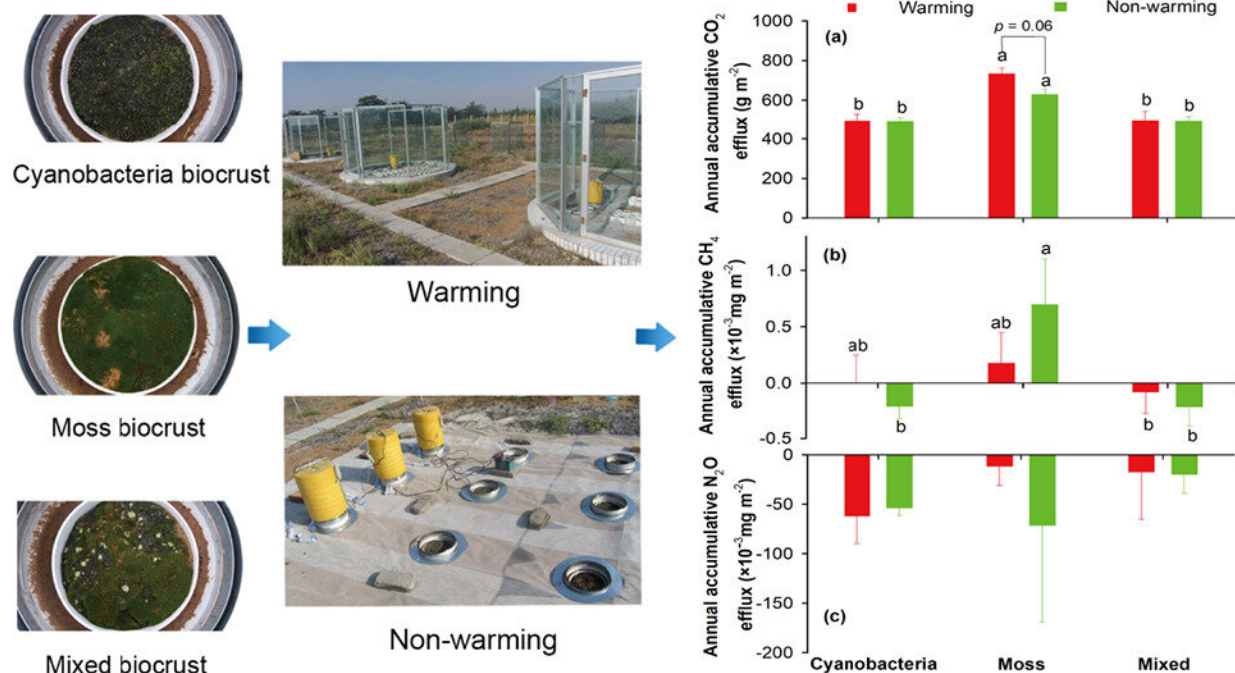


Climate warming will not change greenhouse gas emission of biocrust in arid sandy areas

April 29 2022, by Li Yuan



Graphical abstract. Credit: *Science of The Total Environment* (2022). DOI: 10.1016/j.scitotenv.2022.154805

Climate change marked by global warming is affecting various ecological processes of terrestrial ecosystem.

How [greenhouse gas](#) (GHG, including CO₂, CH₄ and N₂O) emissions respond to [climate change](#) is directly related to the carbon and nitrogen

balance between the atmosphere and terrestrial ecosystem.

Recently, researchers from the Northwest Institute of Eco-Environment and Resources of the Chinese Academy of Sciences (CAS) have found that [climate warming](#) will not change greenhouse gas emission of biocrust in arid sandy areas.

Related results were published in *Science of The Total Environment*.

Based on a field warming experiment with open-top-chambers (OTCs) at the Shapotou Desert Research and Experimental Station, the researchers continuously monitored the GHG flux of mosses, algae and their mixture at the annual scale.

They measured CO₂, CH₄ and N₂O effluxes in cyanobacteria-, moss-, and mixed (moss, cyanobacteria and lichen) biocrust soils from 2012 to 2014, covering three growing seasons and two non-growing seasons. The results showed that desert biocrust soils generally acted as a weak sink of atmospheric CH₄ and N₂O.

Although the effects of [global warming](#) on GHG fluxes varied with sampling time and biocrust type, there was no significant difference in daily, monthly and seasonal average CO₂, CH₄ and N₂O effluxes between warming and control in most cases for three biocrust soils.

Besides, the annual cumulative CO₂ emissions from moss biocrust warming decreased by 14.2% due to warming, but warming had no significant effect on the other two types of biocrust.

If the drought negative effect caused by warming indirectly and OTC sheltering of precipitation directly was excluded, warming would not significantly change the GHG emissions of biocrust soil ecosystem in arid desert areas.

More information: Yigang Hu et al, Reference for different sensitivities of greenhouse gases effluxes to warming climate among types of desert biological soil crust, *Science of The Total Environment* (2022). [DOI: 10.1016/j.scitotenv.2022.154805](https://doi.org/10.1016/j.scitotenv.2022.154805)

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