EGU2020-11639
https://doi.org/10.5194/egusphere-egu2020-11639
EGU General Assembly 2020

Climate services for forest fire risk management

Céline Deandreis[1], Gwendoline Lacressonière[1], Marc Chiapero[1], Miguel Mendes[2], Humberto Diaz Fidalgo[2], Maxence Rageade[3], Christoph Menz[4], Phil Cottle[5], and Nicholas Gellie[6]

[1]ARIA Technologies ; 92100 Boulogne-Billancourt, France
[2]Tecnosylva SL ; 24009 León, Spain
[3]ONFI ; 94736 Nogent-sur-Marne, France
[4]Potsdam Institute for Climate Impact Research (PIK); D-14473 Potsdam ; Germany
[5]Forest Re Ltd; London; UK
[6]ECOGUEGO; Roimil-Friol, 27229 ; Spain

The weather and its climatic evolution play the main role in generating hazard profiles of forest fires. The increased in magnitude and damage of last forest fire seasons has caused a larger concern of the insurance sector for this peril. Due to the lack of knowledge of this risk, there is a widespread low level of insurance coverage of forest fire risk. A first step forward is clearly needed to (1) propose simplified approaches showing how the risk links with its main weather drivers, and (2) re-incentivize the use of insurance by forest managers.

To answer this objective, ARIA Technologies and its partners have developed a geospatial web-based decision tool to support both forest owners and forest insurance actors in managing the vulnerability of their asset/portfolios to fire risk. RiskFP includes:

- A “realistic disaster scenarios generator module” that allows the generation of hundreds of scenarios of extreme wildfires to complete information from historical fires databases. This information can be used in damage and loss modelling to improve the estimation of the probable maximum loss (PML). In addition, the risk FP “impact module” provides to the users information on the different potential impact like the amount of biomass burnt or the economic losses.
- A precise mapping of the local forest fire risk through the graphical representation of an index including five risk levels (from low to extreme) that provides an overview of the most critical locations regarding the potential behavior of the fire in case of an hypothetical ignition.
- A forecasting/projection module to inform the users on the frequency of the severe-extreme days in the mid- and long-term horizons. It can be used by the forestry sector to better anticipate and prepare the next fire season and as a planning tool for long-term operation/investment.

At the heart of the platform lies the concept of critical landscape weather patterns (CLP), an empirical fire weather index that identifies severe-extreme weather days derived from hourly records of a representative weather station (Gellie, 2019). It could be computed from past records,

seasonal forecast or climate projection allowing to provide fire risk assessment for these different time scales. The CLP module is coupled with a propagation model, the Wildfire Analyst® forest fire simulator at the resolution of about 40m, that is used to estimate the progression and behavior of the fire in space and time. It is based on the standardized and validated semi-empirical Rothermel propagation model (1972).

Acknowledgements:

We acknowledge the European Commission for sponsoring this work in the framework of the H2020-insurance project (Grant Agreement number 730381).