A Wildfire Risk Assessment for Belgium

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Notes

Overview

Notes

The Wildfires of 2011

- More than 2000 ha of nature destroyed
  - les Hautes Fagnes → 1399 ha
  - de Kalmthoutse Heide → 500 ha
  - military domain in Meeuwen-Gruitrode → 360 ha
- Mainly NATURA 2000

(a) de Kalmthoutse Heide

(b) les Hautes Fagnes

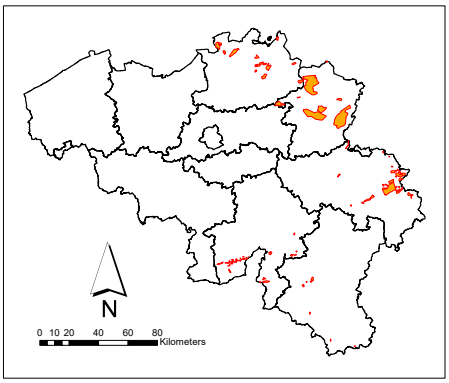
Notes

National Wildfire Action Plan

- Both good and bad practices were experienced
  - need for a better coordination of wildfire respons
  - need for adapted cartography
- July 5, 2011: initiation of the National Wildfire Action Plan
- 5 themes:
  - risk analysis & cartography
  - materials
  - procedures and training
  - emergency planning
  - exercises

Notes

National Wildfire Action Plan



Notes

EU Legislation

- Regulation (EU) No 1305/2013 of the European Parliament and of the Council of 17 December 2013 on support for rural development by the European Agricultural Fund for Rural Development (EAFRD) and repealing Council Regulation (EC) No 1698/2005
  - preventive actions against fires should be undertaken in areas classified by Member States as medium or high fire risk.
  - in the case of preventive actions concerning pests and diseases, the risk of a relevant disaster occurrence must be **supported by scientific evidence and acknowledged by scientific public organisations**.
  - forest areas classified as medium to high forest fire risk according to the forest protection plan established by the Member States shall be **eligible for support** relating to forest fire prevention.

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Data Collection

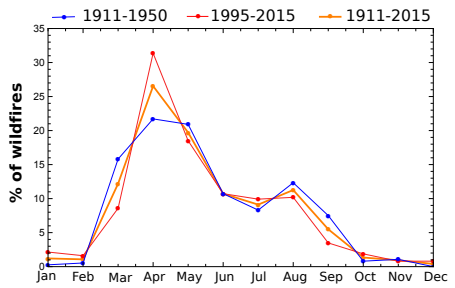
- Sources
  - Federal Public Service Internal Affairs: 2010 – 2013
  - newspaper articles: 1994 – 2015, online
  - newspaper articles: 1830 – 1950, archives of the Royal Library in Brussels
- 756 wildfire interventions registered
  - Mainly human causes!
- 273 useful spatial data points
  - GPS coordinates were retrieved
  - after 1994
  - but are these reliable?

Recommendations future data collection

- register GPS coordinates and perimeter
- correct labelling of wildfire interventions

Notes

Fire Season



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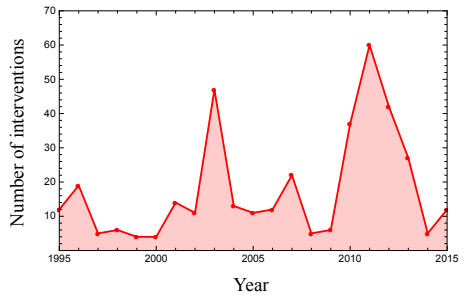
Wildfires Between 1995-2015



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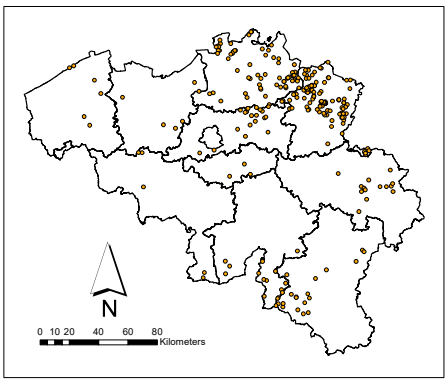
Spatial Wildfire Data



Notes

Spatial data

Region	Province	Number of ignitions
Flanders	Antwerp	71
	Flemish Brabant	19
	West-Flanders	6
	East-Flanders	6
	Limburg	113
Wallonia	Hainaut	5
	Walloon Brabant	3
	Liège	15
	Luxembourg	21
	Namur	14
Brussels		0
	Total	**273**

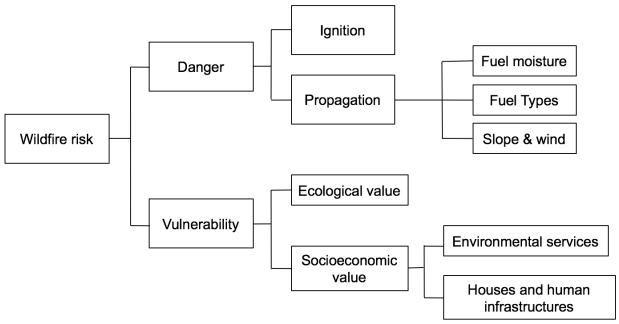
Notes

Overview

1. Background
2. Wildfires in Belgium
3. **Wildfire Risk Assessment**

Notes

Risk determinants



Notes

Belgian wildfire risk map

- $P(I|C_i) = \dfrac{P(I) \times P(C_i|I)}{P(C_i)}$

$$P(I) = \frac{\text{average annual number of interventions}}{\text{total number of cells}}$$

$$P(C_i|I) = \frac{\text{number of interventions on } C_i}{\text{total number of interventions}}$$

$$P(C_i) = \frac{\text{area of } C_i}{\text{total area}}$$

- I is an intervention event
- C_i is a combination of land cover, soil, and land use
- Wildfire risk map $\approx$ Intervention probability map

Notes

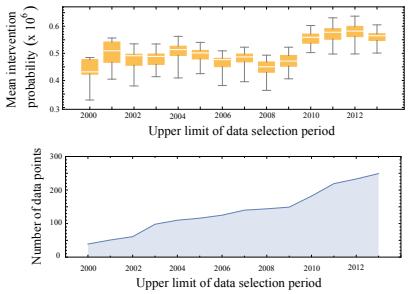
Risk classes

Risk	Interval ($\times 10^6$)	Land cover	Land cover & soil	Land cover, soil & land use
Low	< 0.0025	73.81	71.83	71.29
Intermediate	$0.025 - 0.12$	15.14	23.05	21.86
High	$0.12 - 0.4$	10.27	4.52	6.36
Very high	> 0.4	0.78	0.71	0.48
Average P ($\times 10^6$)		0.28	0.31	0.45

Notes

Risk map robustness

- How robust is the risk map?
- How important is the size of the data set?



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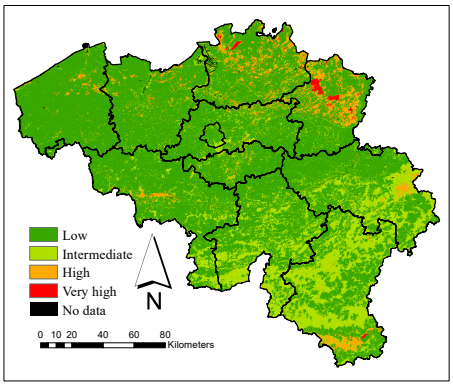
Belgian wildfire risk map



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Provincial breakdown

Region	Province	Low	Intm.	High	Very high
Flanders	Antwerp	71.38	7.98	19.30	1.34
	Flemish Brabant	82.03	13.01	4.83	0.13
	West-Flanders	94.62	2.23	3.10	0.06
	East-Flanders	88.30	6.38	5.17	0.15
	Limburg	66.95	8.38	20.79	3.88
Wallonia	Hainaut	81.20	16.14	2.60	0.06
	Walloon Brabant	85.85	10.49	3.62	0.05
	Liège	63.42	33.69	2.89	0.00
	Luxembourg	46.20	49.26	4.39	0.15
	Namur	60.88	38.68	0.45	0.00
Brussels		70.98	29.01	0.01	0.00

Notes

Towards a pan-European wildfire risk map

1. What?
   1. EGFF working group
   2. Risk determinants
   3. Proxies and data sources
   4. JRC Technical report 'Basic criteria to assess wildfire risk at the pan-European level' on 1)-3)
2. *How?*
   1. *Methodology*
   2. *Implementation*
   3. *Dissemination*

Notes