

# **AF3 FOREST FIRE MODELS WORKSHOP**

**Rome, ISA 22 – June 2017**

**Planning and innovation for  
Forest firefighting in Tuscany**

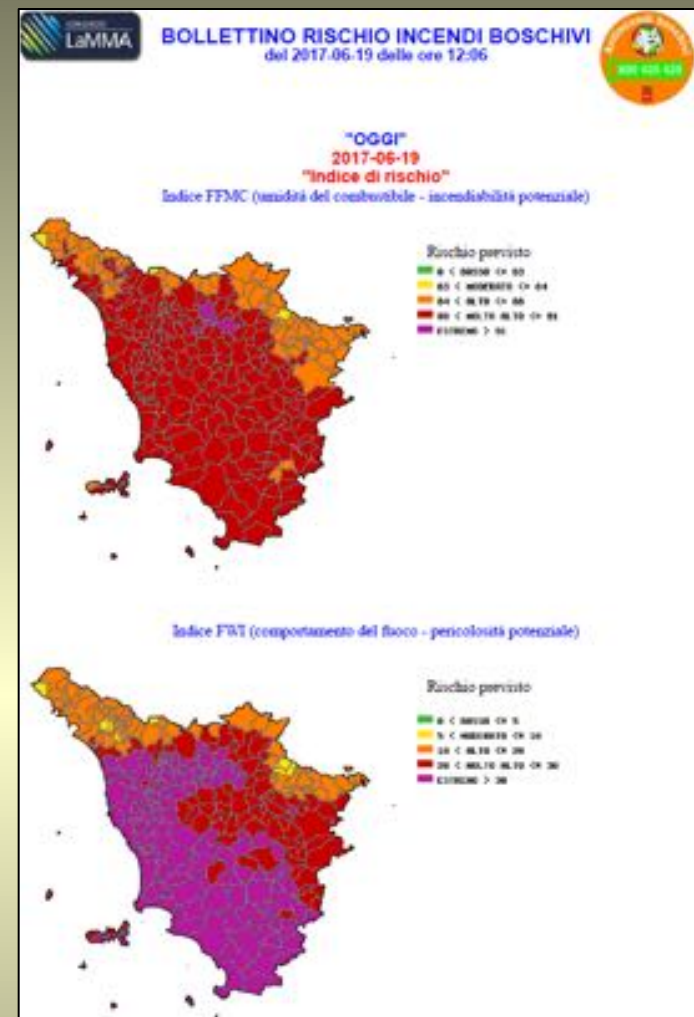
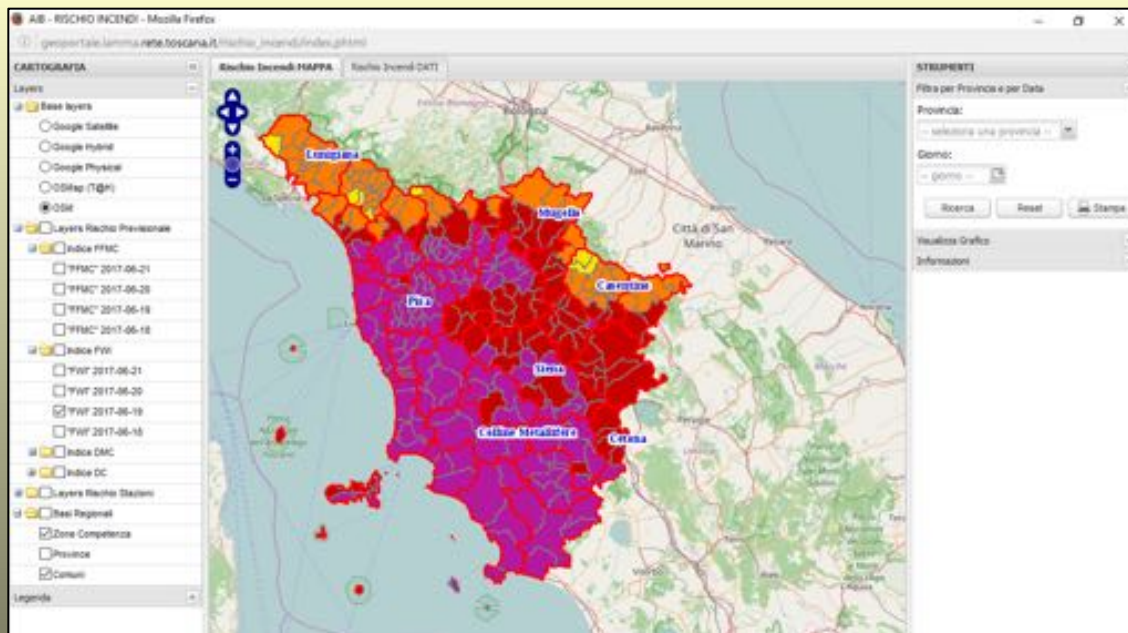
**Paolo BATTELLI**

**REGIONE TOSCANA**



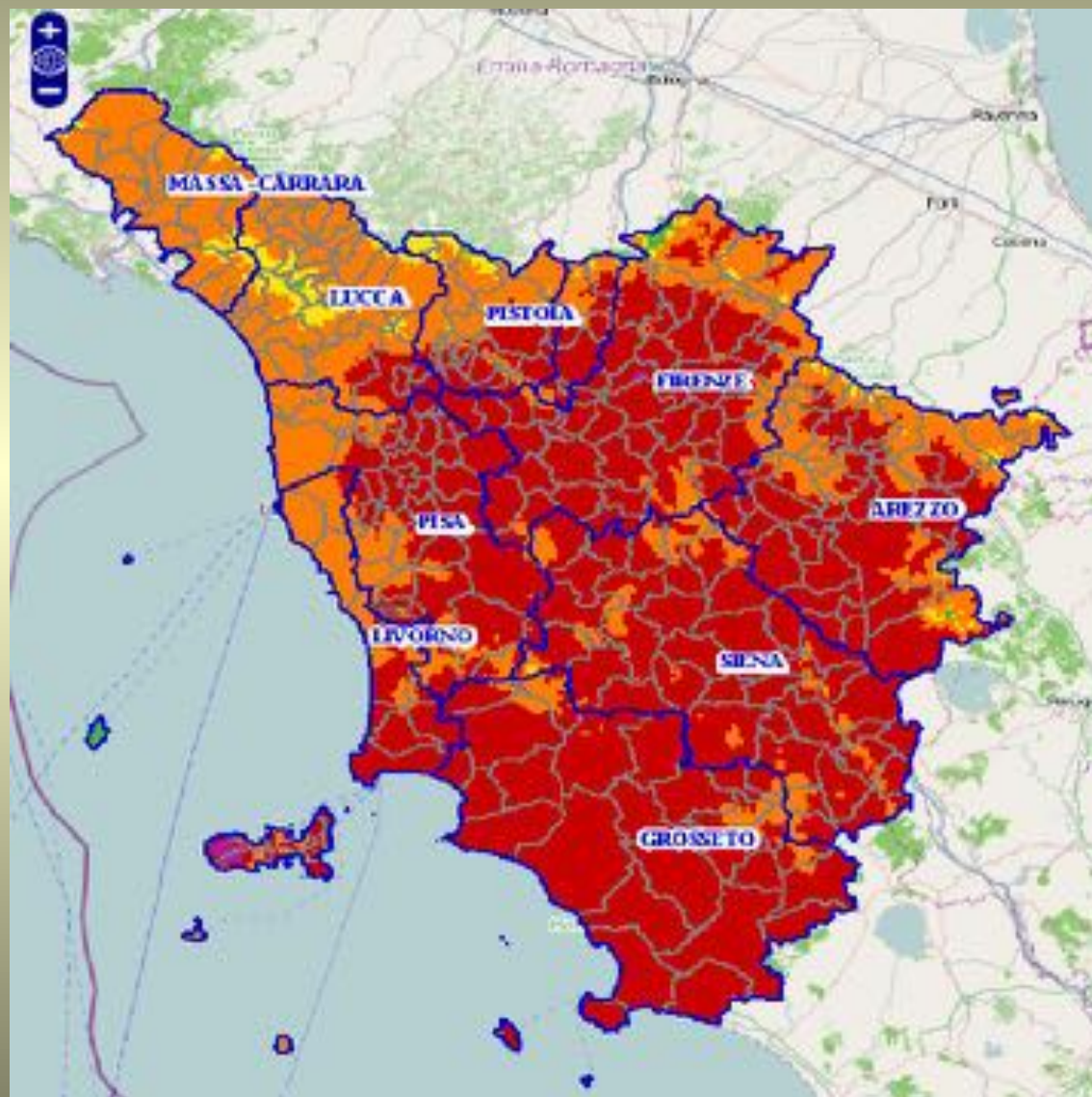
# EXAMPLE OF FOREST FIRE RISK BULLETIN DAY 06.19.2017

ONLINE VERSION



PRINTED VERSION

# SUMMER 2012

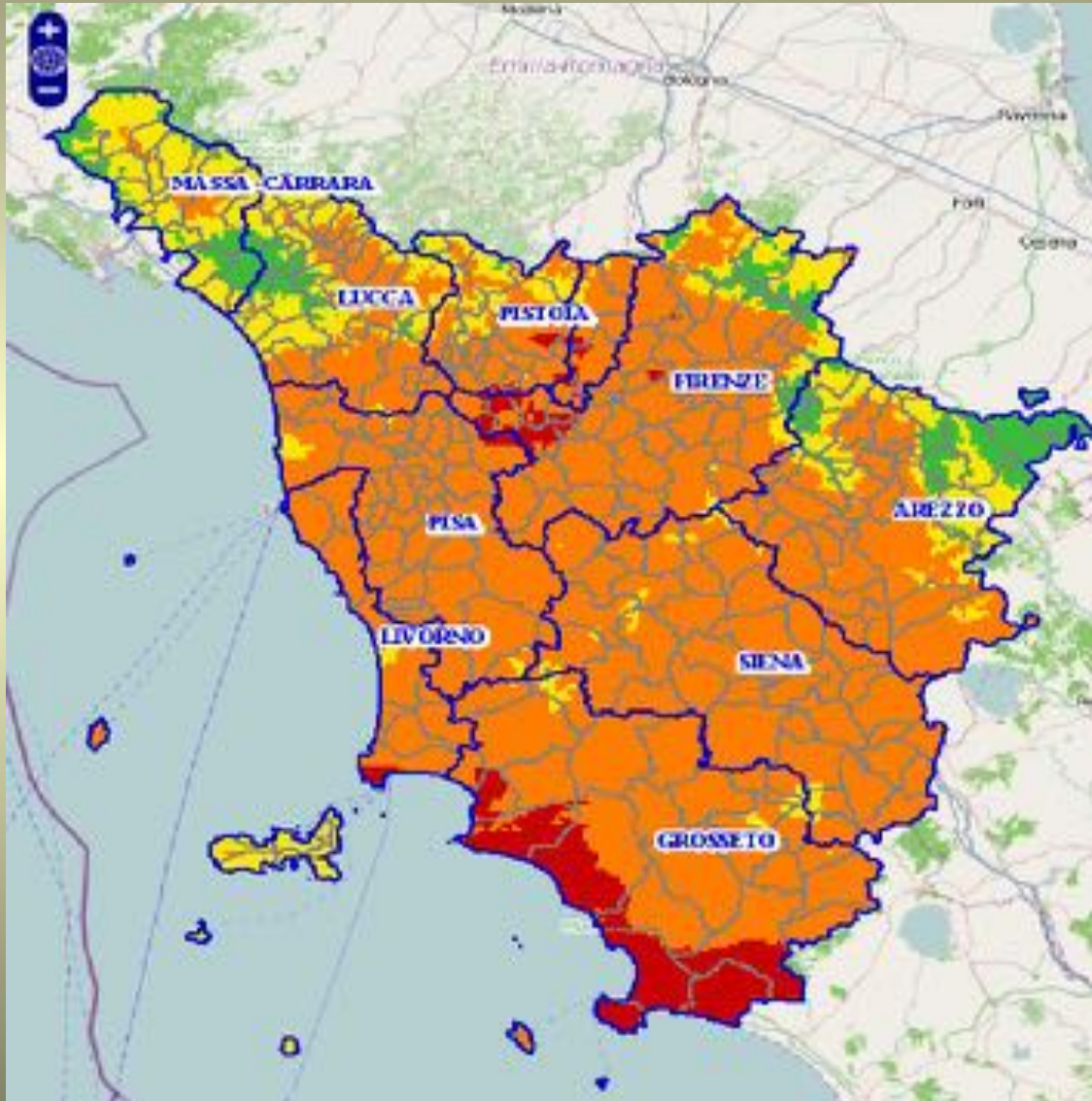


**488 Forest fires**

**2.64 ha/fire**



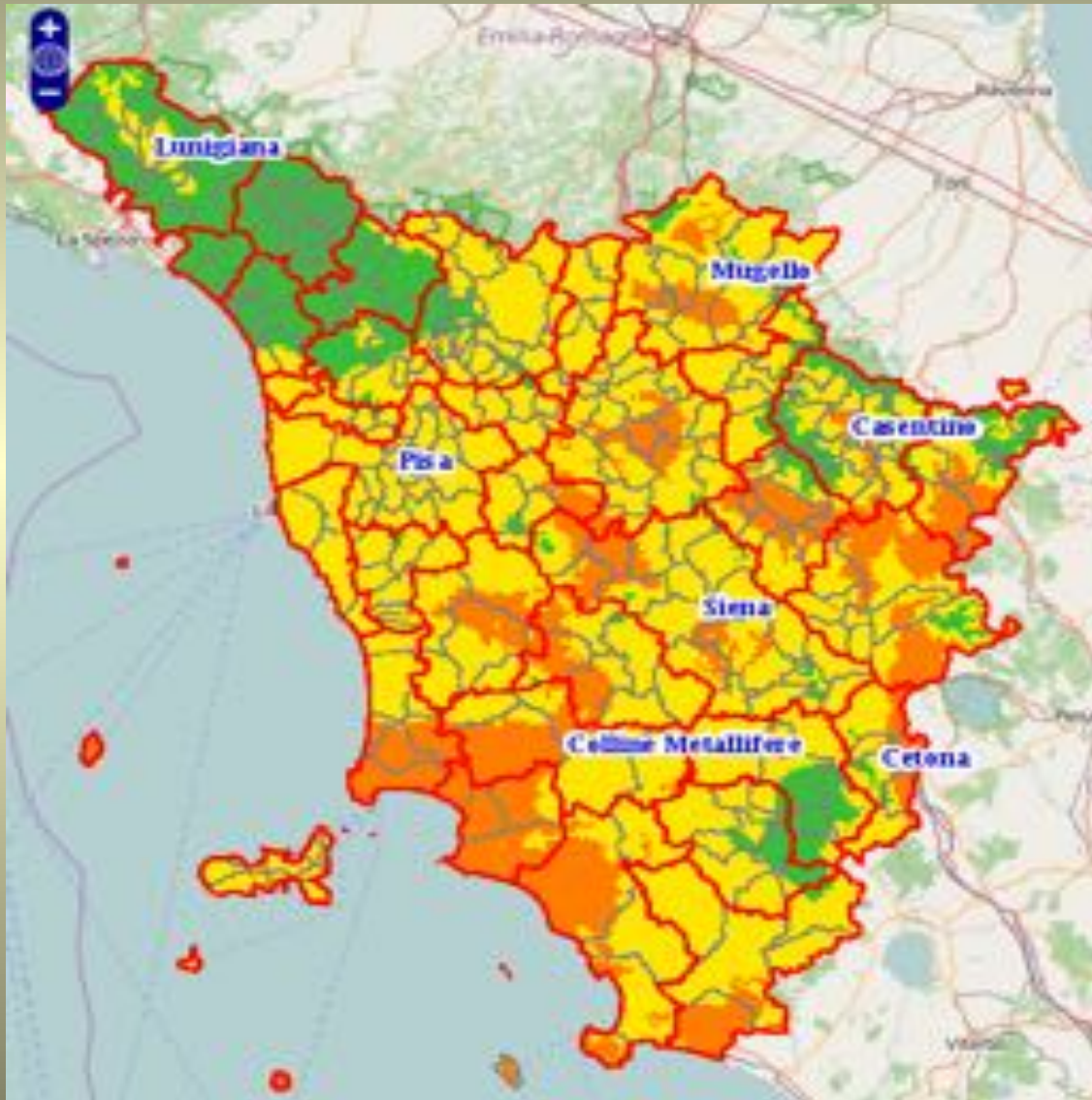
# SUMMER 2013



**190 Forest fires**

**0.40 ha/fire**

# SUMMER 2014

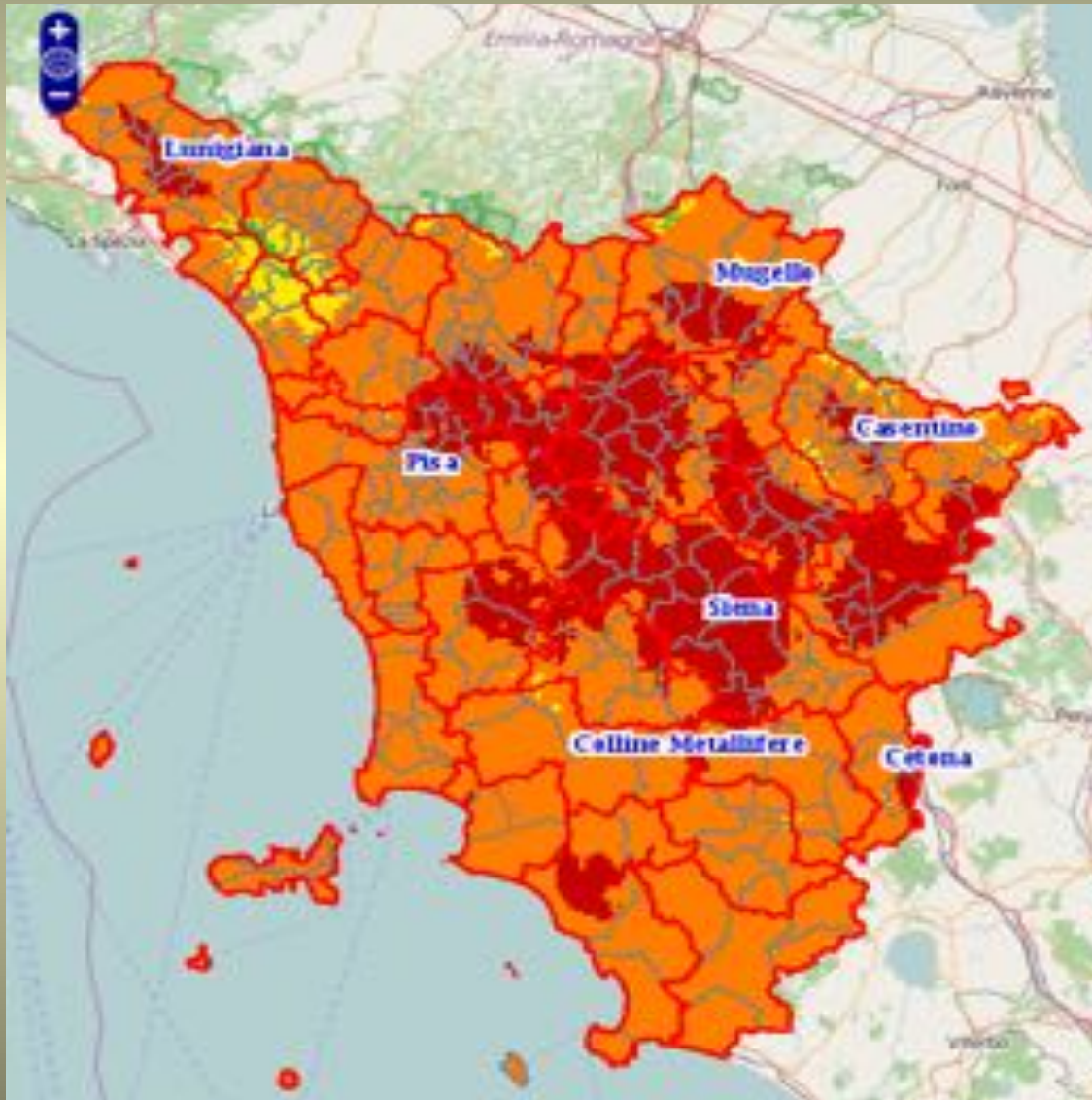


**80 Forest fires**

**0.25 ha/fire**



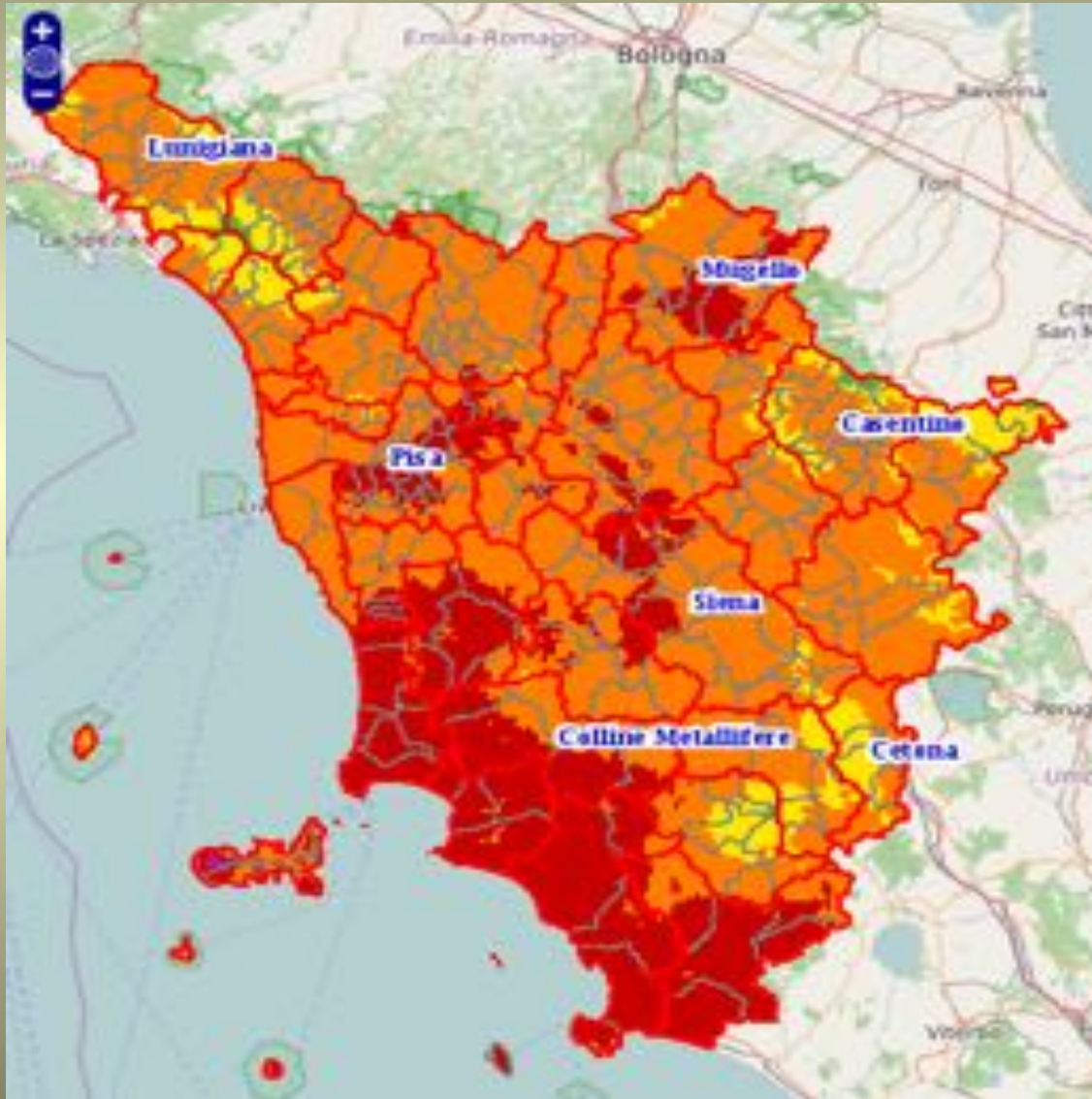
# SUMMER 2015



**261 Forest fires**

**0.60 ha/fire**

# SUMMER 2016



**351 Forest fires**

**1.30 ha/fire**



# 14th INTERNATIONAL CONGRESS ON PRESCRIBED FIRE



**BARCELONA**  
**1 – 3 FEBRAURY 2017**



## MONTSERRAT NATIONAL PARK PRESCRIBED FIRE WORK SITE



## ODENA FOREST FIRE (1200 ha in 6 hours)



# OTHER PERFORMED ACTIVITIES OF TOSCANA REGION

## PRESCRIBED FIRE



### PROGETTO DI FUOCO PRESCRITTO LOCALITA' CERASA



Enti proponenti:  
UC GARFAGNANA  
REGIONE TOSCANA



### Il fuoco per prevenire gli incendi boschivi

Sai che il fuoco può essere uno strumento utile per prevenire gli incendi?

In molte parti del mondo da anni il fuoco è utilizzato da personale esperto per limitare la quantità di materiale vegetale infiammabile nel sottobosco e per rendere le nostre foreste più resistenti agli incendi. Il tutto senza danneggiare il bosco e chi ci abita.

Questa tecnica si chiama **"fuoco prescritto"** e viene applicata seguendo scrupolosamente un progetto elaborato da personale abilitato. Gli operatori sono tutti esperti nell'uso delle tecniche di conduzione del fuoco.

Si procede solo in presenza di precise condizioni meteorologiche, in modo da non danneggiare il suolo, la fauna e la vegetazione che deve essere protetta.

Il fuoco prescritto è una pratica consolidata i cui effetti vengono studiati fin dagli anni Sessanta e in alcune realtà forestali europee è una prassi usuale.



In Italia sono già state realizzate diverse esperienze e in Toscana la legge forestale e il relativo regolamento fissano le norme dell'intero settore forestale, compreso l'uso del fuoco prescritto.

Anche il piano operativo regionale antincendi boschivi, quale strumento di pianificazione, riporta le modalità della progettazione, le finalità e le procedure operative per dare esecuzione al fuoco prescritto.

Obiettivo generale: compatibilità del sistema regionale e sviluppo della competenza dei soggetti coinvolti. Sottosviluppo: formazione del personale e creazione di strutture per l'attuazione.

PROJECT

TRAINING



## **PRESCRIBED FIRE WORK SITE**

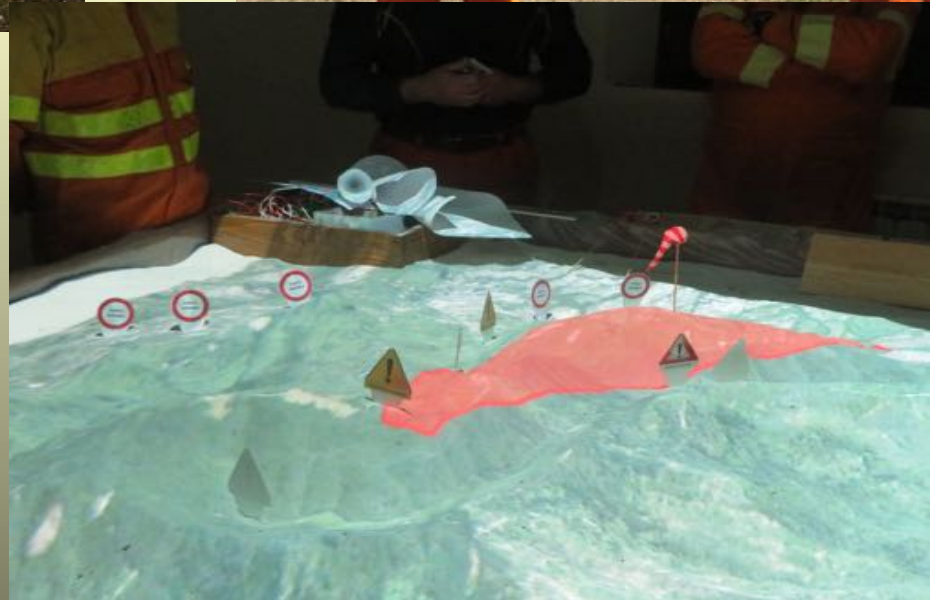




# FEBRUARY 2017 – 1st COURSE FOR FIRE BEHAVIOUR ANALYST



**Banco de arena**





# 1027 ANALISTI AIB

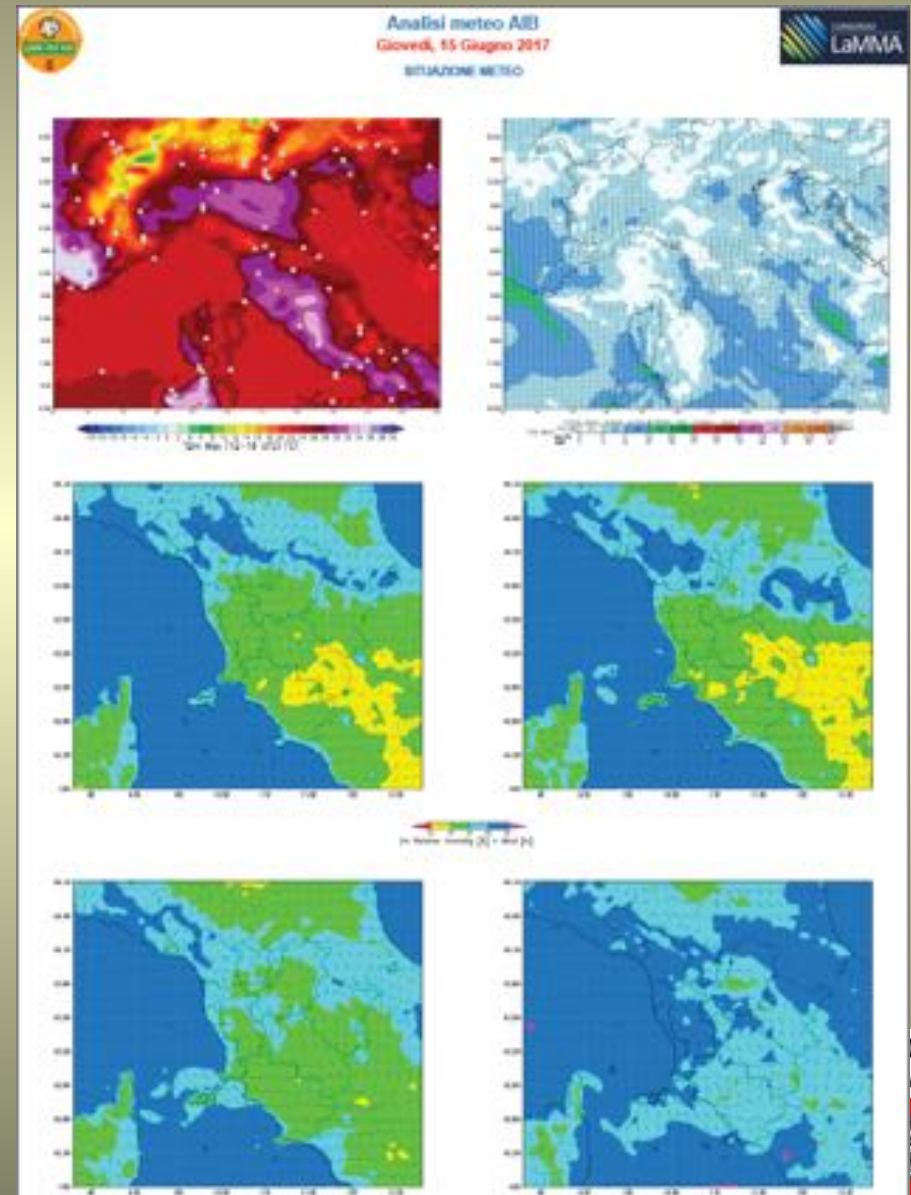
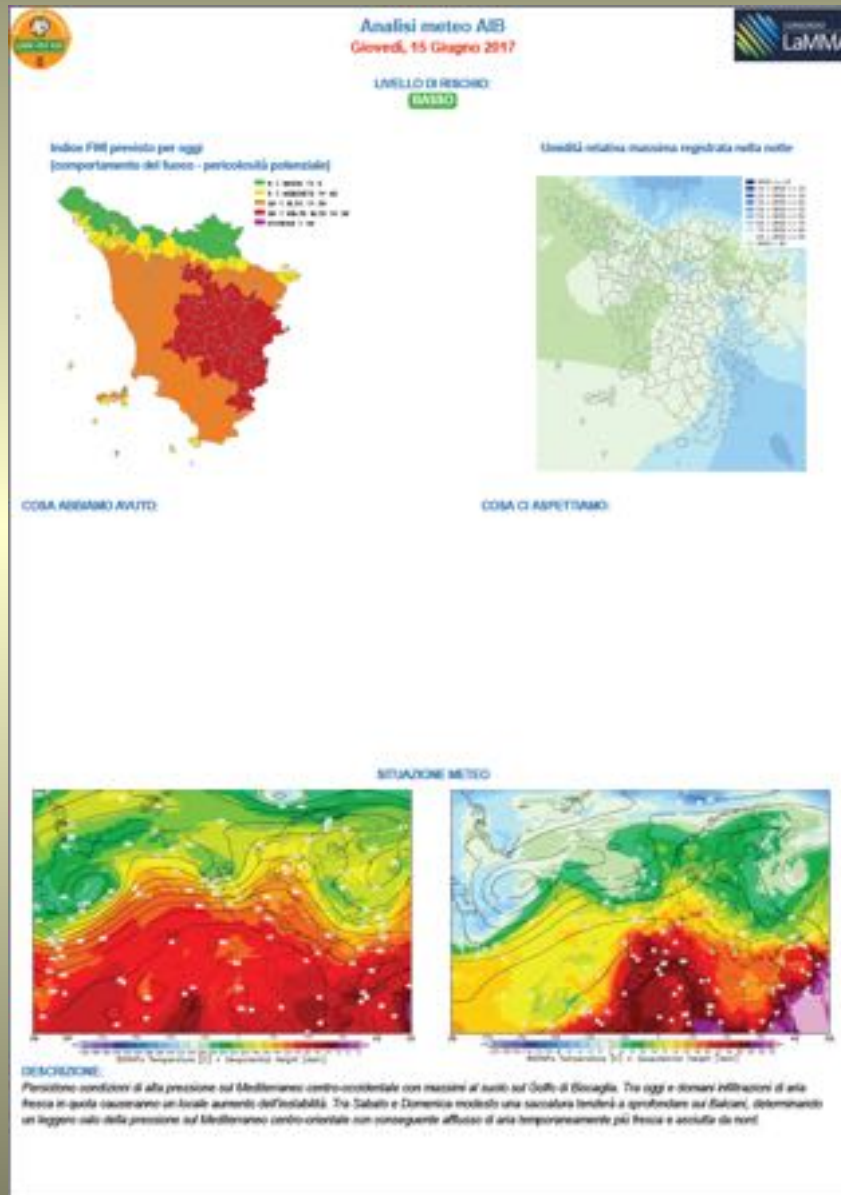


REGIONE  
TOSCANA





# NEW MODEL OF WEATHER ANALISYS BULLETIN





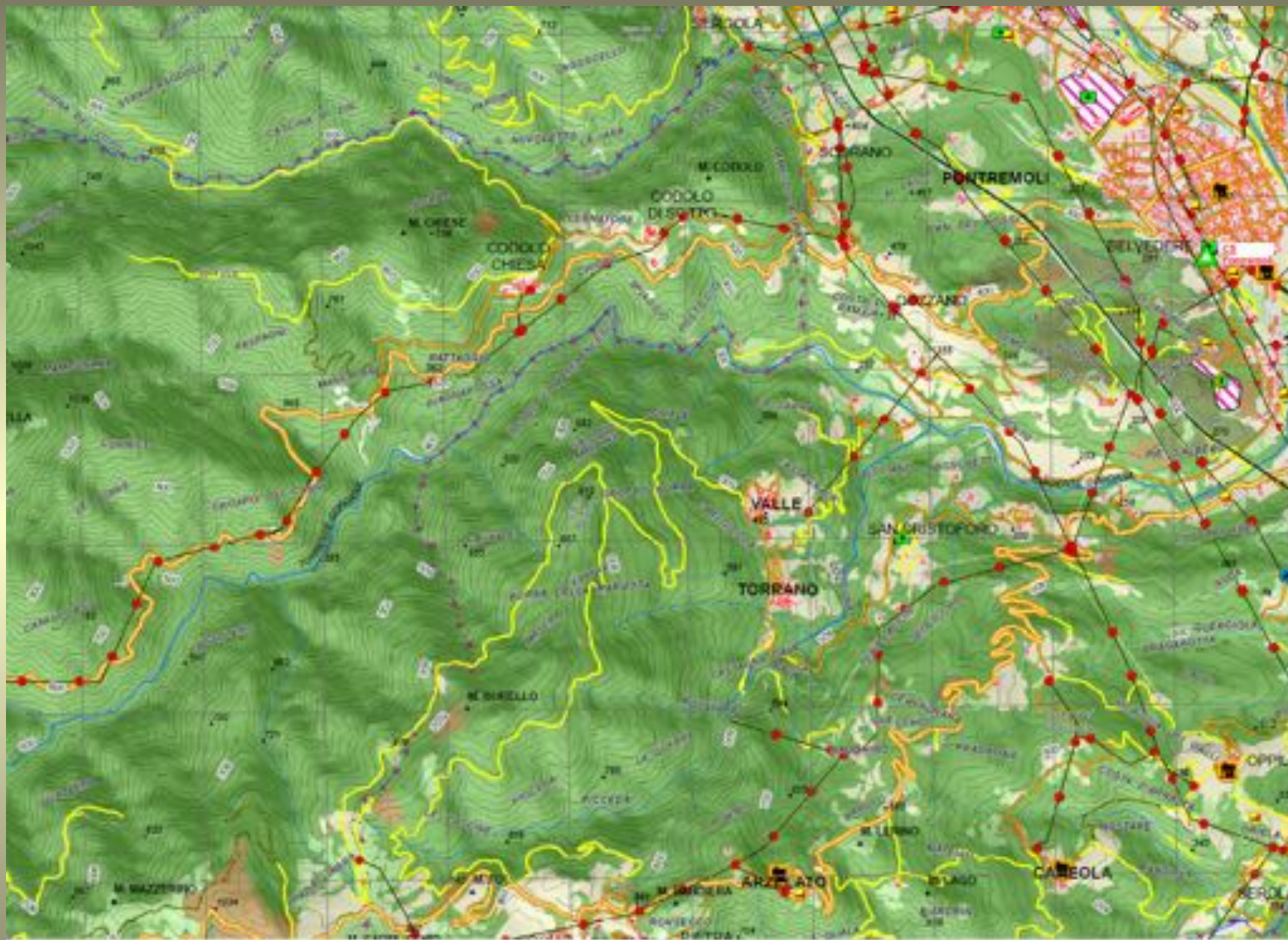
# FOREST FIRE OPERATIONAL MAPS



**PRINTED FORM**







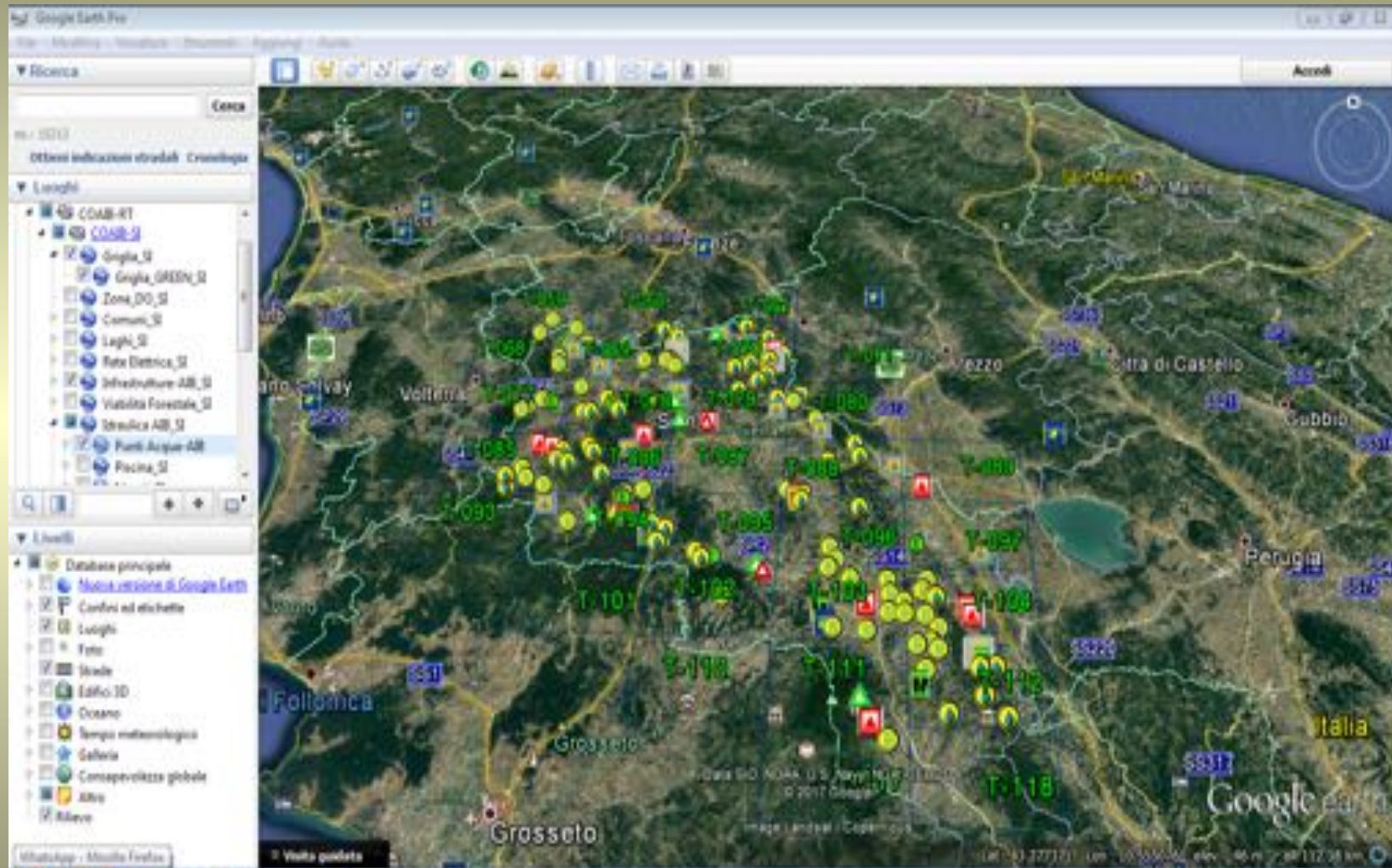
**C.O.A.I.B. T-003 Pontremoli – Massa Carrara**

REGIONE  
TOSCANA





# FOREST FIRE OPERATIONAL MAPS ONLINE VERSION



**C.O.A.I.B. Google Earth Pro – Siena**

# NEW DISTRICT PLANNING – MONTE PISANO (PI)



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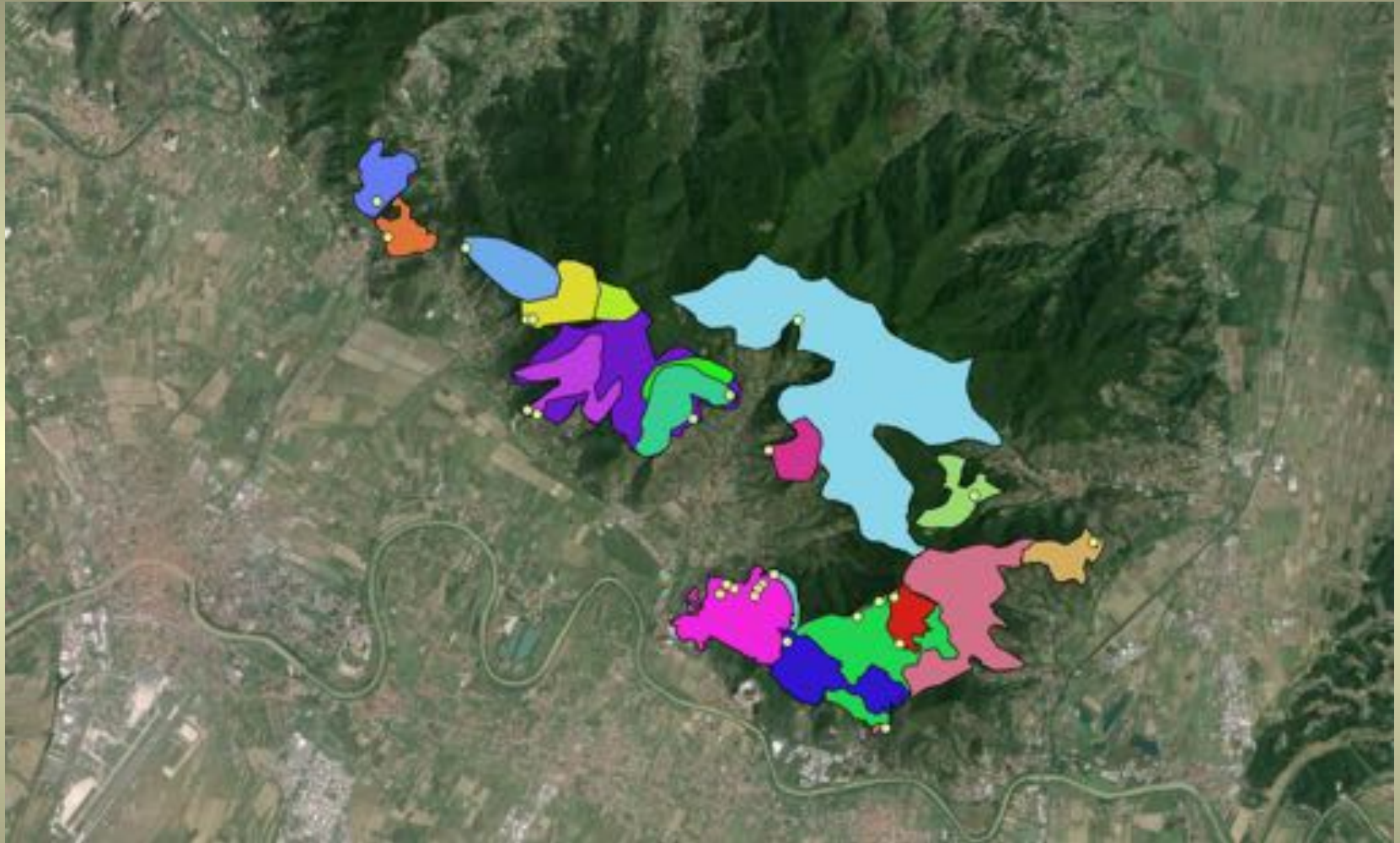
## HISTORICAL REGISTER FROM CORPO FORESTALE DELLO STATO

INCENDI MONTE PISANO PERIODO 1970-2015										
Superficie totale >5 ha										
ANNO	BLITI	Ha li.	CALCI	Ha	SAN GIULIANO TERME	Ha	VICOPIRANO	Ha	TOT. INC. B.	TOT. SUPERF. (Ha)
1970	0		6	293,13	0		0		6	293,13
1971	0		0	1047,2	0		0		0	1047,2
1972	0		0		0		0		0	0
1973	0		0		0		0		0	0
1974	0		0		0		0		0	0
1975	0		0		2	242,73	0		2	242,73
1976	0		1	7,18	0		0		1	7,18
1977	0		0		0		0		0	0
1978	0		1	20,93	0		1	349,74	2	370,67
1979	0		1	7,8	3	211,28	0		4	219,08
1980	0		0		0		1	24,15	1	24,15
1981	0		1	48,8	1	31,86	0		2	80,66
1982	0		0		0		0		0	0
1983	1	9,29	0		3	511,83	0		4	521,12
1984	0		0		2	12,85	0		2	12,85
1985	0		0		2	72,8	1	8,85	3	81,65
1986	1	38,84	0		0		1	6,04	2	44,88
1987	0		1	8,63	1	8,34	2	619,57	4	627,54
1988	0		1	9,84	1	9,8	0		2	19,64
1989	0		4	68,97	2	27,12	0		6	96,09
1990	0		0		1	5,92	1	66,25	2	72,17
1991	1	12,75	0		1	79,17	0		2	91,92
1992	0		0		0		0		0	0
1993	1	7,15	0		0		1	189,2	2	196,35
1994	1	36,44	0		2	20,28	0		3	56,72
1995	0		0		1	6,5	0		1	6,5
1996	0		0		0		0		0	0
1997	0		1	521,16	0		0		1	521,16
1998	1	72,34	0		0		0		1	72,34
1999	0		0		1	6,26	0		1	6,26
2000	0		0		0		1	30,78	1	30,78
2001	1	10,51	1	8,63	1	15,11	0		3	34,25
2002	0		0		0		0		0	0
2003	0		0		1	5	0		1	5
2004	0		0		0		1	13	1	13
2005	1	9,04	0		0		0		1	9,04
2006	1	5,3	0		0		0		1	5,3
2007	0		0		0		1	9,36	1	9,36
2008	1	14,18	0		0		0		1	14,18
2009	0		1	106,04	1	13,75	1	54,7	3	204,49
2010	0		0		0		0		0	0
2011	0		1	41,36	0		0		1	41,36
2012	0		0		1	9,5	0		1	9,5
2013	0		0		1	11,44	0		1	11,44
2014	0		0		0		0		0	0
2015	0		1	10,82	0		0		1	10,82
<b>totale</b>	<b>10</b>	<b>216,4</b>	<b>26</b>	<b>1891,1</b>	<b>28</b>	<b>1305,4</b>	<b>12</b>	<b>1353,3</b>	<b>76</b>	<b>4.761,28</b>
media boscata evento	21,6		72,7		46,4		112,8			62,6
totale 4 comuni pisani				N. 76 incendi totali - Superficie totale: 4.761,28 Media a evento: 62,6 ettari						

## LIST OF FIRES IN THE PERIOD 1970 - 2015

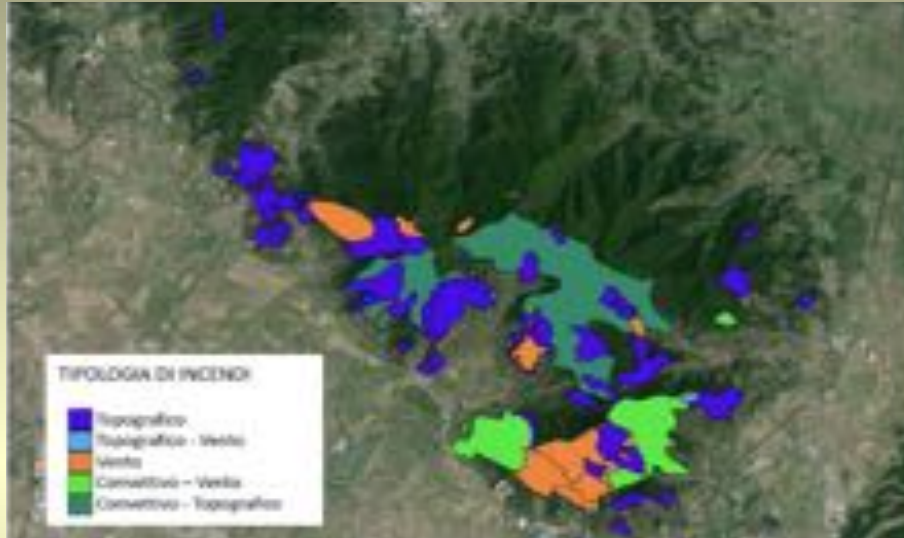


# NEW DISTRICT PLANNING – MONTE PISANO (PI)

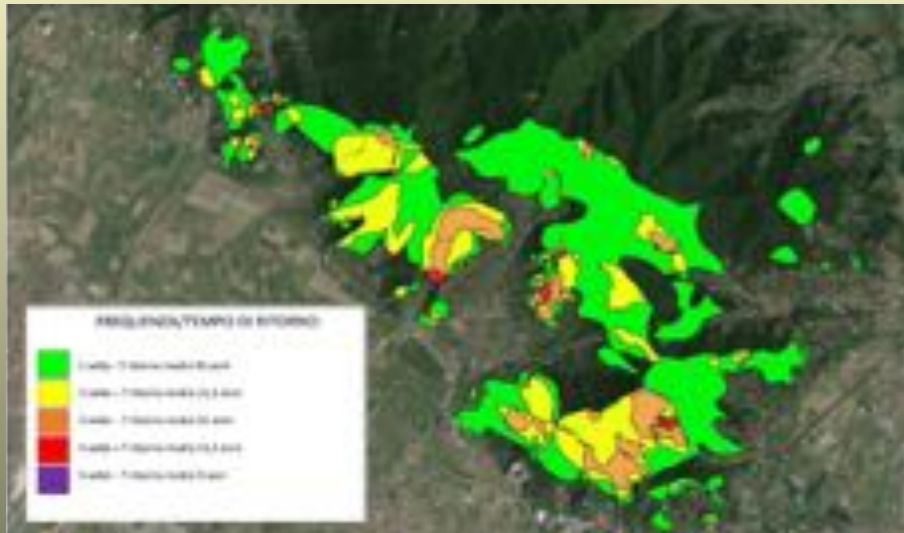
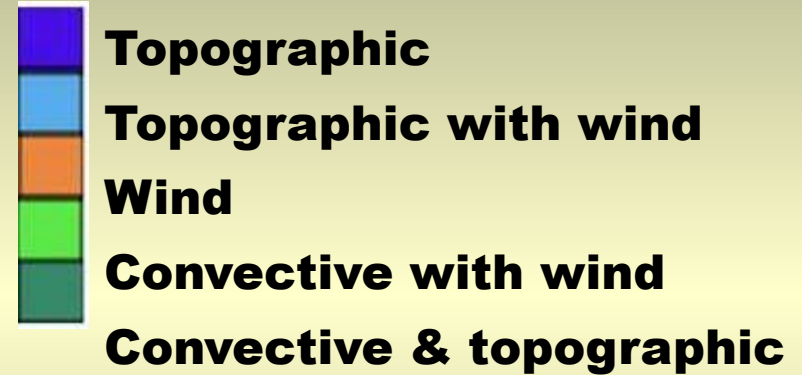


**FIRES OVER 50 ha WITH THE ORIGIN POINT**

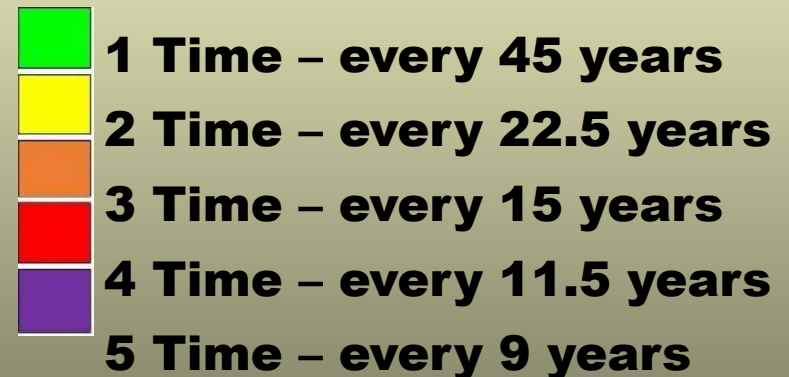
# NEW DISTRICT PLANNING – MONTE PISANO (PI)



## TYPE OF FIRES



## FREQUENCY/RETURN TIME





# NEW DISTRICT PLANNING – MONTE PISANO (PI)



**Fire guided by wind**

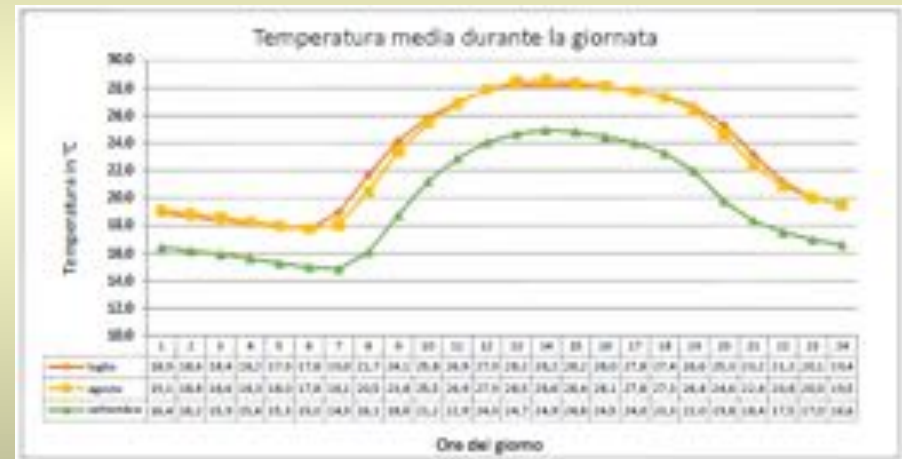
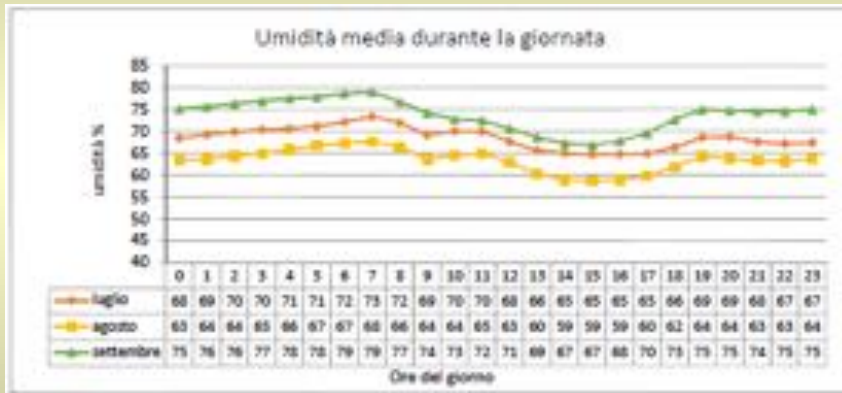
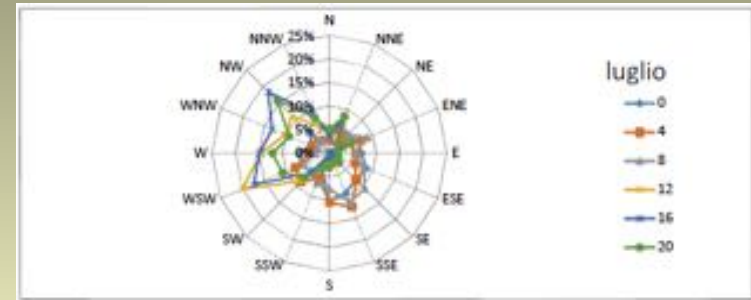
## EXAMPLE OF DIFFERENT FIRE TYPE WITH THE ORIGIN POINT



**Fire guided by topography**



# NEW DISTRICT PLANNING – MONTE PISANO (PI)



## METEOROLOGICAL ANALYSIS





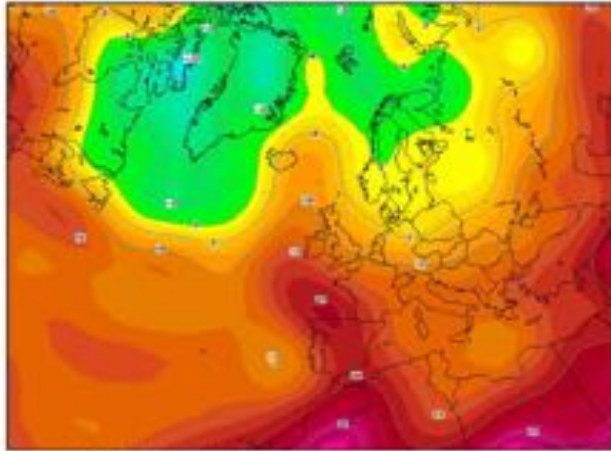
# NEW DISTRICT PLANNING – MONTE PISANO (PI)

## ANALYSIS OF SYNOPTIC SITUATIONS IN OLD GREAT FIRES

06 settembre 1971 (977 ha bosco)

08SEP1971 00Z

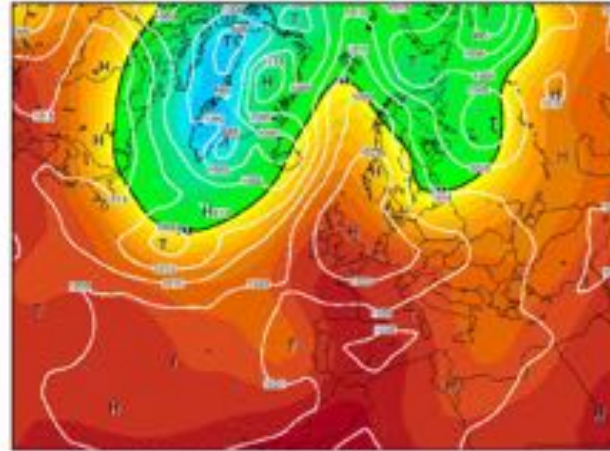
850 hPa Temperatur (Grad C)



Daten: Reanalysis des NCEP  
(L) Wetterzentrale  
[www.wetterzentrale.de](http://www.wetterzentrale.de)

08SEP1971 00Z

500 hPa Geopotential (gpm) und Bodendruck (hPa)

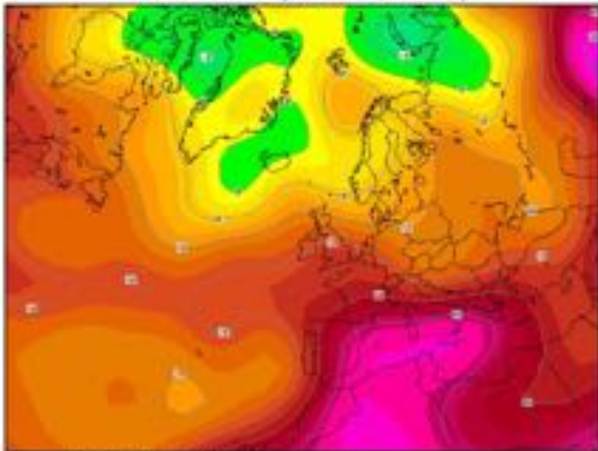


Daten: Reanalysis des NCEP  
(L) Wetterzentrale  
[www.wetterzentrale.de](http://www.wetterzentrale.de)

30 luglio 1983 (495 ha)

30JUL1983 00Z

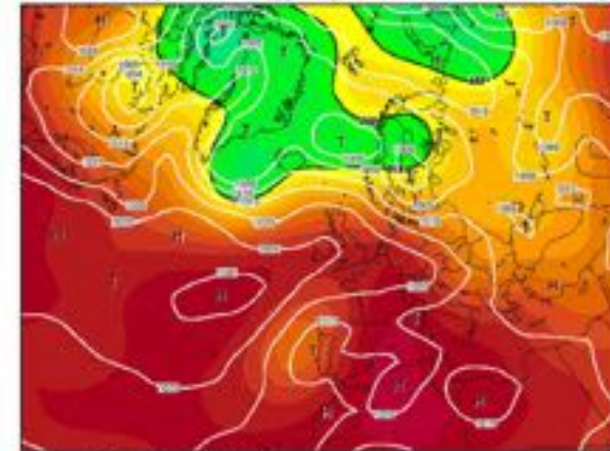
850 hPa Temperatur (Grad C)



Daten: Reanalysis des NCEP  
(L) Wetterzentrale  
[www.wetterzentrale.de](http://www.wetterzentrale.de)

30JUL1983 00Z

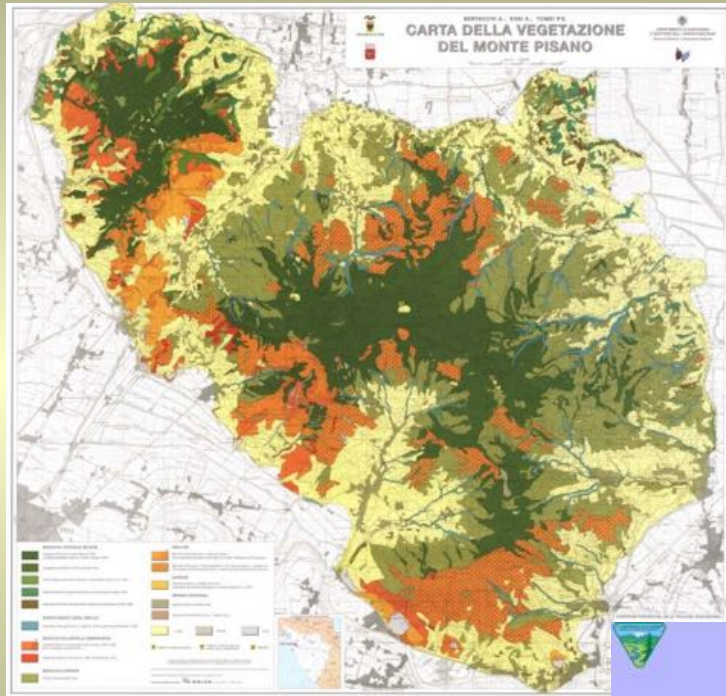
500 hPa Geopotential (gpm) und Bodendruck (hPa)



Daten: Reanalysis des NCEP  
(L) Wetterzentrale  
[www.wetterzentrale.de](http://www.wetterzentrale.de)

# NEW DISTRICT PLANNING – MONTE PISANO (PI)

## VEGETATION MAP



## MODEL VALIDATION



**Scheda tipo di combustibile**

**MACCHIA AD ULEX**

Piano dominante arboreo

Apertura	100%	80%	60%	40%	20%	0%
100%						
80%						
60%						
40%						
20%						
0%						

Specie: Ulex europaeus prevalente per erica arborea e cisto

**Arbustivo**

Apertura	100%	80%	60%	40%	20%	0%
100%						
80%						
60%						
40%						
20%						
0%						

**Erbaceo**

Apertura	100%	80%	60%	40%	20%	0%
100%						
80%						
60%						
40%						
20%						
0%						

**Lettiera**

Apertura	100%	80%	60%	40%	20%	0%
100%						
80%						
60%						
40%						
20%						
0%						

**Residui**

Apertura	100%	80%	60%	40%	20%	0%
100%						
80%						
60%						
40%						
20%						
0%						



## FUEL TYPE CARDS

**Scheda tipo di combustibile**

**PINETA DI PINO MARITTIMO**

Piano dominante arboreo

Apertura	100%	80%	60%	40%	20%	0%
100%						
80%						
60%						
40%						
20%						
0%						

Specie: Pino marittimo

**Arbustivo**

Apertura	100%	80%	60%	40%	20%	0%
100%						
80%						
60%						
40%						
20%						
0%						

Specie: Erica, uliv, mirto

**Erbaceo**

Apertura	100%	80%	60%	40%	20%	0%
100%						
80%						
60%						
40%						
20%						
0%						


**Lettiera**

Apertura	100%	80%	60%	40%	20%	0%
100%						
80%						
60%						
40%						
20%						
0%						


**Residui**

Apertura	100%	80%	60%	40%	20%	0%
100%						
80%						
60%						
40%						
20%						
0%						


**FOTO 1**




**FOTO 2**



**FOTO 3**



**FOTO 4**





# NEW DISTRICT PLANNING – MONTE PISANO (PI)



**EXAMPLE OF  
STRATEGIC MANAGEMENT POINTS  
IN VICOPISANO (PI)**

**CRI – Ridge**  
**IDR – Impluvium**  
**VP – Fire breaks**  
**Remake of two track roads**

# CONCLUSION

With this participation we have striven to highlight the amount of work that Toscana Region have put into prevention, analysis, field study, and the practice of forestry management in forest fires, in the belief that the answer can't be exclusively emergency but must also be **prevention**. We must return to woodland management and practice silviculture and preventive forestry aimed at reducing forest fires.



**Antincendi boschivi**

REGIONE  
TOSCANA



**THANKS FOR YOUR ATTENTION**