The Global Wildfire Information System (GWIS)

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Wildfires: a global issue

- Humans have co-existed with wildfire since ancient times
- Wildfires are intrinsic to ecosystem dynamics and a tool in agricultural practices

However:

- Fires burn approximately 400 Million ha of land every year
- Fires emissions contribute, globally, to about 20% of greenhouse gas emissions
- The natural dynamics of wildfires has been changed by fire exclusion policies
- Wildfires are the cause of environmental degradation, leading to desertification in some regions of the world
- Wildfires are the cause of increasing losses of human lives and economic damages
Climate change is identified as the cause of recent critical fires such as:

Alaska & Indonesia (2015),
Canada, California (2016),
Chile, Canada, Australia, South Africa, California, Europe (2017),
California & Europe (2018),
Amazon, Central Africa, Artic circle (2019),
Australia, California, west coast (USA), Amazon, Artic Circle (2020)
California (USA), Siberia (Russia) (2021)

All the above were unprecedented events!

The intensity and impact of critical wildfires is increasing in Europe, and globally

A regional/global strategy is needed to minimize the impact of wildfires!
European Forest Fire Information System (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.

A number of specific applications are available through EFFIS:

Since 1998, EFFIS is supported by a network of experts from the countries in what is called the Expert Group on Forest Fires, which is registered under the Secretariat General of the European Commission. Currently, this group consists on experts from 40 countries in European, Middle East and North African countries. In 2015, EFFIS became one of the components of the Emergency Management Services in the EU Copernicus program.

The link to some of the most widely used applications is provided below. Additional applications such as the extension of EFFIS to the global level into a Global Wildfire Information System (GWIS) are available through the side “Applications” box.

Current 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 maps of hot spots and fire perimeters.

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.
Fire danger forecast, active fire and burnt area mapping
EFFIS wildfire monitoring

COPERNICUS
Emergency Management Service

EU countries
- Total EU
- Belgium
- Bulgaria
- Croatia
- Cyprus
- Czech republic
- Denmark
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Latvia

Burnt Areas
Number of Fires
SEASONAL TRENDS - Total EU

Burnt Areas mapped in EFFIS (*)

2008 - 2016 Average Burnt Areas
2017 Burnt Areas

(*) The burnt areas mapped in EFFIS represent, on average, about 80% of the total area burnt 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.
Current EFFIS Network of 43 Countries

Extension to MENA countries in collaboration with FAO

EU Countries
European non-EU countries
North Africa & Middle East

Global Wildfire Information System
(GWIS)
GWIS concept:
follows the EFFIS (European Forest Fire Information System) fire cycle:
Global Wildfire Information System (GWIS)

The Global Wildfire Information System is a joint initiative of the GEO and the Copernicus Work Programs. The Global Wildfire Information System (GWIS) aims at bringing together existing information sources at regional and national level in order to provide a comprehensive view and evaluation of fire regimes and fire effects at global level.

GWIS builds on the ongoing activities of the European Forest Fire Information System (EFFIS), the Global Terrestrial Observing System (GTOS) Global Observation of Forest Cover-Global Observation of Land Dynamics (GOFC-GOLD) Fire Implementation Team (GOFC Fire IT), and the associated Regional Networks, complementing existing activities that are on-going around the world with respect to wildfire information gathering. The development of GWIS is supported by the partner organizations and space agencies. Support to GWIS was just launched by NASA through its ROSES program.

Access to worldwide information on wildfires is available through the GWIS viewer at http://gwis.jrc.ec.europa.eu/static/gwis_current_situation/public/index.html
GWIS applications – fire danger forecast
GWIS applications – active fire and burnt area mapping
GWIS Country Profiles (launched March 2021)

GWIS – Country Profiles:
- Burnt area extent
- Fire frequency
- Seasonality
- Landcover damage
- Damage to protected areas
- Etc...
GWIS Country Profiles (launched in 2021)

GWIS – Country Profiles:
- Burnt area extent
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- Etc...
GWIS Country Profiles (launched in 2021): Maps of burnt areas
GWIS Country Profiles (launched in 2021): Burnt area, number of fires, fire size
GWIS Country Profiles (launched in 2021): Biomass Emissions
Seasonal Trends (under development, e.g. Democratic Republic of Congo):
Weekly evolution of: damage to protected areas, burnt areas, active fires, land cover damage, fire danger, fire emissions
Fire danger forecast and fire danger trends

Fire Weather Index

Daily Severity Rating

Congo (Democratic Republic of): mean values for the number of max of consecutive days above the 90th percentile in the period 1980-2018

Congo, Democratic Republic of: cumulative DSR normalised by end-of-year median in 1980-2019
What can GWIS provide for wildfire monitoring at global scale?

- Analysis of fire regimes and changes in different regions of the world
- Harmonized and up to date comparable data across the globe to assess wildfire effects—wildfire regime profiles, fire seasonality, impact, trends
- Methods for reliable analysis of fire damages and economic impacts, including near real-time information on critical events
- Implementation of information systems reachable at national/regional/global scale
- Web information services reaching citizens (education/awareness)
- Development of tools supporting fire prevention/preparedness
- Repository for relevant global datasets for users
- Training and capacity building...
Wildfire science is at a loss for comprehensive data

An international monitoring initiative is crucial for understanding wildfires and reducing their damage

*Nature* (Bowman, July 2018)

https://gwis.jrc.ec.europa.eu
https://effis.jrc.ec.europa.eu

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