

'State of nature' important in determining the impact of climate change

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Current models of how vegetation will react to climate change do not consider the state of the vegetation - whether it is mature and stable, or already responding to some disturbance event.

New research from one of the world's longest running [climate change](#) experiments, which is funded by the European Commission (EU-FP7 INCREASE infrastructure) and led by the Centre for Ecology and Hydrology, and European partners, including Bangor University was published today in *Nature Communications* . The research suggests that for shrublands, the time since the last disturbance of the ecosystem affects its response to future climates and should be considered when predicting ecosystem responses to climate change.

Prof Bridget Emmet, Head of Centre for Ecology and Hydrology in Bangor and the UK lead for the project says:

"This work provides evidence that that as we disturb ecosystems we may be making them more sensitive to climate change. That provides us with both a challenge and an opportunity as we try to identify approaches to make our habitats more resilient to climate change and identify those most at risk. Long term experiments like these provide a unique way to explore possible futures under the now inevitable climate change which will result from greenhouse gases already emitted into the atmosphere"

Dr Andy Smith of the School of Environment, Natural Resources and Geography, Bangor University who worked on biogeochemical cycling

and plant community dynamics at the UK site said:

"Shrubland [ecosystems](#) are an important component of global and European terrestrial vegetation, provide multiple ecosystem services such as flood and climate regulation, they lock up carbon and provide an ecosystem to host biodiversity, and are strongly affected by environmental change."

The amount of land covered by shrublands is expanding in many arid and semiarid regions of the world due to changes in land use and it is becoming increasingly important to consider how disturbance by humans, or natural events such as fire, or infestation by pests and diseases may affect the different ecosystem 'services' provided.

According to the findings, shrublands that are regenerating, or recovering from a disturbance event, are more susceptible to climate change than undisturbed shrubland.

The authors conclude that the disturbance state of an ecosystem should be taken into consideration when modelling how plants will respond to climate change.

More information: "Increased sensitivity to climate change in disturbed ecosystems." *Nature Communications* 6, Article number: 6682 [DOI: 10.1038/ncomms7682](https://doi.org/10.1038/ncomms7682)

Provided by Bangor University

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