

Key Messages

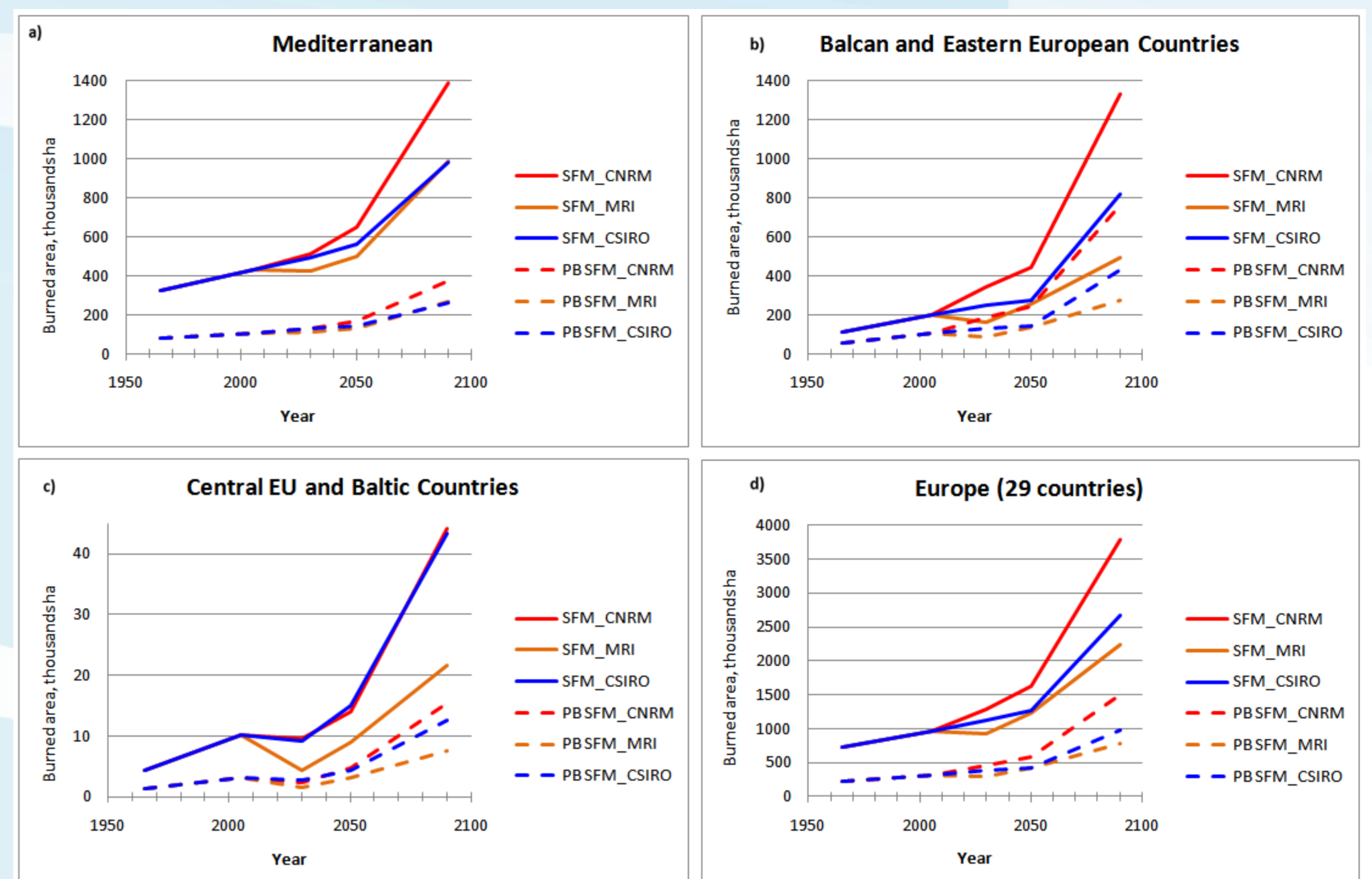
For climate change projections reflecting the SRES A2 scenario:

- 1) Estimated potential increase of burned areas in Europe under "no adaptation" scenario is about **200% by 2090** (compared to 2000-2008).
- 2) The application of prescribed burnings has the potential to keep that increase below **50%**.
- 3) Fire suppression might reduce this impact even further, e.g. boosting the probability of putting out a fire within a day by 10% would result in about a 30% decrease in annual burned areas.

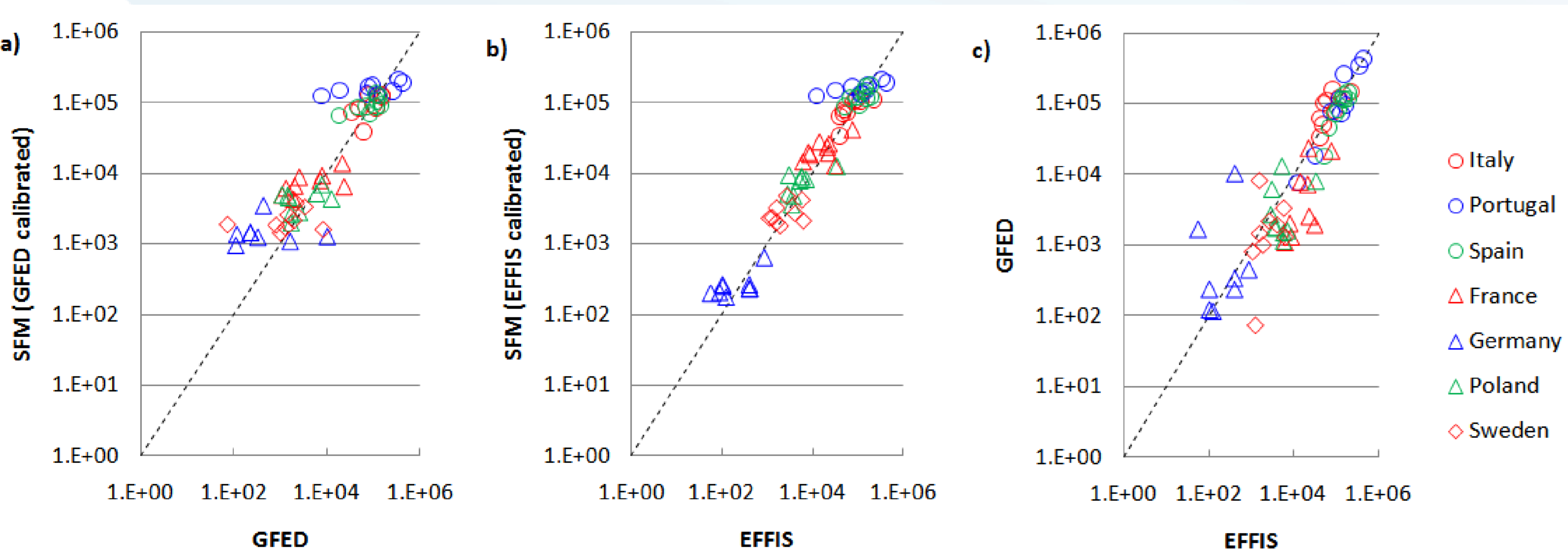
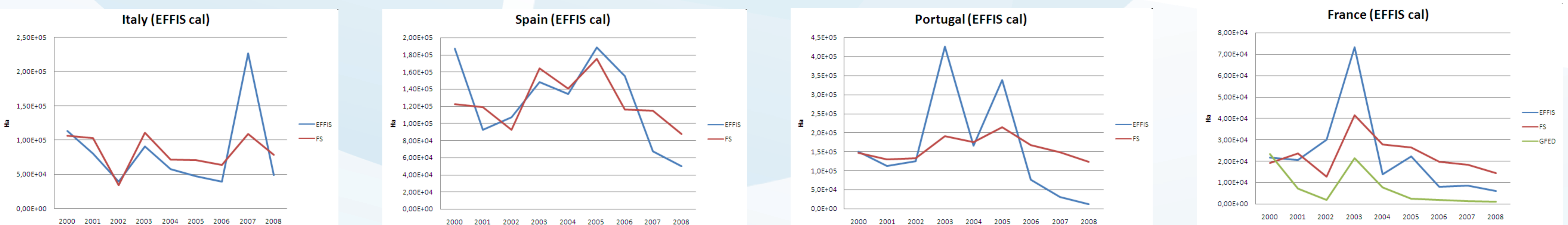
Current modeling limitations call for a **fundamental upgrade** of the existing continental-scale fire models.

Figures to the right: Projected impacts and effect of fuel removal (prescribed burnings) on burned areas (in thousands of hectares) as assessed by Standalone Fire Model (SFM_{MRI}, SFM_{CNRM}, and SFM_{CSIRO}) calibrated using Global Fire Emissions Database ver.3 (GFED) for European regions. Solid lines represent "no adaptation" scenario, dashed lines – prescribed burnings (PB, [Litter C + CWD C] / 2).

Climate models: CNRM-CM3 (France), MRI-CGCM2.3.2 (Japan), CSIRO-Mk3.0 (Australia) from WCRP CMIP3 multi-model dataset.



Validation – Historical Annual Burned Areas

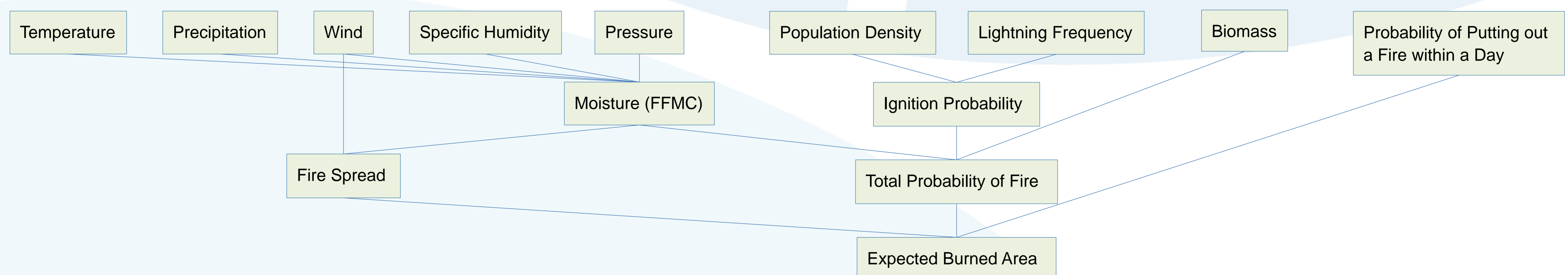


Top row figures: Inter-annual variability of burned areas in hectares as reported (EFFIS, European Forest Fire Information System) and reproduced by the model (FS). Last figure shows also GFED data.

Figures to the left: Scatter plots of yearly burned areas: modelled (SFM) vs. reported and GFED vs. EFFIS - in hectares on a log scale for selected European countries.

Historical daily weather data: Princeton dataset at 1 arc degree, years 1948-2008, values: temperature, precipitation, wind, specific humidity, and surface pressure. Sheffield J, Goteti G, Wood EF (2006) Development of a 50-year high-resolution global dataset of meteorological forcings for land surface modeling. *J Clim* 19:3088–3111

Model Schematic



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¹ International Institute for Applied Systems Analysis, Laxenburg, Austria; ² Alterra, Wageningen University and Research Centre, Wageningen, The Netherlands; ³ Institute for Environment and Sustainability, European Commission – Joint Research Centre, Ispra, Italy; ⁴ Max Planck Institute for Biogeochemistry, Jena, Germany

* Contact e-mail: khabarov@iiasa.ac.at