New fire-prone areas in Europe

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With climate change, fire risk is projected to increase in many parts of Europe. Under severe climate change this
could also lead to an increase of fire in ecosystems, which are not dominated by fires under current climate. In
that case, fire risk would cause area and biomass burnt to increase, i.e. keep the linear relationship, and lead to an
enormous increase in fire severity.
We have developed an algorithm to map new fire-prone areas in Europe. It identifies grid points where large-scale
fires, yet rare, are becoming the mean at the end of the 21st century. We applied this algorithm to simulation results
from experiments where the dynamic vegetation-fire models LPJ-GUESS-SIMFIRE and LPJmL-SPITFIRE model
were applied to scenarios of climate change and human population. Since both models simulate bi-directional
feedbacks of vegetation dynamics and fire, simulated changes in fire regimes inherently reflect changes in fuel
composition and fuel availability.
Changes in future fire regimes and resulting new fire-prone areas as projected for the 21st century using CMIP5
climate scenarios (RCP8.5 vs. RPC2.6) will be presented. First results indicate that the new fire-prone areas
would be found in eastern Europe. Depending on the climate scenario and vegetation-fire model used, it could
also extend to central and south-eastern Europe. What this implies for vegetation composition and dynamics in the
affected areas and how fire and climate change interact to lead to such changes will be shown.