



# The European Forest Fire Information System (European Forest Fire Early Warning System)

## EFFIS

<http://effis.jrc.ec.europa.eu>  
[effis@jrc.ec.europa.eu](mailto:effis@jrc.ec.europa.eu)

Jesús San-Miguel-Ayanz  
EC Joint Research Centre  
Institute for Environment and Sustainability  
Forest Resources and Climate  
Ispra (VA), Italy

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Research  
Centre

## Definition and scope of EFFIS

- System established by the Joint Research Centre (JRC) and DG Environment (ENV) as focal point for information on forest fires in Europe (1998)
- Provides EU level assessments during both pre-fire and post-fire phases, thus supporting fire prevention, preparedness, fire fighting and post-fire operations
- Complements national fire information systems through the provision of harmonised data, methods and standards

## Users

- EC Services, European Parliament, national/regional forest fires and civil protection services of EU and non-EU countries
- FAO, United Nations Economic Commission for Europe, FAO *Silva Mediterranea*

## Operation and development

- Development by the JRC
- Operation supported by the EC Directorate Generals ENV, ECHO, JRC

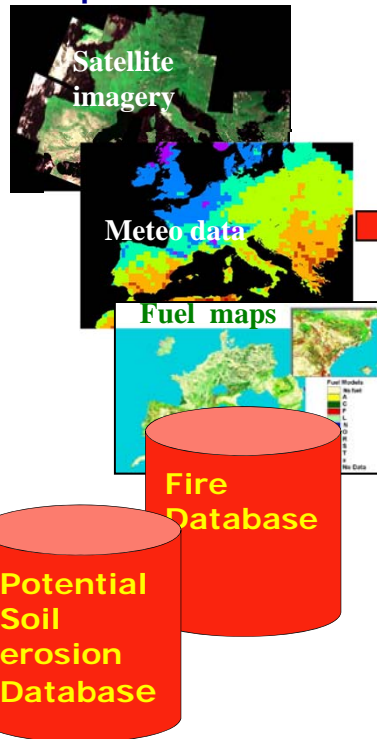


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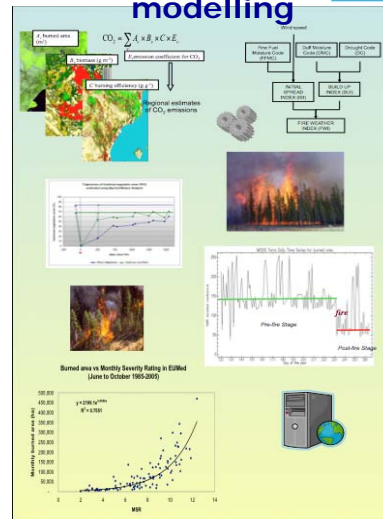
**EFFIS**

## data and information flow

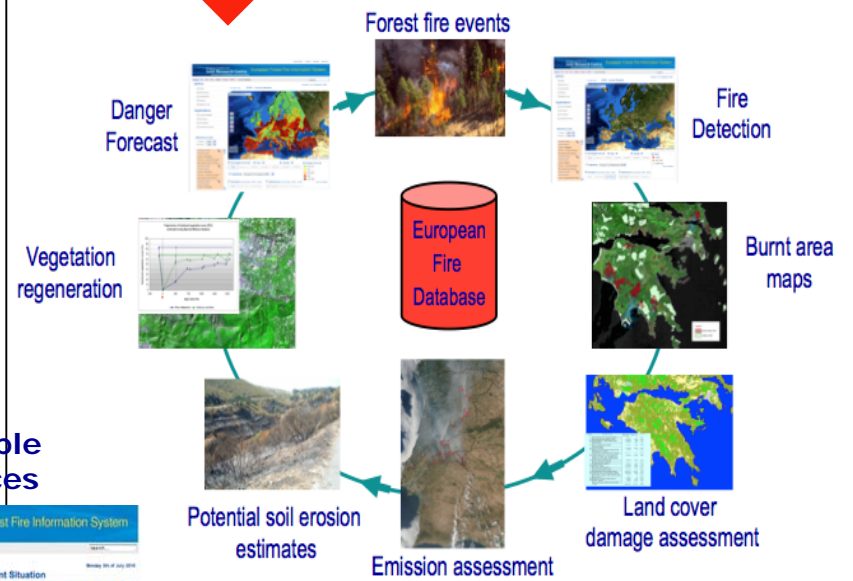
### Input datasets



### EFFIS modelling



Fire monitoring from  
Pre-fire conditions to  
post-fire effects



### EFFIS interoperable Web services



Support to  
international  
cooperation on  
fire fighting –  
increased  
preparedness in  
MS

ECHO  
Flash  
Daily

MS GIS  
Services

General  
Public



# EFFIS supports effort to combat fires in Portugal

## EFFIS monitors fires in Russia and quantifies effects

## EFFIS monitors the fire in Haifa. EC provides means for fire fighting to support Israel

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European Commission

Joint Research Centre

European Commission > JRC > Headlines

At a glance

Activities

Press

News & Events

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Collaboration

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Forest fire danger remains critical in Portugal



During the last weeks, Portugal has seen conditions of high and very high fire danger. These conditions that favour fire ignition and spread lead to a number of severe forest fires in Northern Portugal. Fire danger forecast provided by the European Fire Information System (EFFIS) shows that fire danger conditions will continue to be critical in the next days, with a gradual decrease of fire danger though still at the very high levels in large areas of the Iberian peninsula. A slight improvement is expected for 19 August.

13/08/10



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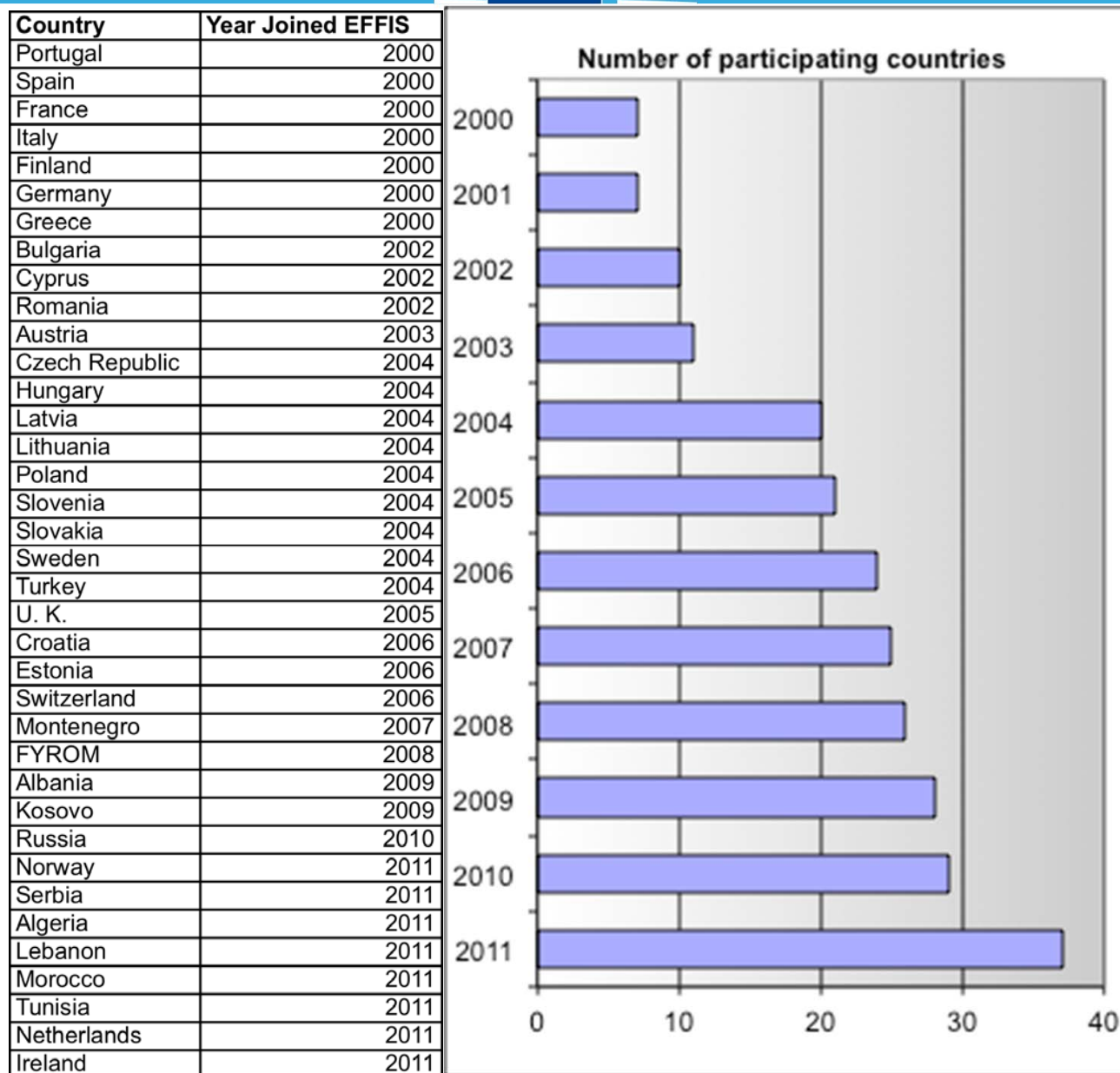
JRC



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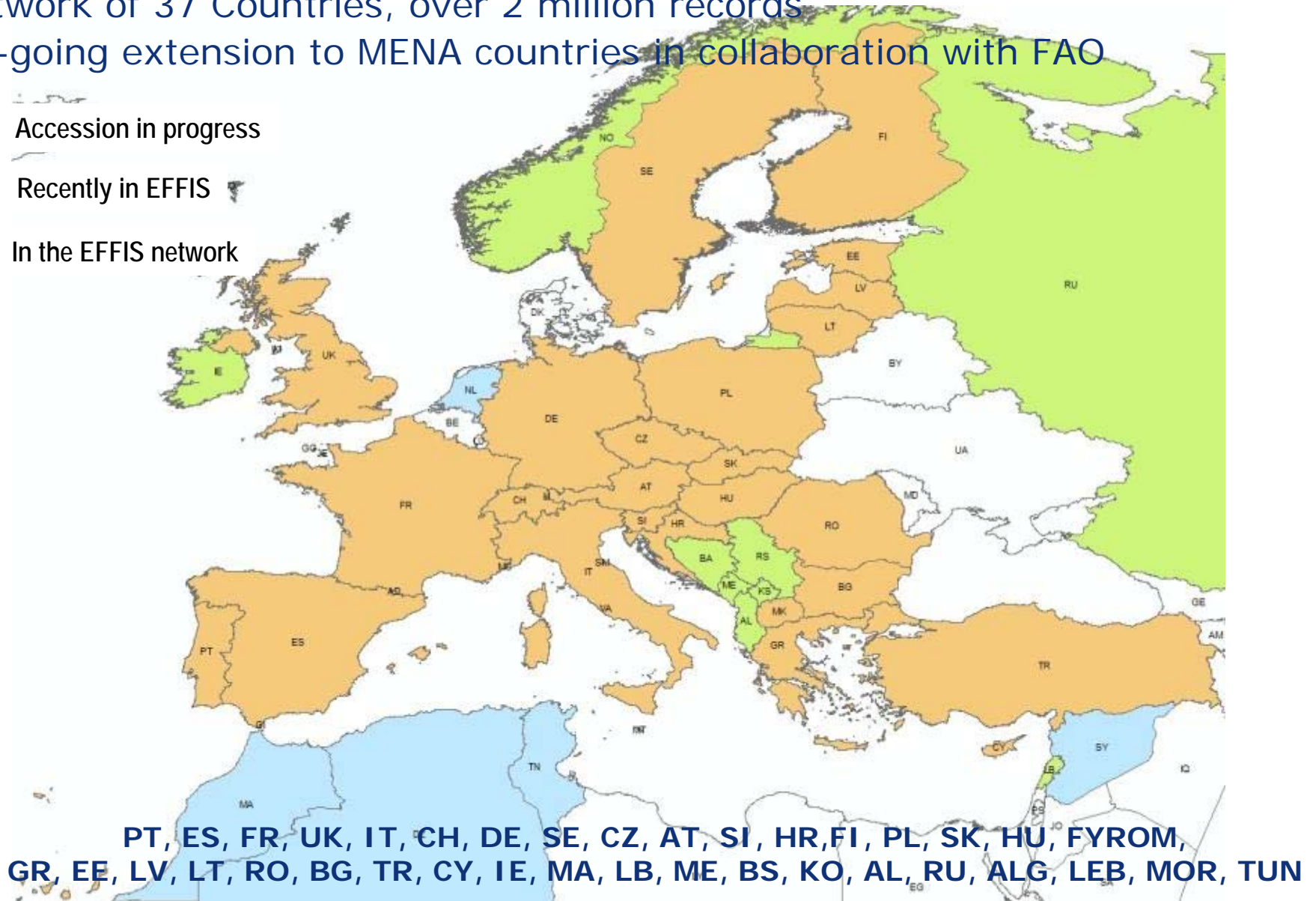
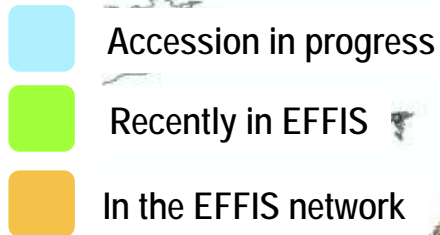


# EFFIS Network

Joint effort of national and EC services

Network of 37 Countries, over 2 million records

On-going extension to MENA countries in collaboration with FAO

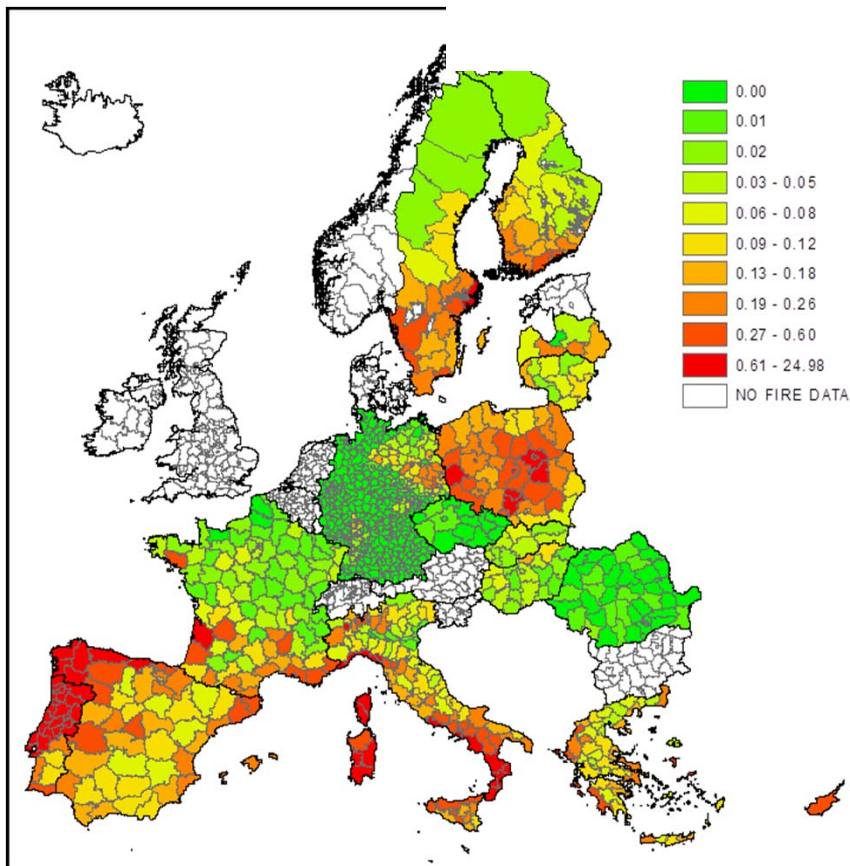


## EFFIS Fire Database

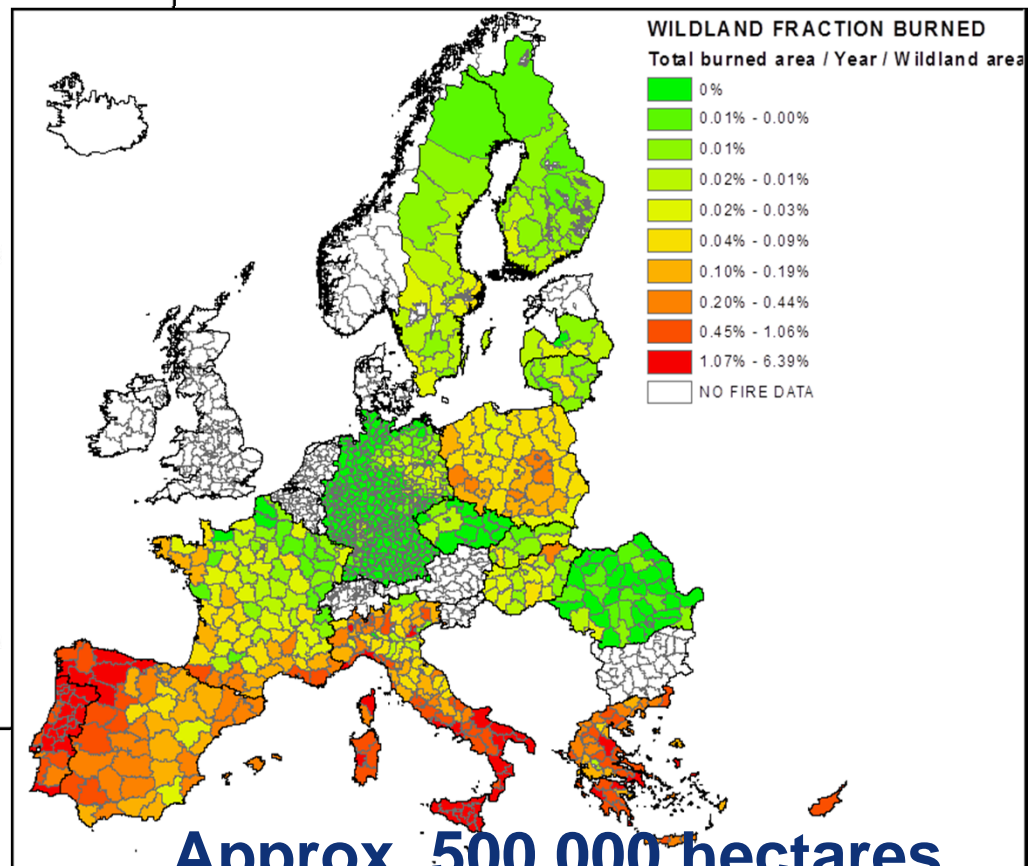
ID	Unique Fire identifier	FIREID
TIME OF FIRE	Date of first alert [YYYYMMDD]	DATEAL
	Time of first alert [HHMM]	TIMEAL
	Date of first intervention [YYYYMMDD]	DATEIN
	Time of first intervention [HHMM]	TIMEIN
	Date of fire extinction [YYYYMMDD]	DATEEX
	Time of fire extinction [HHMM]	TIMEEX
LOCATION OF FIRE	Province Code (national nomenclature)	PROVCODE
	NUTS3 code	NUTS3
	Commune Code (national nomenclature)	CODECOM
	Commune Name (national nomenclature)	NAMECOM
	Latitude [decimal degrees]	NORTH
	Longitude [decimal degrees]	EAST
SIZE OF FIRE	Burned Area FOREST [Ha]	BAFOR
	Burned Area OTHER WOODED LAND [Ha]	BAOW
	Burned Area OTHER NON WOODED NATURAL LAND [Ha]	BAONW
	Burned Area AGRICULTURE AND OTHER ARTIFICIAL LAND [Ha]	BAAGR
CAUSE OF FIRE	Presumed Cause (EU categories code)	CAUSE_EU
	Presumed Cause (Country detailed categories code)	CAUSE_CO



## Fire regimes in Europe Spatio/temporal distribution



**Approx. 65,000  
wildfires per year**



**Approx. 500,000 hectares  
burned per year in EU  
(85% in PT, ES, FR, IT and GR)**





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## EFFIS

### Forest fire events



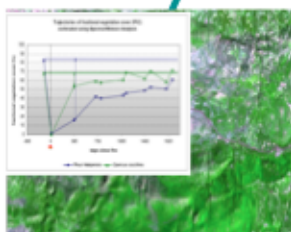
Danger  
Forecast



Fire  
Detection



Vegetation  
regeneration



Burnt area  
maps



Potential soil erosion  
estimates



Land cover  
damage assessment



Emission assessment



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## JOINT RESEARCH CENTRE

EFFIS - European Forest Fire Information System

Europa » EC » JRC » IES » FRC » Forest » EFFIS

### Forest

#### EFFIS

- About EFFIS
- Reports and Publications
- Applications

### EFFIS

#### WELCOME TO EFFIS

The European Forest Fire Information System (EFFIS) supports the services in charge of the protection of forests against fires in the EU countries and provides the European Commission services and the European Parliament with updated and reliable information on wildland fires in Europe.

#### CURRENT FIRE SITUATION



The most up to date information on the current fire season in Europe and in the Mediterranean area. This includes today meteorological fire danger maps and forecast up to 6 days, daily updated satellite images of the last 7 days, maps of the latest hot spots and fire perimeters also updated daily.

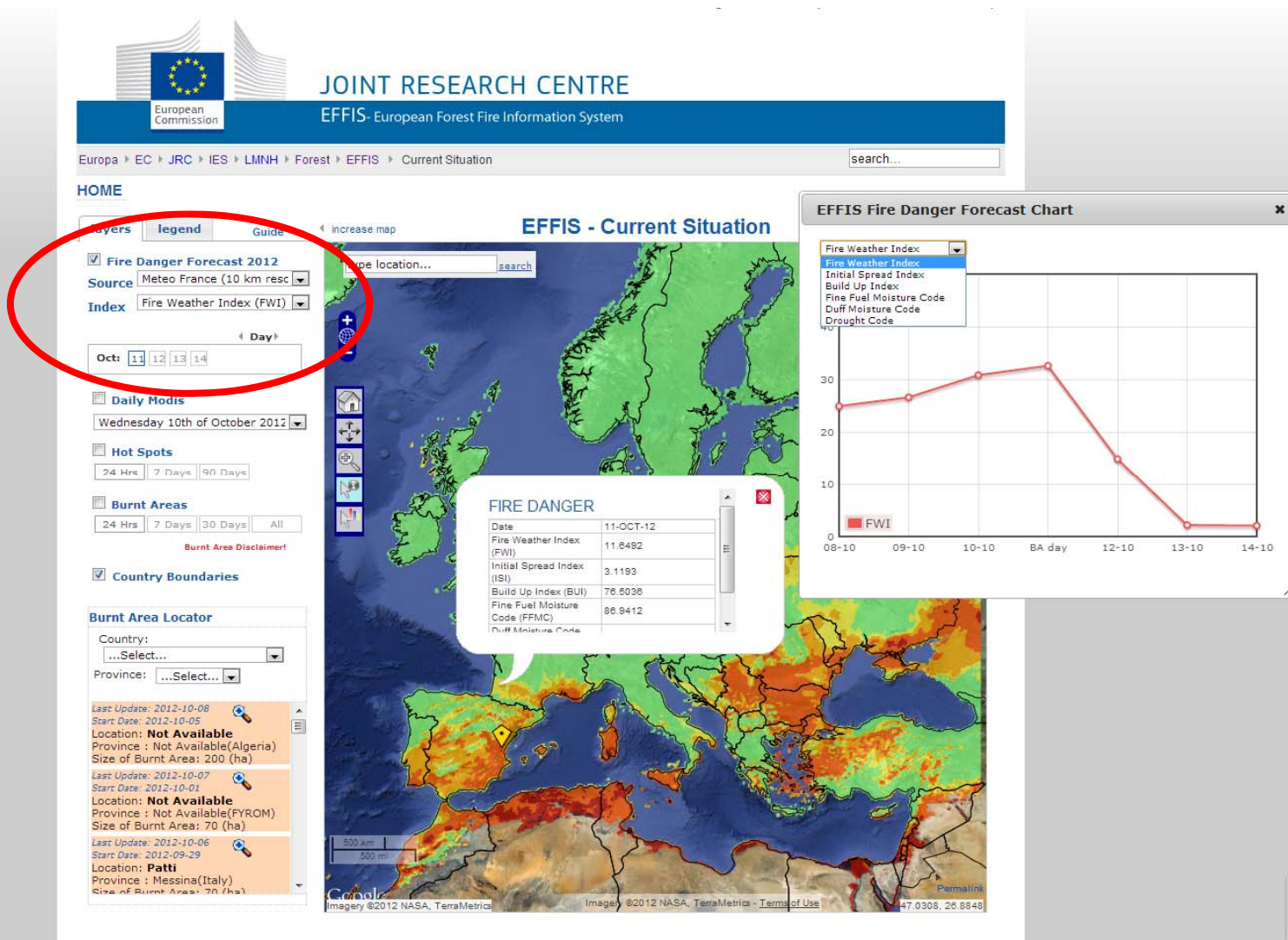
#### FIRE NEWS



A selection of news from the press on wildland fires in Europe updated daily by the EFFIS team. News can be browsed for specific countries selected by the user from the news map.



# EFFIS current situation – Fire Danger Forecast



## Fire danger classes in EFFIS

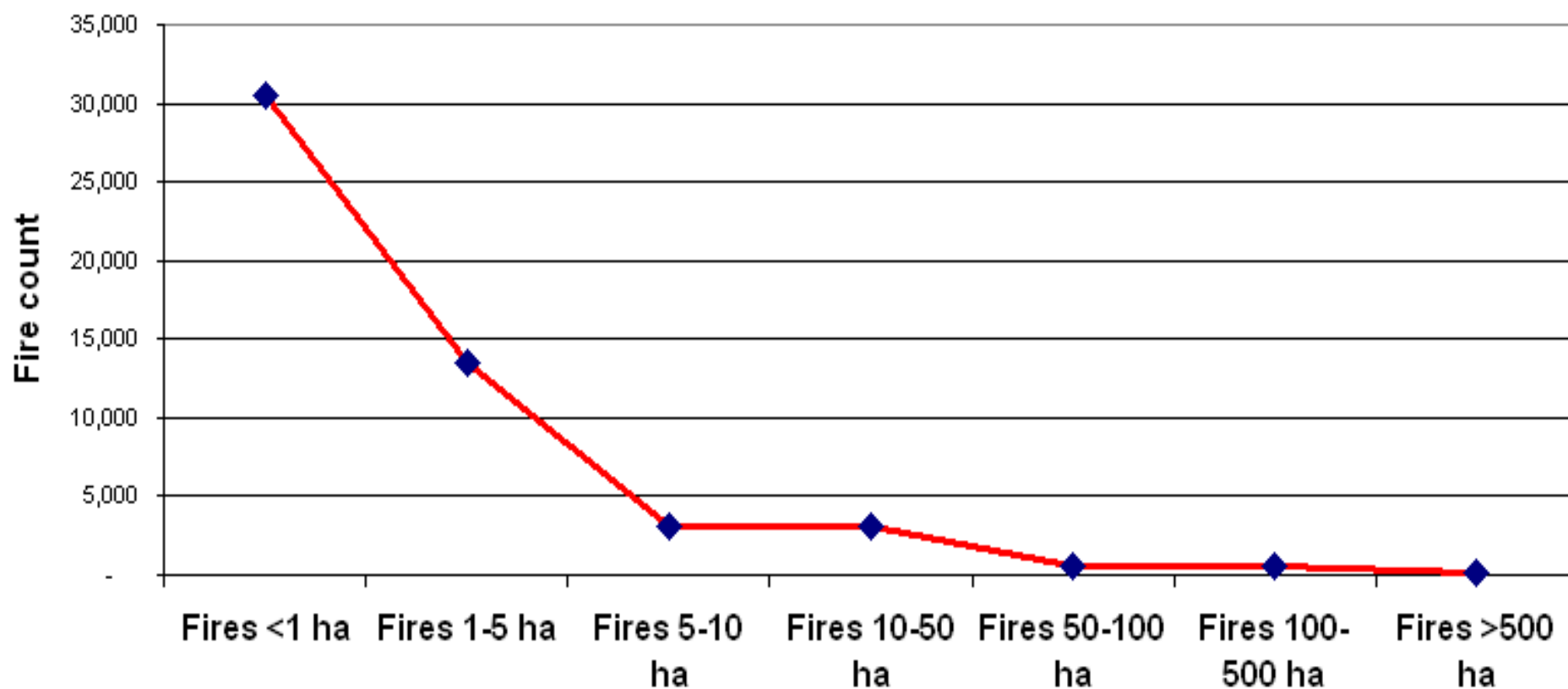
FWI range	Fire danger level (and approximate expected fire behavior)
<5.2	<b>Very low.</b> Fire spread unlikely, no control problems
5.2 – 11.2	<b>Low.</b> Surface fires can be controlled with hand tools
11.2 -21.3	<b>Moderate.</b> Vigorous surface fires
21.3 – 38.0	<b>High.</b> Intermittent crowning in forests
38.0 – 50.0	<b>Very high.</b> Onset of “blow ups”. In EU 75% of large fires (burned area > 500 ha) occurred when FWI > 38
> 50.0	<b>Extreme.</b> Conflagrations. Most catastrophic events (burned area > 5000 ha) are in this class





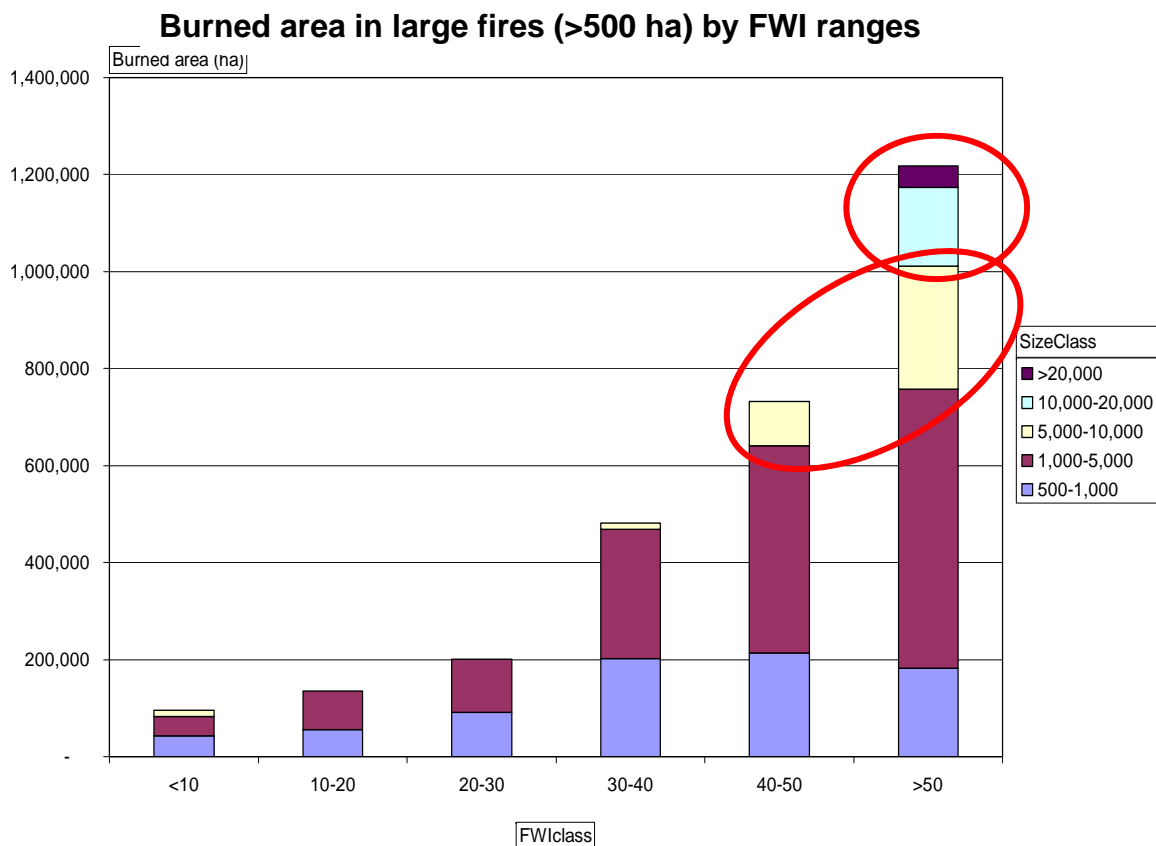
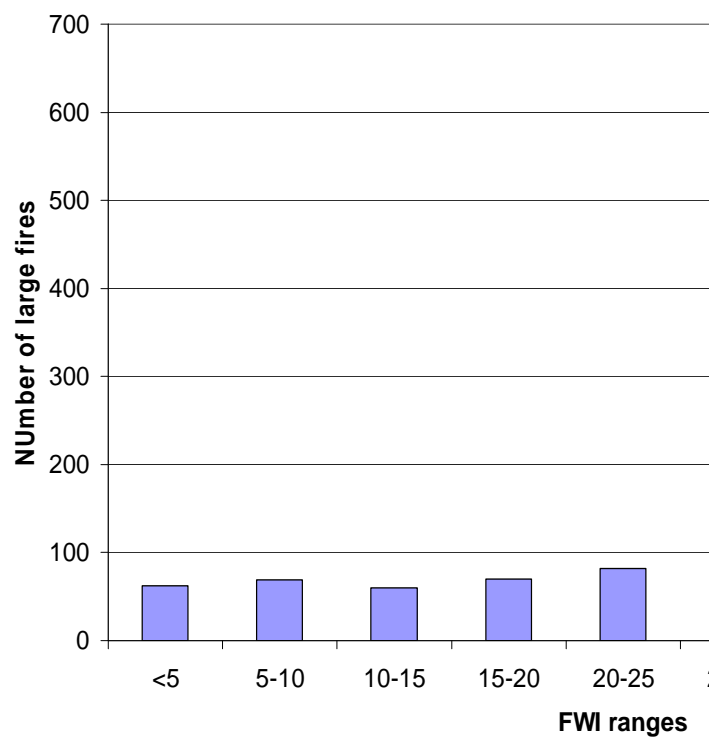
## Fire regimes in Europe Spatio/temporal distribution

Fire size distribution in EUMed (average 1985-2009)



# Large fires vs Fire danger (Fire Weather Index)

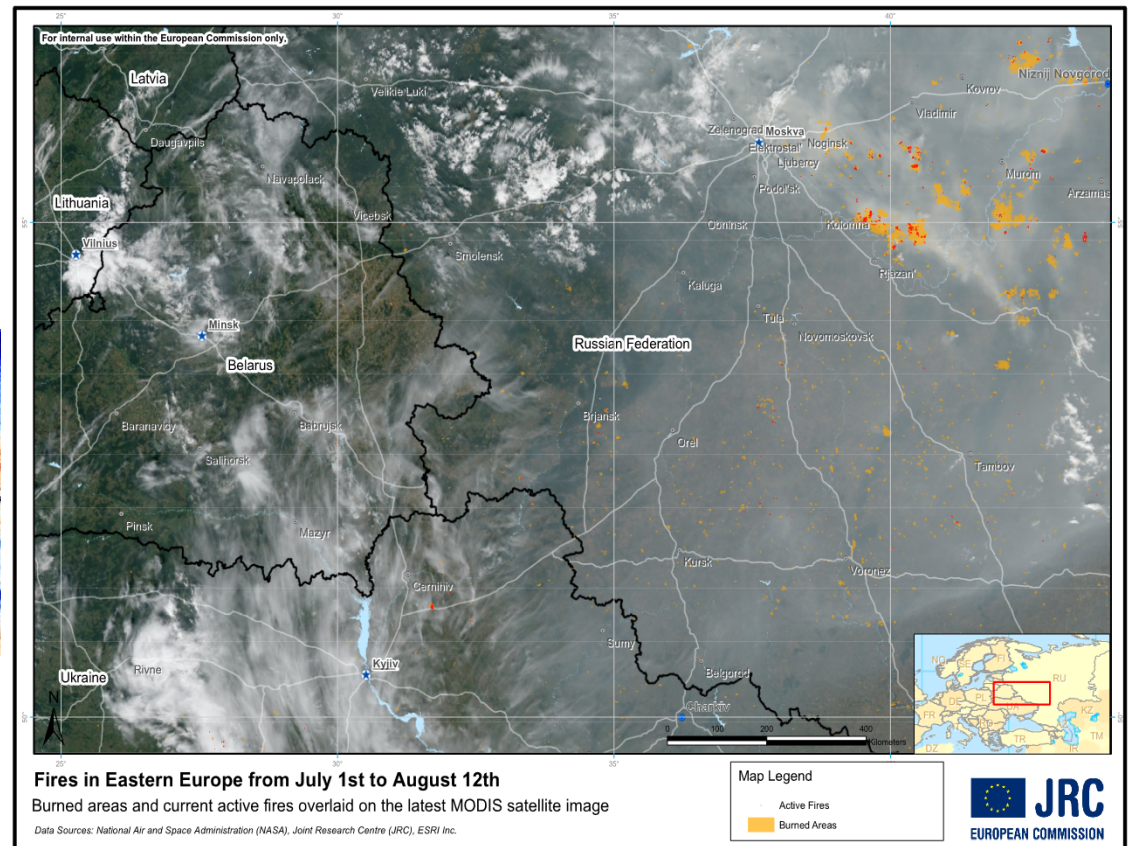
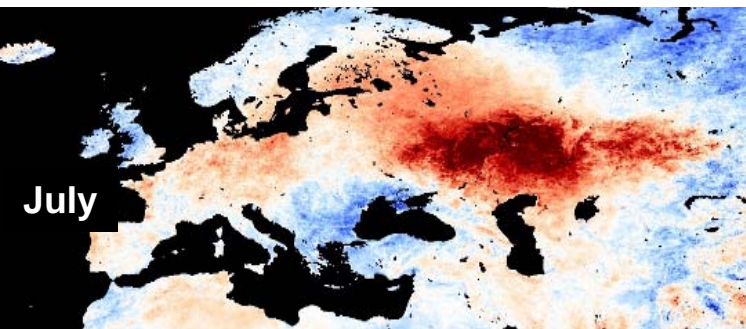
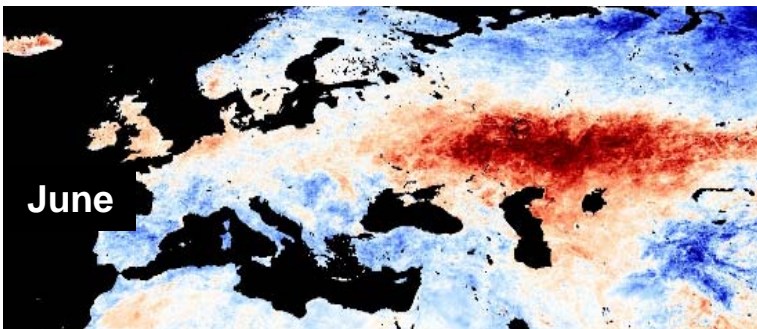
Number of large fires (>500 ha) and FWI values





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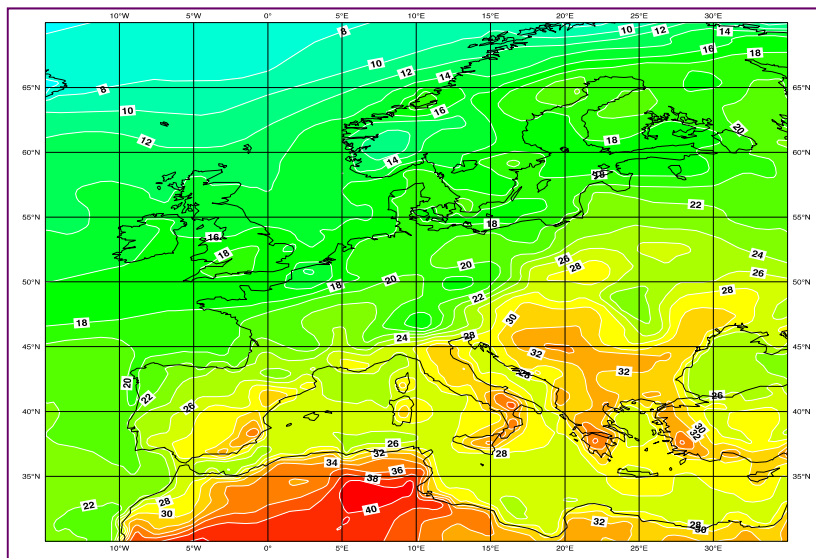
# Seasonal forecast: Land Surface Temperature Anomaly & fires in Russia 2010



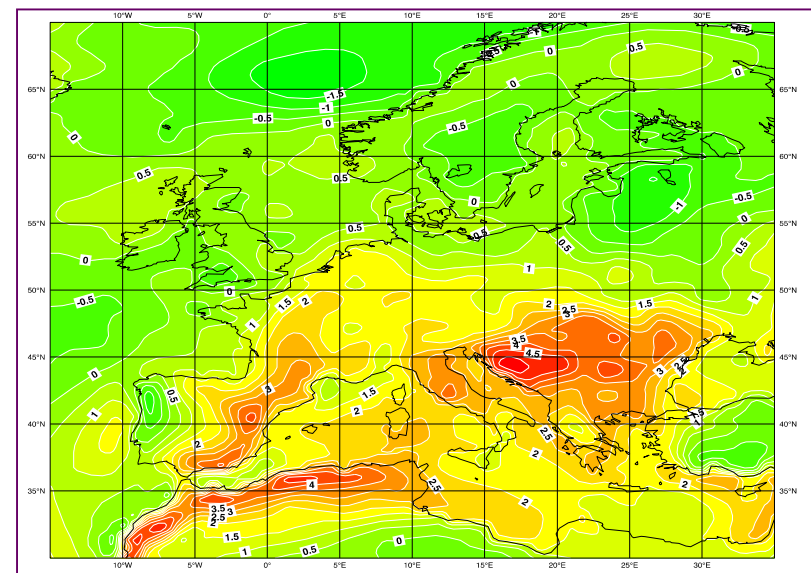
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## Towards seasonal forecast

**Mean Temperature for August  
(12UTC) for 1979 to 2008 (30 years)**



**Anomalies for August (12UTC) 2012**

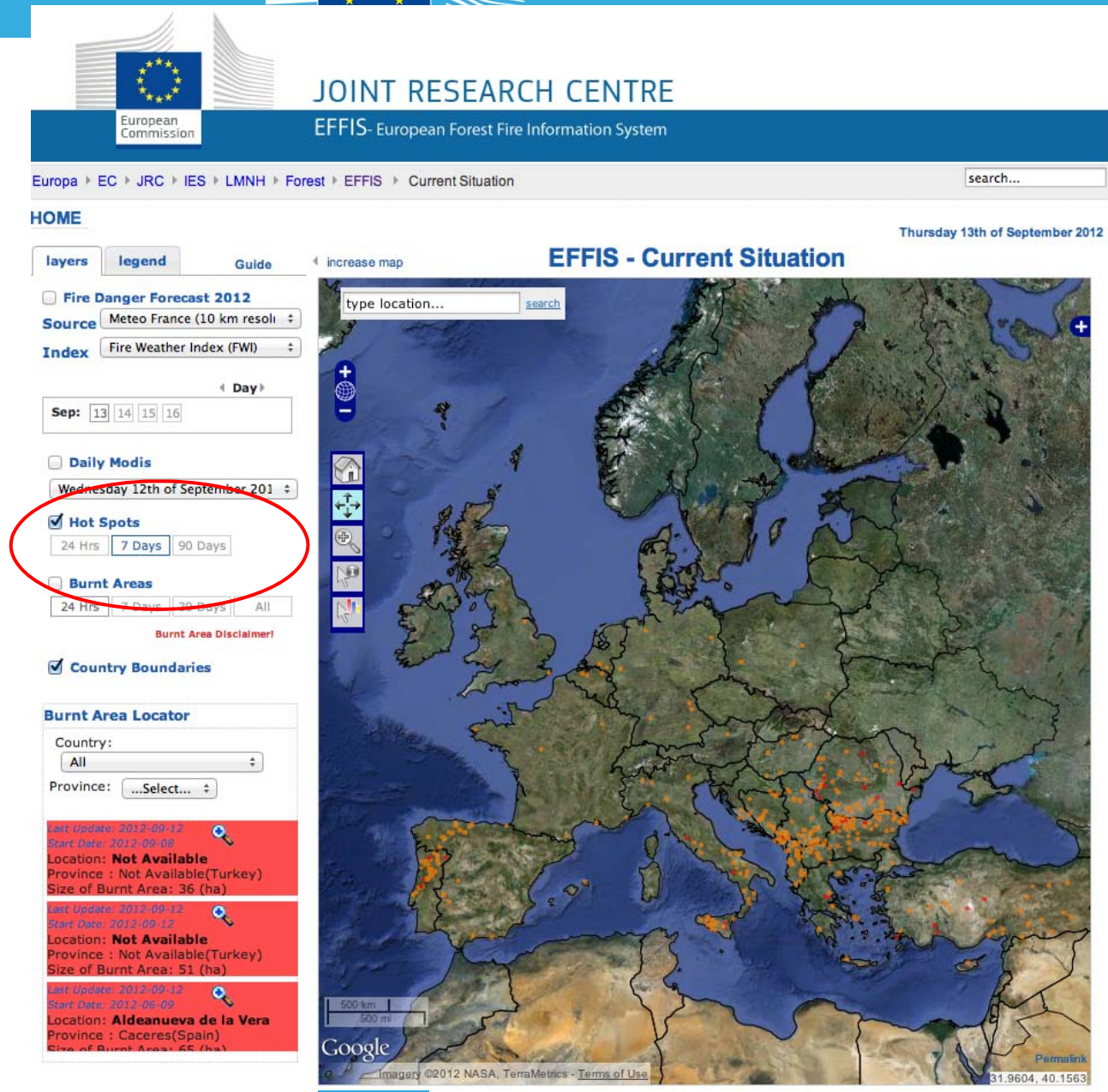




## Active fire detection (hot spots)

-Location

-Landcover affected





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EFFIS- European Forest Fire Information System

Europa > EC > JRC > IES > LMNH > Forest > EFFIS > Current Situation

search...

HOME

Thursday 13th of September 2012

layers legend Guide increase map

### EFFIS - Current Situation

☐ Fire Danger Forecast 2012

Source: Meteo France (10 km resoli)

Index: Fire Weather Index (FWI)

Day

Sep: 13 14 15 16

☐ Daily Modis

Wednesday 12th of September 201

☐ Hot Spots

24 Hrs 7 Days 90 Days

☒ Burnt Areas

24 Hrs 7 Days 30 Days All

Burnt Area Disclaimer!

☒ Country Boundaries

#### Burnt Area Locator

Country:  
All

Province: ...Select...

Last Update: 2012-09-12  
Start Date: 2012-09-08  
Location: **Not Available**  
Province: Not Available(Turkey)  
Size of Burnt Area: 36 (ha)

Last Update: 2012-09-12  
Start Date: 2012-09-12  
Location: **Not Available**  
Province: Not Available(Turkey)  
Size of Burnt Area: 51 (ha)

Last Update: 2012-09-12  
Start Date: 2012-06-09  
Location: **Aldeanueva de la Vera**  
Province: Caceres(Spain)  
Size of Burnt Area: 55 (ha)





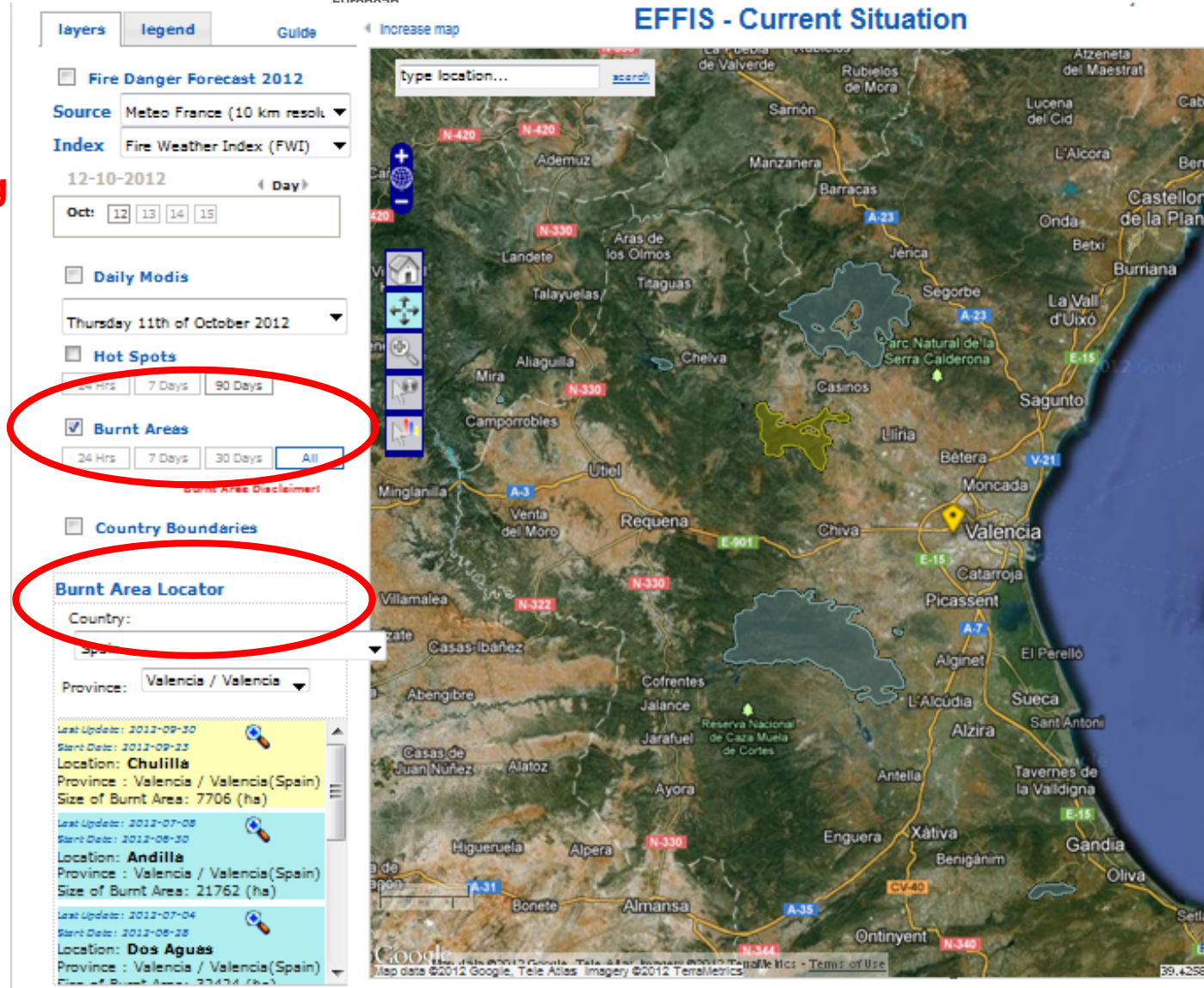


European

## EFFIS - Current Situation

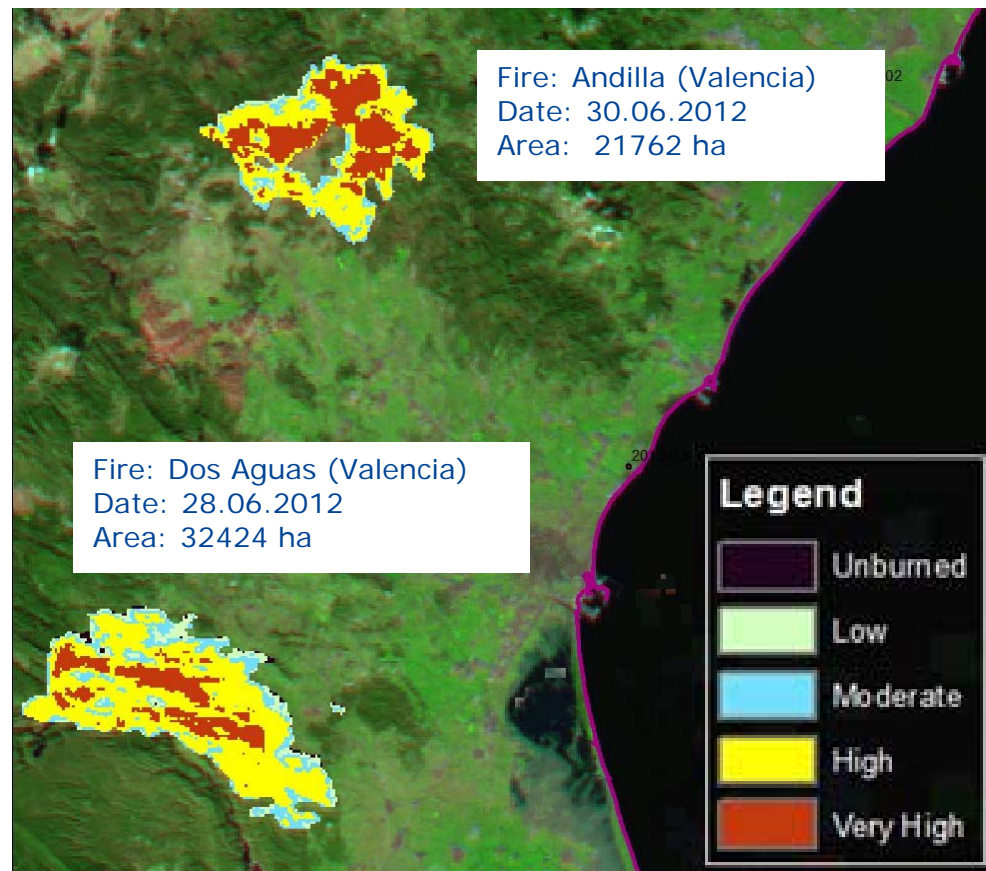
### Burned area mapping (Rapid Damage Assessment)

- Location
- Total burnt area
- Landcover damage assessment



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# Assessment of fire severity





## Weekly report on forest fire activity in Europe and the Mediterranean area

24-08-2012 - 30-08-2012

The map below shows the location of main forest fire events mapped by EFFIS during the last 7 days.  
Only fires > 100 hectares are shown at this scale. Dot size is according to the extent class of the fire event.



The full list of fires mapped by EFFIS in the last 7 days is in the following pages.

For each fire, the following information is given: **Date of last update**, **Location (province)**, **Burned area (ha)**.

### Notes on the fire list:

Fires are grouped by country and are sorted by decreasing size within each country.  
Fires with burned area larger than 500 ha are highlighted in bold.

# Weekly reporting on fire activity in Europe

## European Union

### Bulgaria

- 2012-08-27: Slivovo Burgas **1744 (ha)**
- 2012-08-29: Kireevo Vidin **1674 (ha)**
- 2012-08-27: Rilski manastir Kyustendil 246 (ha)
- 2012-08-28: Dolna banya Sofia 118 (ha)

### France

- 2012-08-27: Eyguières Bouches-du-Rhône **775 (ha)**
- 2012-08-27: Borne Ardèche 33 (ha)

### Greece

- 2012-08-29: Dimos Aylonos Evvoia **3724 (ha)**
- 2012-08-27: Dimos Kalampakas Trikala **692 (ha)**
- 2012-08-30: Dimos Melitis Florina **658 (ha)**
- 2012-08-29: Dimos Kynoy Pella 426 (ha)
- 2012-08-28: Dimos Melitis Florina 389 (ha)
- 2012-08-25: Koinotita Afidnon Attiki 327 (ha)
- 2012-08-29: Dimos Kameirov Dodekanisos 302 (ha)
- 2012-08-24: Dimos Elation Zakynthos 242 (ha)
- 2012-08-29: Dimos Askioy Kozani 151 (ha)
- 2012-08-25: Dimos Paravolas Aitolokamania 74 (ha)
- 2012-08-28: Dimos Lagana Zakynthos 54 (ha)
- 2012-08-27: Dimos Nemeas Korinthia 35 (ha)
- 2012-08-29: Dimos Moysoyron Chania 17 (ha)

### Italy

- 2012-08-26: Sclafani Bagni Palermo **1294 (ha)**
- 2012-08-28: Pisticci Matera **784 (ha)**
- 2012-08-28: Niccolia Enna **584 (ha)**

# EFFIS Fire News

Find a location



Search:  From: 04/04/2013 To: 04/11/2013

Place	Country	Size	Update	Critical	News
Ras AlHilal	Libya	900	April 8, 2013	False	1 News linked
Sinop	Turkey	4	April 4, 2013	False	1 News linked

1/1 10

2 fires selected (with 2 related news). [Get this KML](#)

Size Class: [All](#) - N.A. - Small - Medium - Large - Major

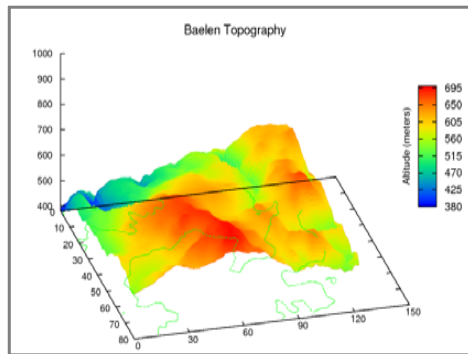
Country: [All](#) - France - Greece - Italy - Portugal - Spain - Turkey -



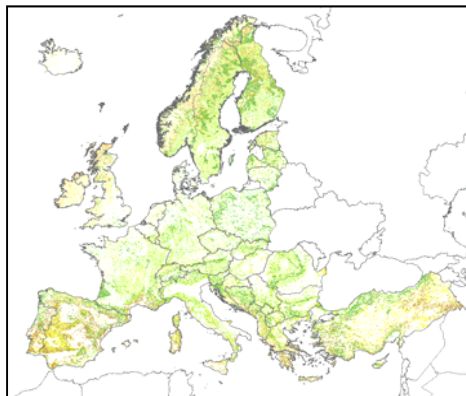
	30-08	02-09	-7.17	40.35	Sortelha	Beira Interior Norte(Portugal)	8616(ha)	Very low (0.9)	992
	30-08	01-09	-7.89	41.55	Vilar de Cunhas	Tamega(Portugal)	1055(ha)	Very low (0.1)	1767



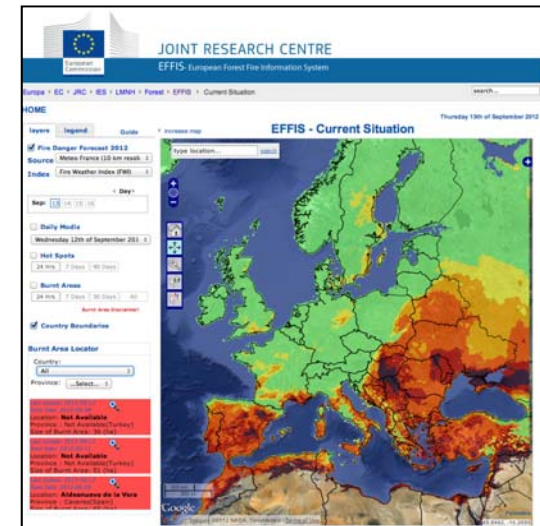
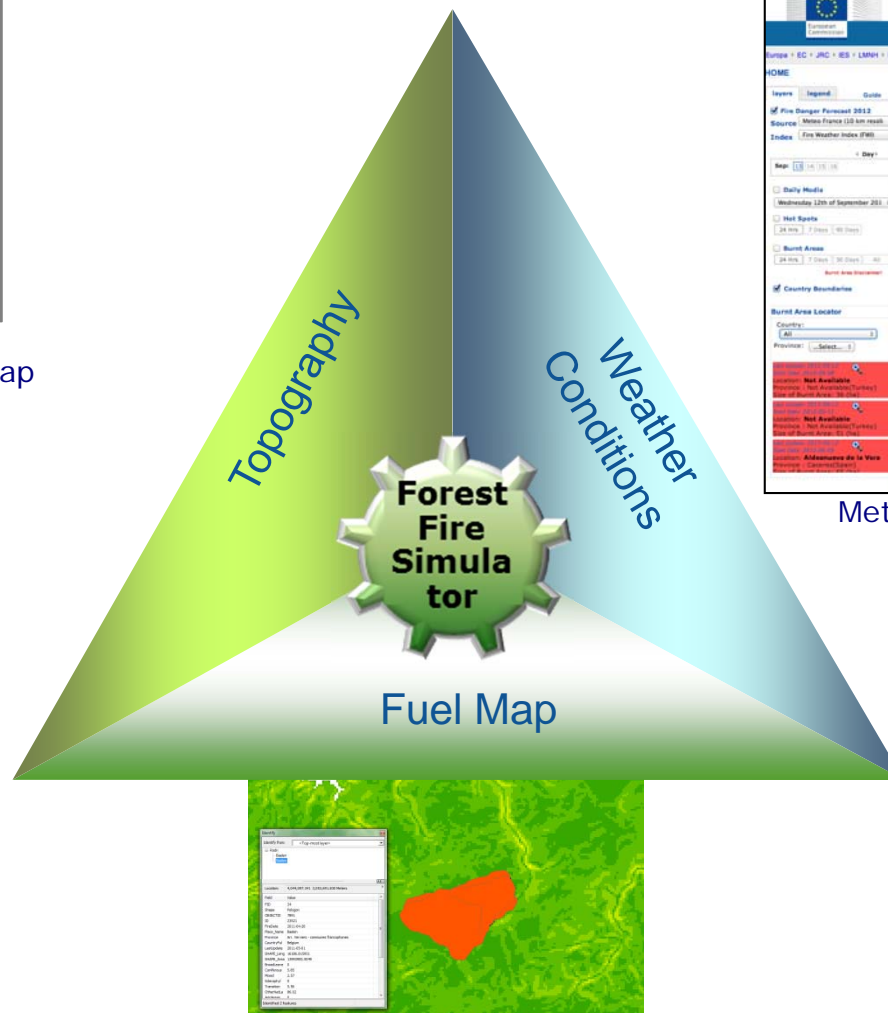
# Fire spread modeling (under development)



SRTM Global Digital Elevation Map



Fuel Map of Europe



Meteo fields / Fuel moisture

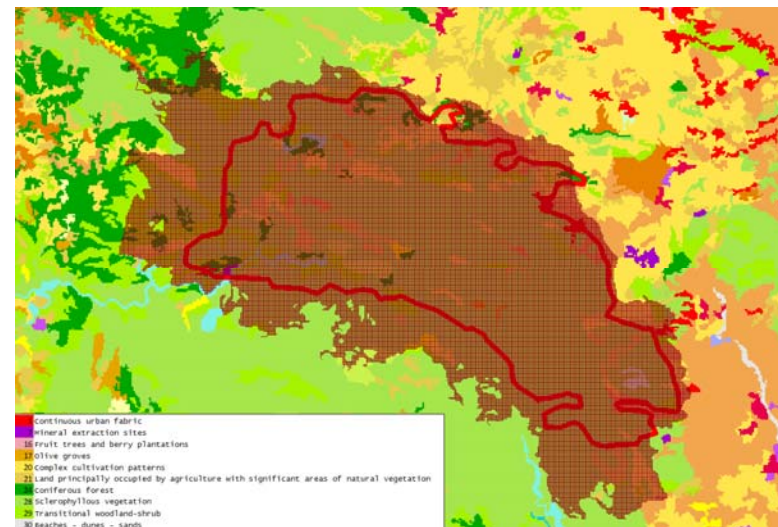
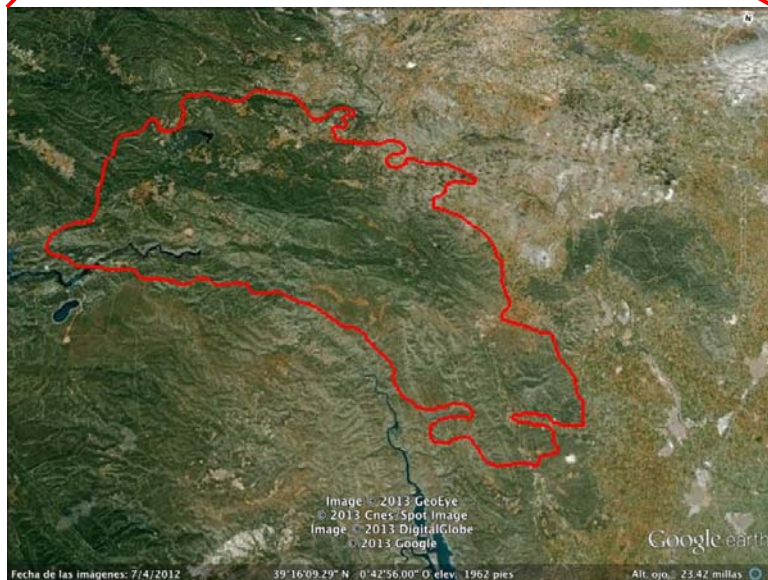
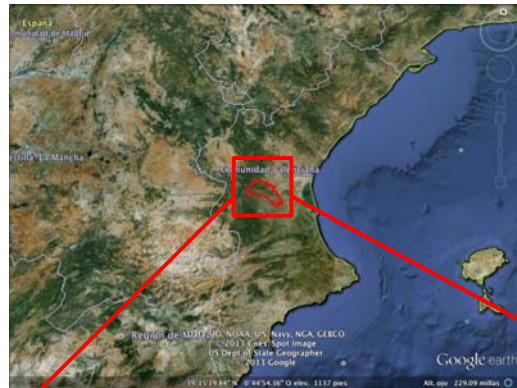


## Study case

Valencia (Dos Aguas)

Inputs:

- ▶ Real propagation maps from MODIS (every 24 hours).
- ▶ Weather info (25kmx25km).
- ▶ Fuel Map
- ▶ Digital elevation map at 100mx100m



Start simulation: **02-07-2012**

End simulation: **03-07-2012**



## Report on forest fires in Europe up to October, 2012

- Average **burnt area** in the EU in the last 12 years approx. **470,000 ha/yr.**
- Estimated **annual losses** in the last 12 years approx. **2 billion/year**
- 2012 fire campaign:
  - Early fire activity due to drought in the EU Med region (approximately 100,000 ha burnt by the end of March)
  - Spring fire activity in central Europe (e.g. fire in Hungary approx. 1000 ha)
  - Damages area above average of last decades (approx. 567,000 ha)
  - Large impact in Natura2000 areas (approx. 180,000 ha)
  - Considerable number of human casualties
- Requests to the Monitoring and Information Centre (MIC) for support on fire-fighting in Albania, Bosnia, Bulgaria, FYROM, Greece, Montenegro, Portugal, Romania, France/Spain.



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The European Forest Fire Information System Newsletter

Issue 2008 (2)

3 September 2008



<http://effis.jrc.ec.europa.eu>



2 Annual pre- and post-fire season meetings with the Expert Group on Forest Fires  
Annual report on “Forest Fires in Europe 201X”

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## Other EFFIS developments

New developed modules:

- Harmonized scheme of fire causes
- European forest fire fuels cartography
- Near-real time fire severity assessment
- Socio-economic impact of forest fires
- EFFIS forest fire news (internet search and retrieval of fire news)

On-going developments for critical fires:

- Fire smoke dispersion and influence on human health
- Fire behavior and spread



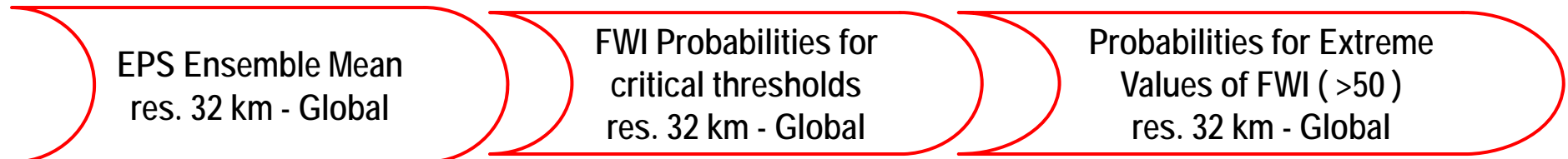


## Global Wildfire Information System (beta) Fire Danger Assessment

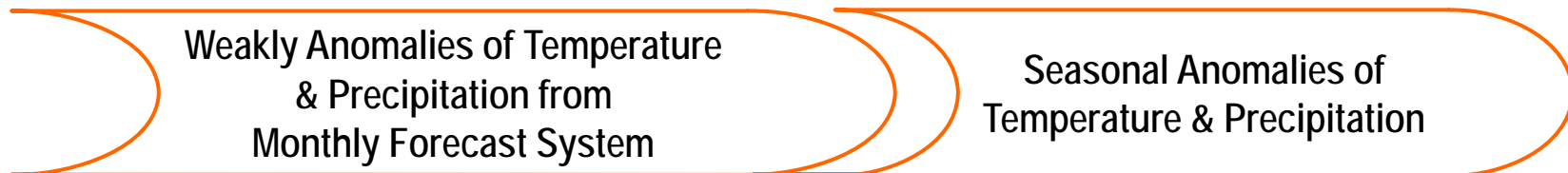
### Single Model Deterministic Components up to 10 days



### Probabilistic (Ensemble) Components up to 15 days



### Additional Monthly & Seasonal Products up to 4 months

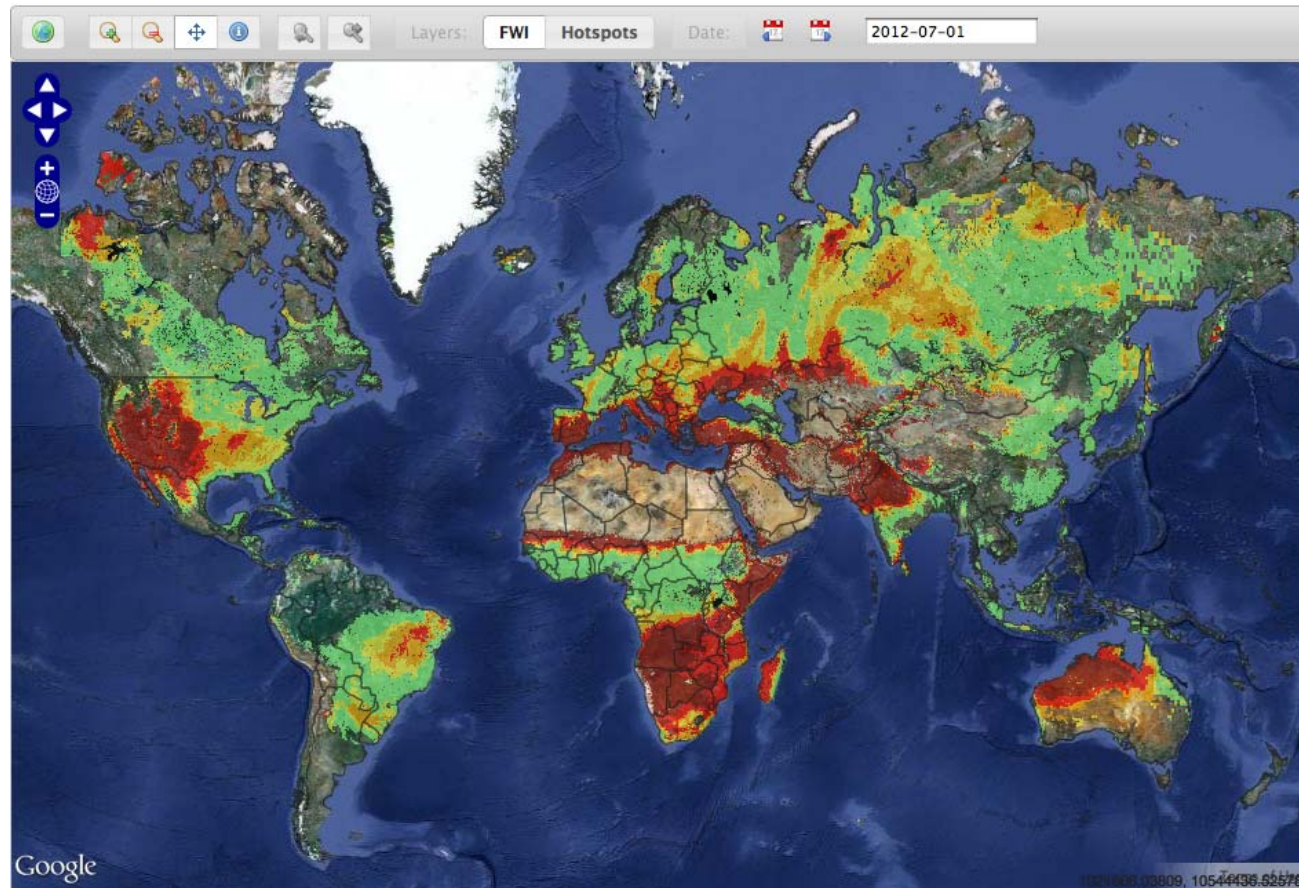


# Global Wildfire Information System (prototype)

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EFFIS- European Forest Fire Information System

EFFIS Global Viewer





# Global Wildfire Information System (prototype)

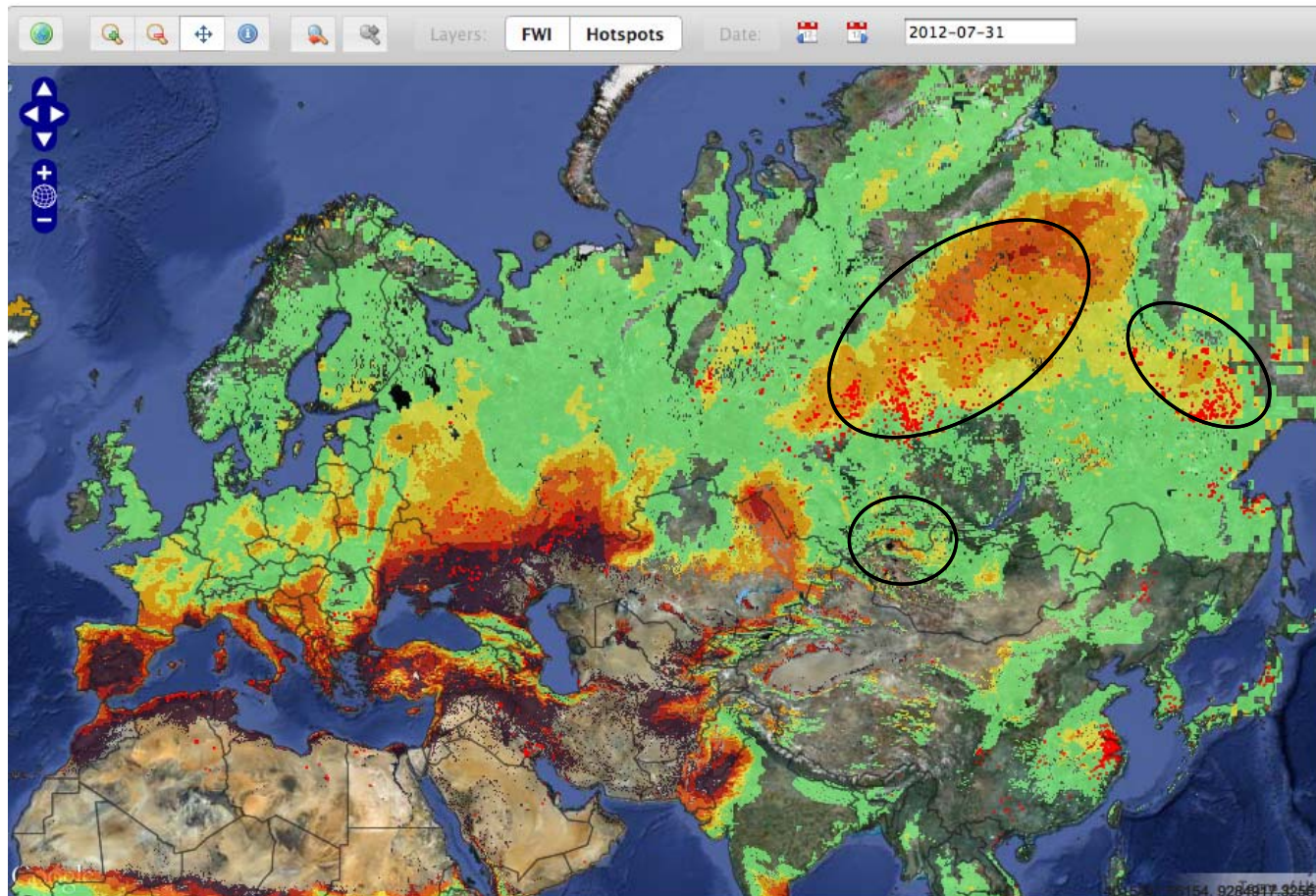


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EFFIS- European Forest Fire Information System

Fire activity in Russia - July 31, 2012

EFFIS Global Viewer







# Thank you

[effis@jrc.ec.europa.eu](mailto:effis@jrc.ec.europa.eu)

<http://effis.jrc.ec.europa.eu>

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