



Relationship between agriculture and wildfires

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Relationship between agriculture and wildfire

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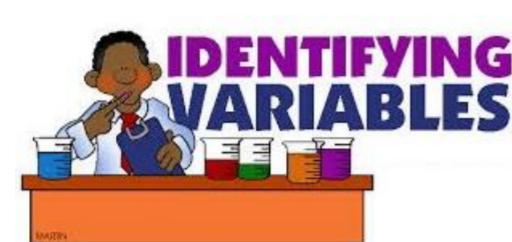
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Research question :



- Socio – économics (national statistics)
- Geo – bio – climatics (t° , slope ..)
- Agriculture (sunflowers, cereals, farms ..)
- Public policies (Maet 226C - CAP)
- Database wildfire Promethee
- Corine Land cover
- Agricultural census (RPG, RGA)

Methodology : Two models

* $p<0,05$; ** $p < 0,01$; *** $<0,001$

Probit model = Wildfire (0/1)= f(altitude, wind, livestock, area forest, urban/vineyards/cereals forest interface, agriculture, t° , cap premiums, length of roads)

Wildfire	Value	Wildfire	Value
Altitude	0,0009***	Altitude 2	- 0,0000384*
wind2	0,0362442	Farms 2010	0,00352*
Livestock 2010	-0,000082	Meadows area 2010	0,1060417
Meadows area 2010	- 0,0000354	Forest/cereal int 2012	- 0,0298295
Urban/forest 2012	0,0038113	Vineyard/cereal 2012	- 0,597011
Sunflower 2013	2,746988	Other cereals 2013	- 0,2404459
Rapessed 2013	- 6,551224	Wind 2013	- 0,1534355
Premium CAP	- 0,0006214	Lenght of roads	0,001475**
T° 2013	0,154545***	Crops wich favor 2013	- 11,40668*

Int = interface

Heckman model : Two steps models

Step 1 : Wildfire (0/1)= f(t° , area forest, urban/cereals forest interface, length of roads, altitude, population, wind)

Wildfire	Value	Wildfire	Value
T° (2013)	-1717,049	Livestock 2010	8,599077
Meadows area 2010	25,664**	Forest/cereal int 2012	34,050
Urban/forest int 2012	- 64132,13***	Population 2010	-1,522
Lenght of roads	133,384	wind2	-1190,942
Altitude2	0,020449		

Step 2 : Wildfire (0/1)= f(number of farms, area forest, urban/cereals forest interface, agriculture, area meadows)

Area	Value	Area	Value
Farms (2010)	0,115***	Livestock 2010	0,0003*
Meadows area 2010	- 0,00015*	cereal/forest int 2012	- 0,327
Urban/forest int 2012	0,29529***	Vineyard/cereal int 2012	- 0,2056*
Sunflower 2013	2,845803	Other cereals 2013	- 0,26422
Rapessed 2013	-2,396582	livestock2	- 0,00012**
Crops wich favor 2013	-14,03351**	Meadows area2	0,00003

Results



Rural areas



Interface urban/forest
(small cities in countryside)



Mean temperature



Length of roads

Strong relationships



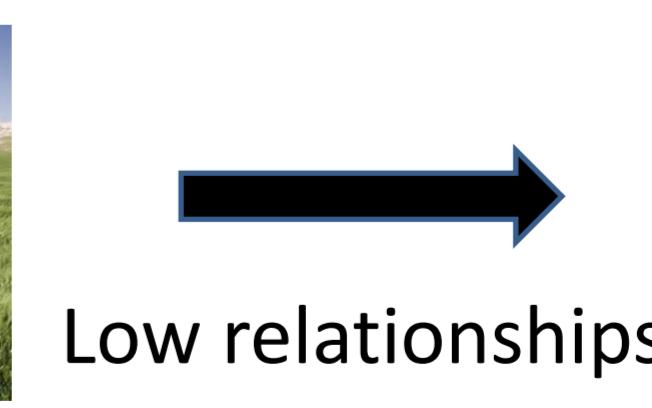
Livestock
– but in a sufficient stock



Interface vineyards /forest



Meadows



Low relationships

Conclusion: - Wildfire events are mainly located in rural areas with roads and small cities (interfaces urban/forest)
- The relation between agriculture and wildfire going through a sufficient density of agricultural land uses. An regional approach of these thresholds may be assessed at regional scale.