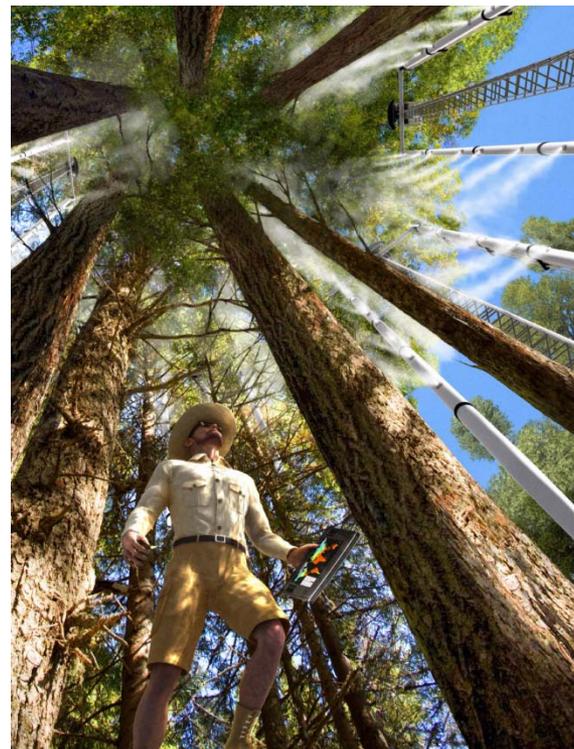


Scientific American article highlights global change experiments to a worldwide audience.

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Funding: DOE Office of Science, Biological and Environmental Research

- Scientists have manipulated the environment that surrounds grasslands, crops, and forests to see how changes in carbon dioxide, precipitation, and temperature will affect the biosphere.
- Seldom, however, are these experiments described for the public, nor are the results presented in a manner that will inform citizens about the science that underlies climate change.
- This article highlights DOE-sponsored research at Oak Ridge National Laboratory (e.g., FACE and TDE), Los Alamos National Laboratory, and other experiments being conducted across the United States.
- These studies are critical to understanding how ecosystems will be affected by climate change and how those changes might feed back to further advance change.
- Scientific American has a worldwide circulation of 750,000 subscribers, making this a substantial outreach activity that highlights the contributions of experiments to the climate change debate.



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Abstract: Thirty years ago Charles F. Baes, Jr., a chemist at the U.S. Department of Energy's Oak Ridge National Laboratory, wrote that the earth was undergoing a great "uncontrolled experiment," one that would soon reveal the global consequences of rising greenhouse gas concentrations. Today scientists know that deforestation, land use and the burning of fossil fuels are warming our planet. We are less certain, however, about how climate change will alter forests and grasslands, as well as the goods and services these ecosystems provide society. Largely unknown to the public, several sizable outdoor experiments involving altered temperature, precipitation, and CO₂ concentrations have been under way for more than a decade. Enough data have now been generated to improve models that predict climate, providing a more accurate picture of how woodlands, prairies and agricultural crops may change in a future world. New experiments are needed to clearly predict the response of boreal, tundra and tropical plants and of ecosystems. Several years will be needed to prepare such experiments because they are likely to be scientifically complicated and located in remote regions. Data from such experiments will help society anticipate, plan and adapt to a climate that is already changing rapidly.

Citation: Wullschleger S.D. and M. Strahl. 2010. Climate Change: A Controlled Experiment. Scientific American, March 2010, pp. 78-83.