerner, Christian, No overall stimulation of soil respiration under mature deciduous forest trees after 7 years of CO2 enrichment, 1354-1013, Global change biology, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

462226, Bignucolo, O.; Koerner, Ch., Leaf miner activity and its effects on leaf chemistry in adult beech under elevated CO2, 1439-1791, Basic and applied ecology, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

Add documents

Specify cooperation partners