Data from: Open-top chambers for temperature manipulation in taller-stature plant communities

Welshofer KB, Zarnetske PL, Lany NK, Thompson LAE

Date Published: August 10, 2017

DOI: http://dx.doi.org/10.5061/dryad.2br8k

Files in this package

Title	**Northern Forest Clearing Microclimate Data**
Downloaded	12 times
Description	Detailed microclimate data at the Northern Forest Clearing site at the University of Michigan Biological Station in Pellston, Michigan, USA.
Download	nfc_detailed_microclimate.csv (1.738 Mb)
Details	View File Details

Title	**Southern Old Agriculture Field Microclimate Data**
Downloaded	11 times
Description	Detailed microclimate data at the Southern Old Agriculture Field site at the Kellogg Biological Station in Hickory Corners, Michigan, USA.
Download	soaf_detailed_microclimate.csv (1.810 Mb)
Details	View File Details

Title	**Northern Forest Clearing Pendant Data**
Downloaded	10 times
Description	Hourly temperature data at 1 meter height taken in warmed plots at the Northern Forest Clearing site at the University of Michigan Biological Station in Pellston, Michigan, USA.
Download	nfc_pendants.csv (666.4 Kb)
Details	View File Details

Title	**Southern Old Agriculture Field Pendant Data**
Downloaded	12 times
Description	Hourly temperature data at 1 meter height taken in warmed plots at the southern old agriculture field site at the Kellogg Biological Station in Hickory Corners, Michigan, USA.

Download	soaf_pendants.csv (604.3 Kb)
Details	View File Details

Title	**README**
Downloaded	6 times
Description	Includes a list of all data files, a description of the variables, and contact information.
Download	README_otc.txt (4.231 Kb)
Details	View File Details

When using this data, please cite the original publication:

Welshofer KB, Zarnetske PL, Lany NK, Thompson LA (2017) Open-top chambers for temperature manipulation in taller-stature plant communities. Methods in Ecology and Evolution, online in advance of print. http://dx.doi.org/10.1111/2041-210x.12863

Additionally, please cite the Dryad data package:

Welshofer KB, Zarnetske PL, Lany NK, Thompson LAE (2017) Data from: Open-top chambers for temperature manipulation in taller-stature plant communities. Dryad Digital Repository. http://dx.doi.org/10.5061/dryad.2br8k

Cite | Share

Pageviews	75
Keywords	open-top chamber, climate change, warming experiment, passive warming, plant community ecology
Spatial Coverage	Michigan USA

Abstract

Open-top chambers simulate global warming by passively increasing air temperatures in field experiments. They are commonly used in low-stature alpine and arctic ecosystems, but rarely in taller-stature plant communities because of their limited height. We present a modified International Tundra Experiment (ITEX) chamber design for year-round outdoor use in warming taller-stature plant communities up to 1.5m tall. We report a full year of results for the chambers' effects on air and soil temperature, relative humidity, and soil moisture in a northern hardwood forest clearing and a southern early successional grassland site located in Michigan, USA. Detailed construction plans are also provided. The chambers elevated daytime air temperatures at 1m height by 1.8ºC above ambient levels, on average over an entire year, at both the northern and southern site. The chambers did not affect relative humidity at either site. The chambers did not alter average soil temperature or moisture at the northern site and reduced soil temperatures and soil moisture at the southern site. The chambers increased variability in soil freeze/thaw cycles at both sites. The chambers achieved predicted levels of warming for mid-century (2046-2065) scenarios consistent with the majority of Representative Concentration Pathways (RCPs) in the International Panel on Climate Change 5th Assessment Report, with minimal experimental artifact. This design is a valuable tool for examining the effects of in situ warming on understudied taller-stature plant

communities and creates the opportunity to expand future comparisons across a diversity of systems.

Show Full Metadata