

Research Project

Swiss canopy crane (SCC): CO₂-enrichment (2009-2012)

Third-party funded project

Project title Swiss canopy crane (SCC): CO₂-enrichment (2009-2012)

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Organisation / Research unit

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Department

Project Website <http://plantecology.unibas.ch/scc/index.shtml>

Project start 01.04.2009

Probable end 31.03.2012

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 CO₂ Enrichment, called webFACE, part of this forest is exposed to 530 ppm CO₂ 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 CO₂-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)

Follow-up project of [5708 Swiss canopy crane \(SCC\): CO₂-enrichment \(2006-2009\)](#)

Add publication

Published results

102345, Leuzinger, Sebastian; Koerner, Christian, Rainfall distribution is the main driver of runoff under future CO₂-concentration in a temperate deciduous forest, 1354-1013, Global change biology, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

102373, Leuzinger, Sebastian; Vogt, Roland; Koerner, Christian, Tree surface temperature in an urban environment, 0168-1923, Agricultural and forest meteorology, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

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)

986283, Leuzinger, S; Hartmann, A; Körner, C, Water relations of climbing ivy in a temperate forest, 0032-0935, Planta, Publication: JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

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