

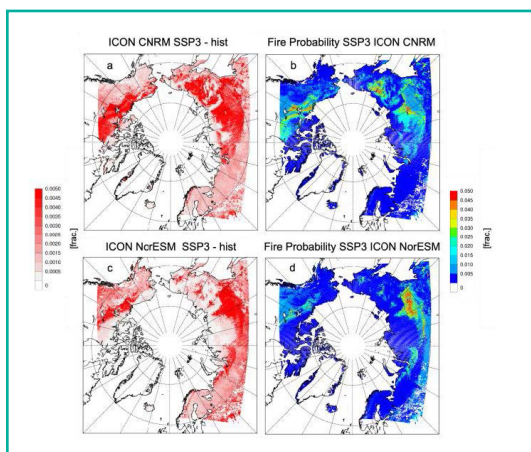
BOREAL WILDFIRES

HOW ARE WILDFIRES IN THE ARCTIC GOING TO DEVELOP UNDER DIFFERENT CLIMATE SCENARIOS AND STORYLINES?



RESEARCH

PolarRES conducted high-resolution simulations to assess how boreal wildfire in the Arctic will change by the end of the 21st century. The dynamic global vegetation model LPJ-GUESS and its fire-model SIMFIRE-BLAZE were applied. The models were driven by output from a regional climate model driven by two global climate models under the medium to high-risk greenhouse gas emissions scenario SSP3-7.0. This enabled detailed investigation of how changing climate and vegetation composition interact to shape the future fire regime across the Arctic regions.



RESULTS

The models show that the occurrence of wildfires will increase across the entire Arctic region, but will differ regionally, depending on the climate models applied. The main driver for changes in burned area are shifts in vegetation composition (fire biomes). An increase in biomass is the second driver dominating the increase of carbon emissions by fire in simulations with generally lower biomass.

Figure: Increase in fire-probability [fract.] (average of the period 2070-2100 minus average 1985-2014): a) ICON-CNRM b) ICON-NorESM; and total fire probability averaged 2070-2100: c) ICON-CNRM d) ICON-NorESM.



POLICY ACTIONS NEEDED

To address the growing wildfire risk, **adaptation and mitigation planning are essential**. Measures may include more fire-fighting facilities or the application of fire-breaks, implementing early warning systems and strengthening international collaboration across Arctic nations to manage cross border fire hazards.

IMPORTANCE

These findings are important for both local and regional governments, infrastructure planners and national and global carbon accounting efforts.

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