

Incubating climate change

September 7 2016

A group of James Cook University scientists led by Emeritus Professor Ross Alford has designed and built an inexpensive incubator that could boost research into how animals and plants will be affected by climate change.

JCU's Sasha Greenspan said the team designed and built small, inexpensive, low-energy-consumption chambers that allow [small organisms](#) to grow under very precisely controlled [temperature](#) regimes.

"These are an important advance because they make well replicated, realistic experiments possible," said Ms Greenspan.

"Because they are small, cheap and energy efficient, as opposed to normal scientific [incubators](#), which are large, expensive, and energy-hungry, researchers can investigate many more sets of conditions at once. For example, at JCU we have 48 of them operating," she said.

The group combined a commercially manufactured constant temperature chamber with an open-source microcontroller, for a total cost of less than \$US 160 each. They've made the design freely available to others.

"We can produce virtually any ecologically relevant temperature regime in an insulated chamber with a design that is inexpensive and simple to assemble in large numbers, enabling genuine replication of even highly complex study designs," said Ms Greenspan.

She said the development of the incubators would not stop.

"With simple modifications, the incubators can also be used to manipulate and measure essentially any variable that can be applied to an insulated container, such as humidity, light or UV radiation. There are a vast number of potential applications for these chambers in environmental, agricultural and biomedical research."

More information: Sasha E. Greenspan et al, Low-cost fluctuating-temperature chamber for experimental ecology, *Methods in Ecology and Evolution* (2016). [DOI: 10.1111/2041-210X.12619](https://doi.org/10.1111/2041-210X.12619)

Provided by James Cook University

Citation: Incubating climate change (2016, September 7) retrieved 19 April 2024 from <https://phys.org/news/2016-09-incubating-climate.html>

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