



Copernicus EMS Early Warning Service Forecasting Fires

Copernicus Emergency Management Service



Space



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www.copernicus.eu



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18 and 19 June 2016

- Two major forest fire started near **Argaka** village and **Evrychou** area
- More than **1500 ha** of forest and mixed vegetation got lost
- Cyprus activated the **Union Civil protection Mechanism** (UCPM) requesting aerial firefighting means, air tractors and flame retardant substances
- **Two firefighters were killed** tackling one of the largest forest fires to hit Cyprus in last years.



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Forest fires: an increasing threat

- Over one million hectares of forest destroyed by wildfires in Europe in 2017, an area four times the size of Luxembourg and over ten times the size of Berlin
- Destruction of property and major impacts on the economy including to network infrastructure, businesses (commercial and industrial), agricultural and forestry activities. Over 100 people killed only in Portugal and nearly
- EUR 600 million, representing 0.34% of Portugal's Gross National
- Forest fires are also becoming a reality in new locations, with the 2017 fires affecting parts of Ireland and Greenland

Source: Strengthening EU Disaster Management - rescEU Solidarity with Responsibility (COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL AND THE COMMITTEE OF THE REGIONS)

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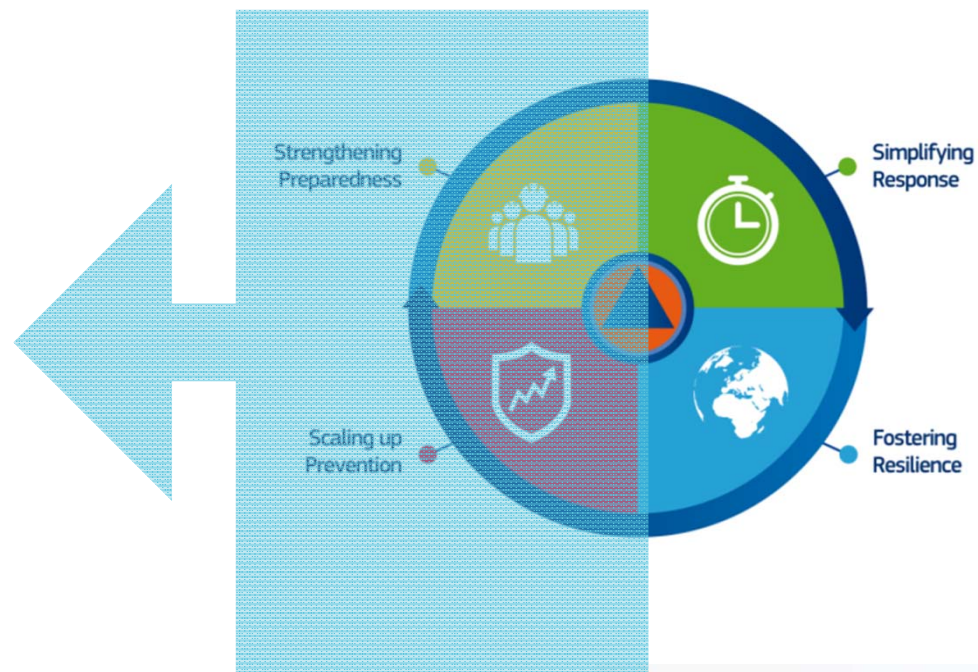


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Preparedness and prevention are crucial

Increase the relevance, effectiveness, efficiency and coherence of the Union Civil Protection Mechanism (UCPM) by

1 € spent in
prevention saves up
to 7 € during
response



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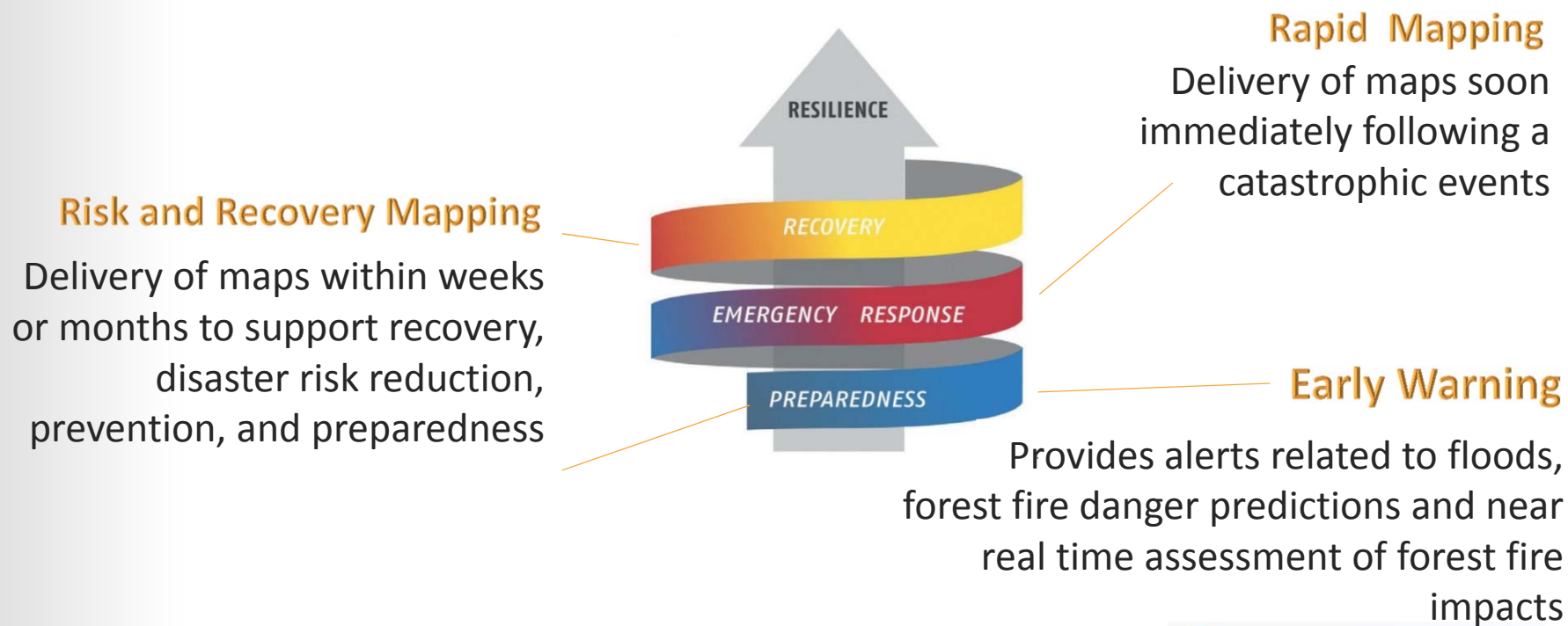
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Copernicus empowering preparedness

The Copernicus Emergency Management Service components

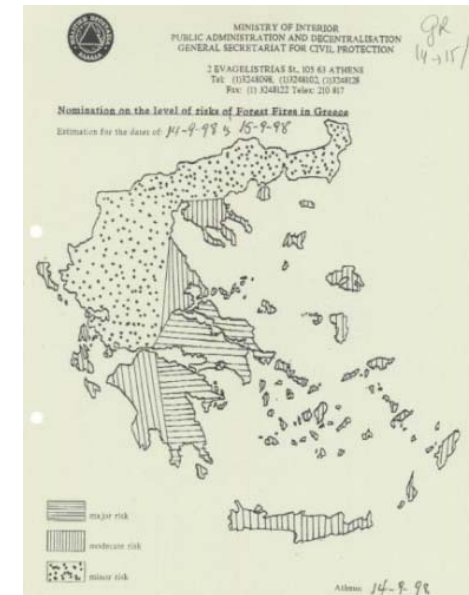
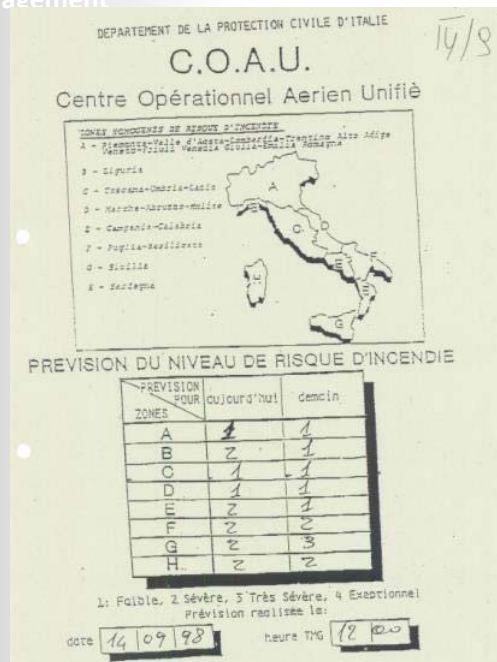


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The long road towards a Europe that protects



1998

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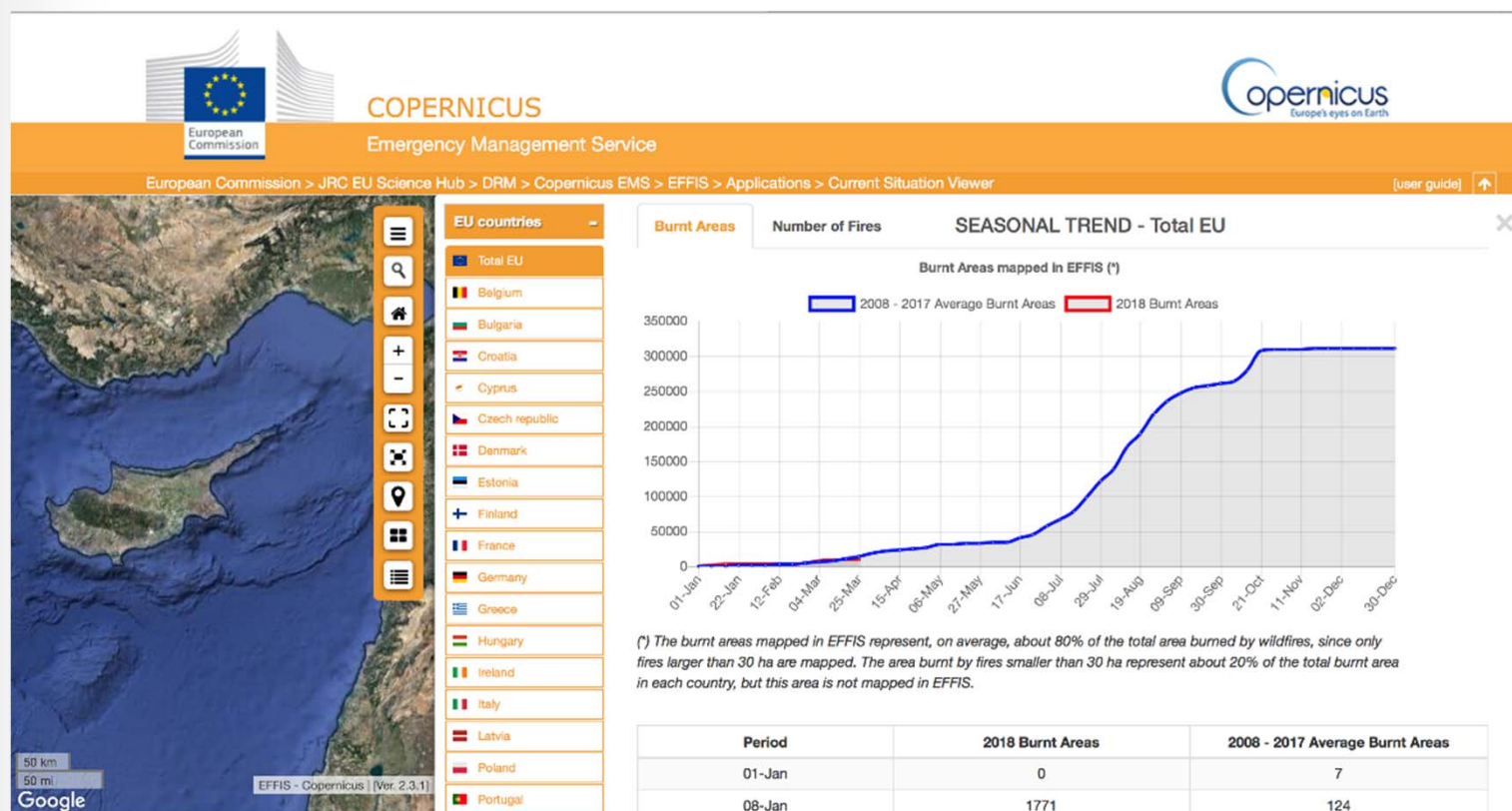
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EFFIS - current status 2018



2018 - EFFIS

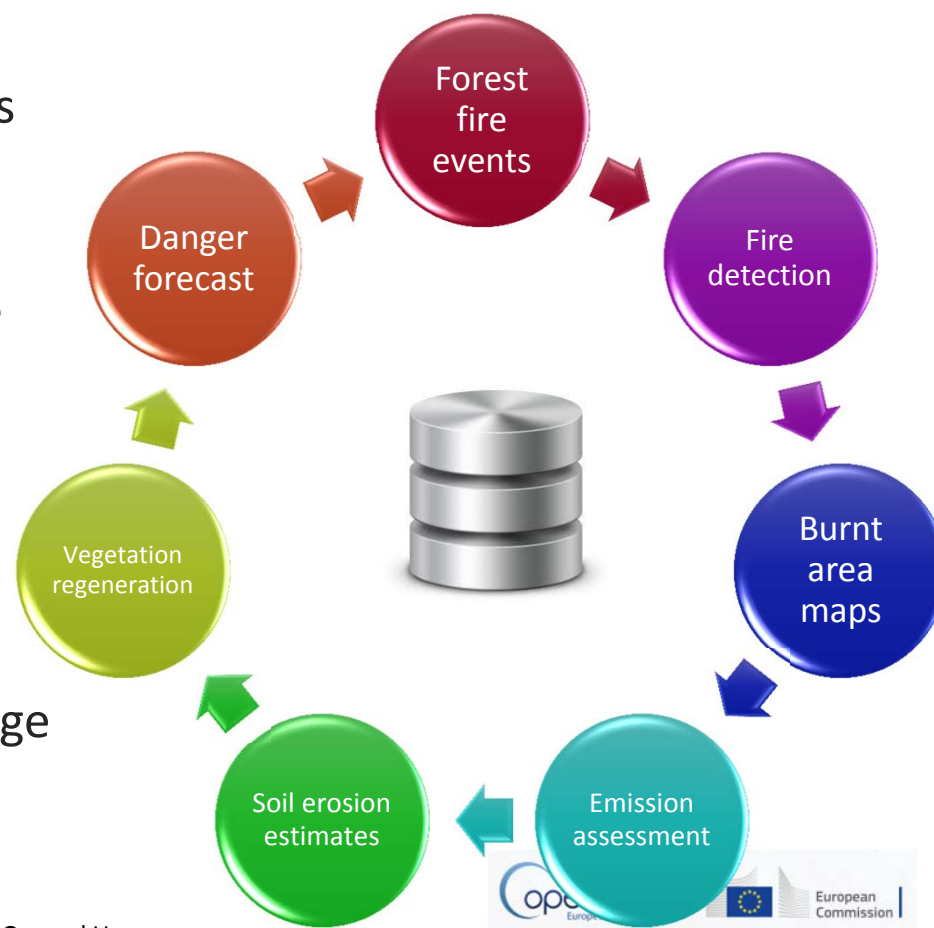
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What is EFFIS?

- EFFIS is the European Forest Fires Information System
- EFFIS provides EU level assessments during both pre-fire and post-fire phases
- EFFIS complements national fire information systems through the provision of harmonised data, methods and standards
- EFFIS provides also global coverage through the Global Wildfire Information System - GWIS



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The EFFIS network

- Experts on forest fires meeting in Spring and Autumn before and after the fire season to **improve forest fire prevention** in Europe and Med countries
 - **40 European Countries** , international organizations such as FAO, and EC Services
 - Cyprus is represented by the **Ministry of Agriculture, Rural Development and Environment**
Department of Forests



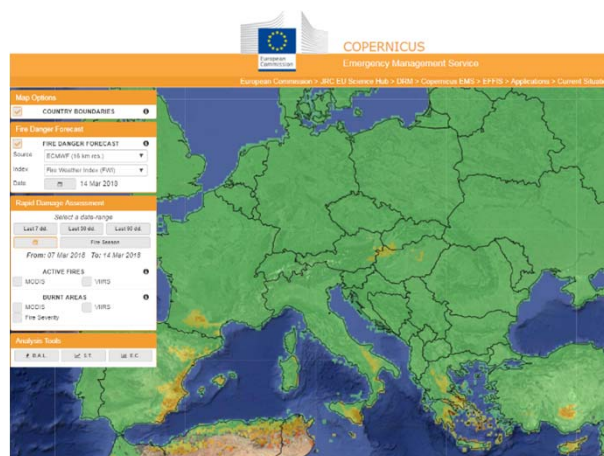
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EFFIS applications

Current situation



The most up to date information on the current fire season in Europe and
Med areas

Today meteorological fire danger maps

Forecast up to 6 days

Daily updated maps of hot spots and fire perimeters

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Current situation

Fire danger forecast

Daily maps of 1 to 10 days of forecasted fire danger level using numerical weather predictions

Active fire detection

Active fires are located by comparing the temperature of a potential fire with the temperature of the land cover around. Hot Spots are detected using MODIS/VIIRS and Sentinel2&3

Rapid damage assessment

Daily update of the perimeters of burnt areas in Europe for fires of about 30 ha or larger, providing location, fire duration, total burnt area and land cover affected

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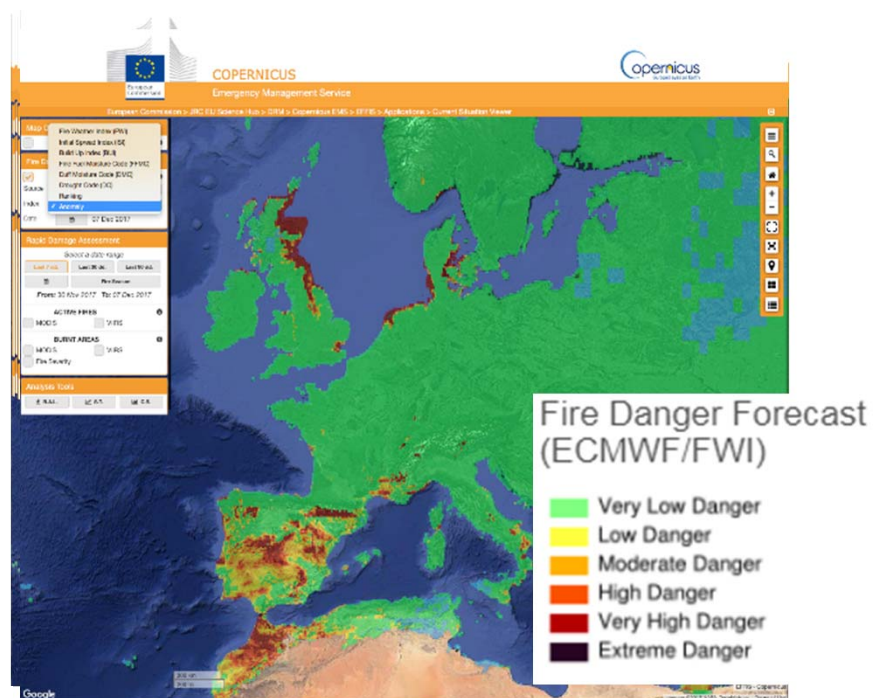




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Fire Danger Forecast



Fire Danger Forecast up to 10 days ahead of the current date

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Active fire detection



Active fire detection in Cyprus June 1st – September 31st

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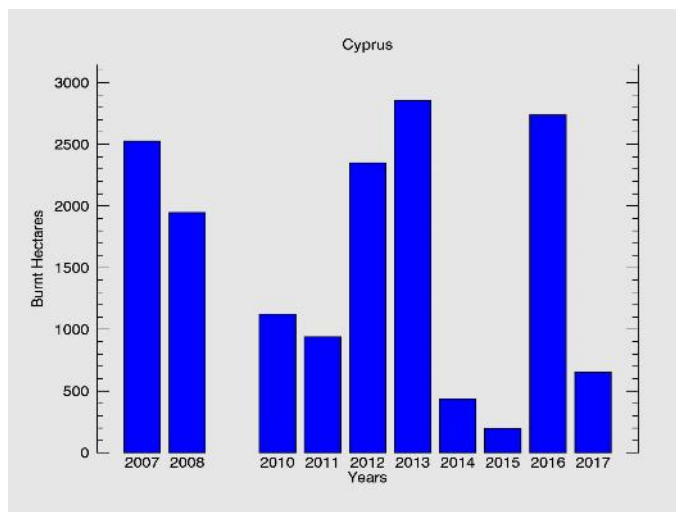




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Burnt area mapping (fires bigger than 30 ha)



Nearly 70% of total
burned area in
2017 was covered
by forest

Land Cover	Area Burned	% of Total Burned
Forest and Other Wooded Land	454.92	69.71
Other Natural Land	74.49	11.41
Agriculture	121.5	18.62
Artificial Surfaces	1.72	0.26
TOTAL	652.61	100

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Post fire assessment- fire severity

- Fire severity: based on the Relative Difference Normalized Burn Ratio (Miller et al. 2009)
- Under development:
 - Post-fire vegetation regeneration to assess the vegetation recovery in a time series of images
 - Post-fire soil erosion risk to assess the potential soil loss



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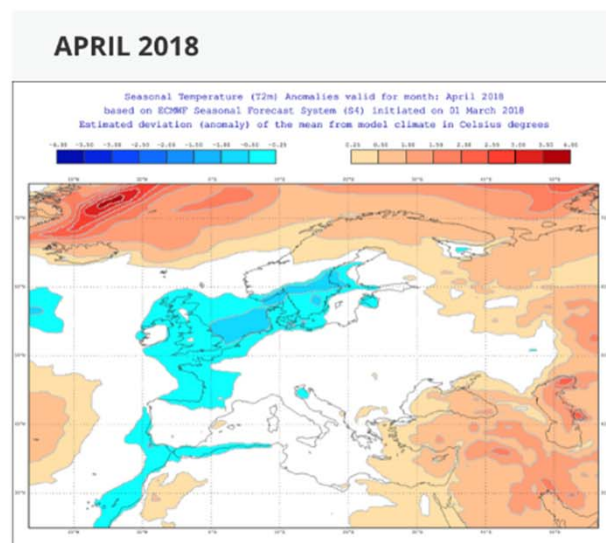


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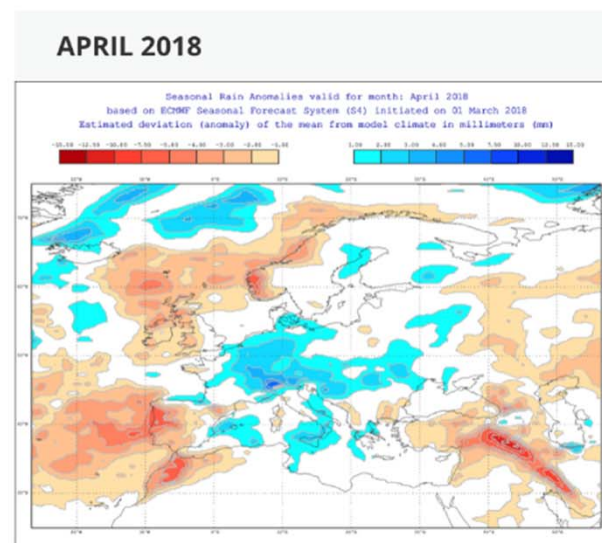
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Long term Fire Weather Forecast

Temperature anomalies



Rain anomalies



Temperature and rainfall anomalies expected to prevail in the coming months
Monthly forecast (next 4 weeks) & Seasonal (next 7 months)

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EFFIS tool: seasonal trend of burnt areas

EU countries

Total EU

Belgium

Bulgaria

Croatia

Cyprus

Czech republic

Denmark

Estonia

Finland

France

Germany

Greece

Hungary

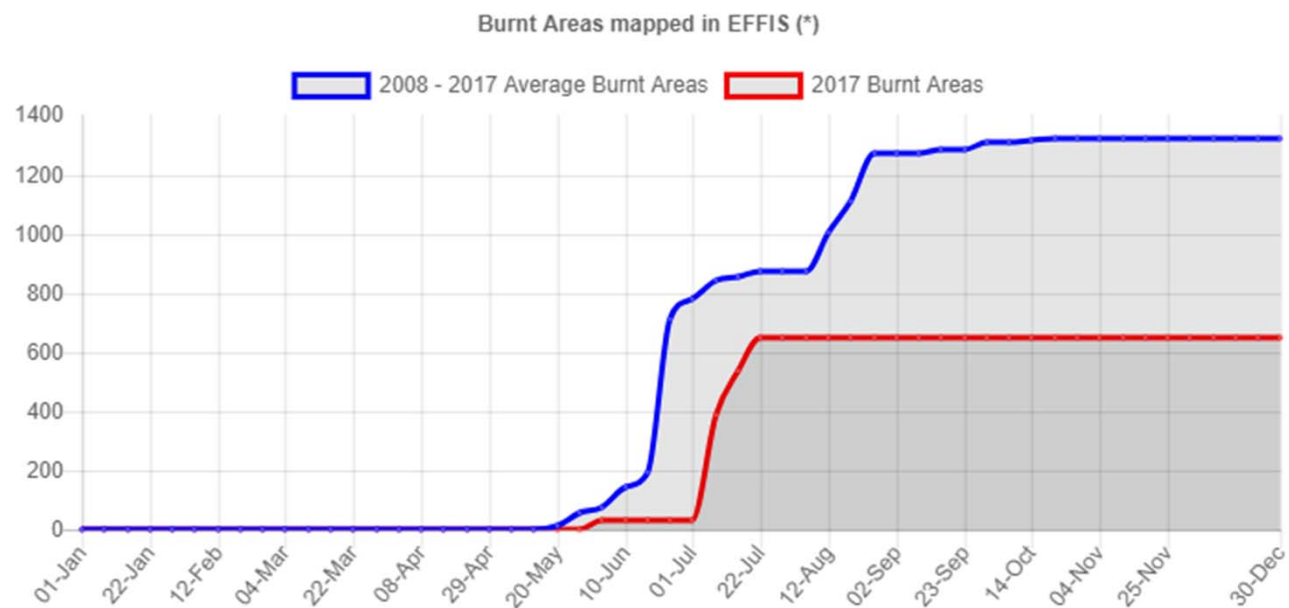
Ireland

Italy

Burnt Areas

Number of Fires

SEASONAL TREND - Cyprus



(*) The burnt areas mapped in EFFIS represent, on average, about 80% of the total area burned by wildfires, since only fires larger than 30 ha are mapped. The area burnt by fires smaller than 30 ha represent about 20% of the total burnt area in each country, but this area is not mapped in EFFIS.

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EFFIS tools - seasonal trend of number of fires

EU countries

Total EU

Belgium

Bulgaria

Croatia

Cyprus

Czech republic

Denmark

Estonia

Finland

France

Germany

Greece

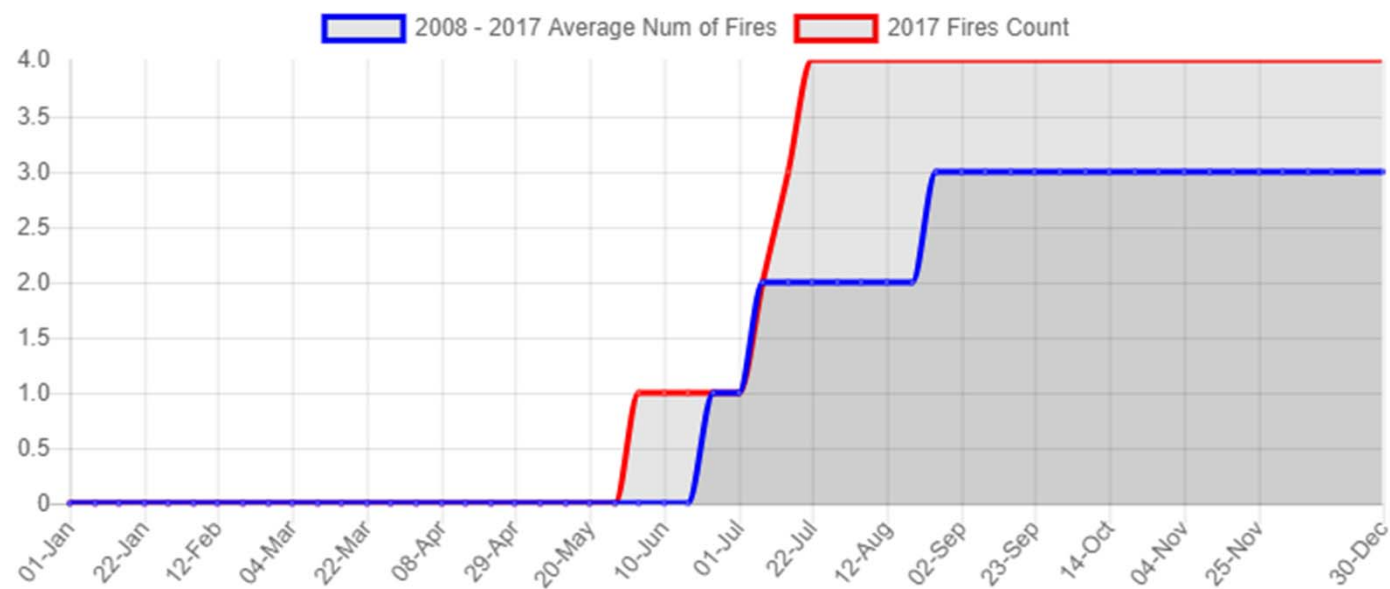
Hungary

Burnt Areas

Number of Fires

SEASONAL TREND - Cyprus

Numbers of Fires mapped in EFFIS (of approx. 30 ha or larger)



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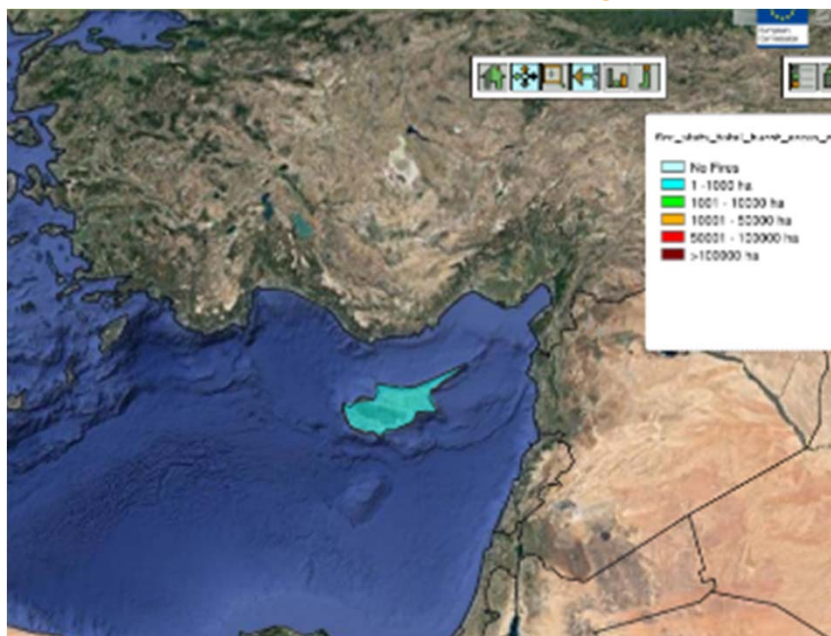




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EFFIS applications

Fire history



Build customized historical fire maps by querying the European Fire Database on number of fires, average burned area size in a selected year

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Fire news

Fire News

Find a source



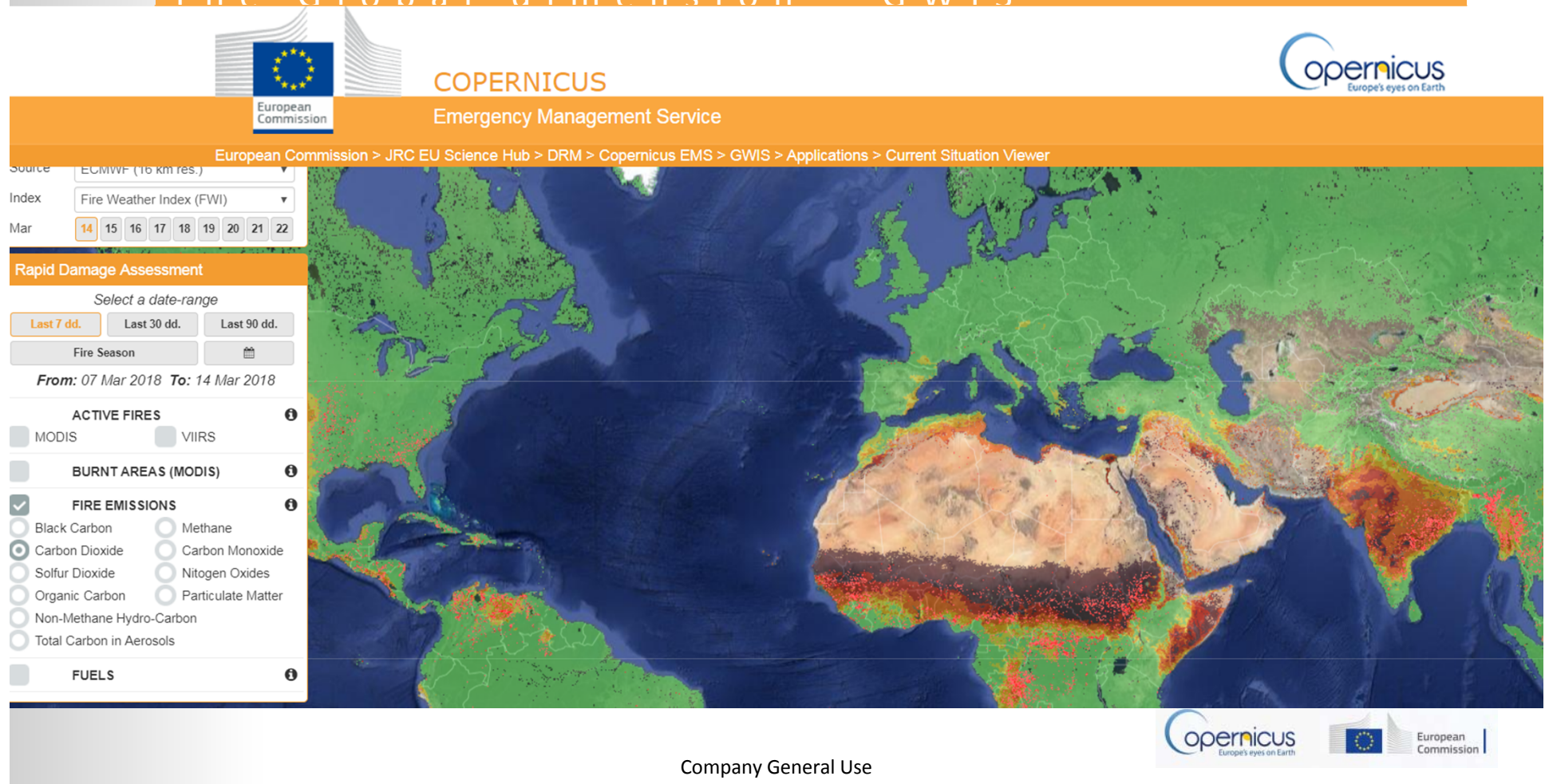
Search: Results: 1-15/47 (15) Size: 1-25/47 (15)

Country	Place	Date	Size	Source	News
Germany	Waldbrand	15.05.2017	1.000 m²	1.000 m²	1.000 m²
France	Forêt de la Gironde	15.05.2017	1.000 m²	1.000 m²	1.000 m²
Spain	Waldbrand	15.05.2017	1.000 m²	1.000 m²	1.000 m²
Italy	Waldbrand	15.05.2017	1.000 m²	1.000 m²	1.000 m²
Portugal	Waldbrand	15.05.2017	1.000 m²	1.000 m²	1.000 m²
Greece	Waldbrand	15.05.2017	1.000 m²	1.000 m²	1.000 m²
Belgium	Waldbrand	15.05.2017	1.000 m²	1.000 m²	1.000 m²
Poland	Waldbrand	15.05.2017	1.000 m²	1.000 m²	1.000 m²
Sweden	Waldbrand	15.05.2017	1.000 m²	1.000 m²	1.000 m²
Finland	Waldbrand	15.05.2017	1.000 m²	1.000 m²	1.000 m²

A selection of news from the press on wildland fires in Europe
Updated daily by the EFFIS team
News are geo-located and can be easily browsed by date, size, country

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The Global dimension - GWIS





How can I access EFFIS?



- EFFIS data and application freely accessible Web-GIS at: <http://forest.jrc.ec.europa.eu/effis/>
- WMS are available at <http://forest.jrc.ec.europa.eu/effis/applications/data-and-services/>
- Get additional support to access data which are no more available through the EFFIS web services (e.g. historic data, extracts of the fire database, or raw burned area perimeters) can be asked.



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Thank you for your
attention



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