The Global Wildfire Information System (GWIS)

Jesús San-Miguel-Ayanz & the EFFIS Team (EC Joint Research Center)

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 is 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)

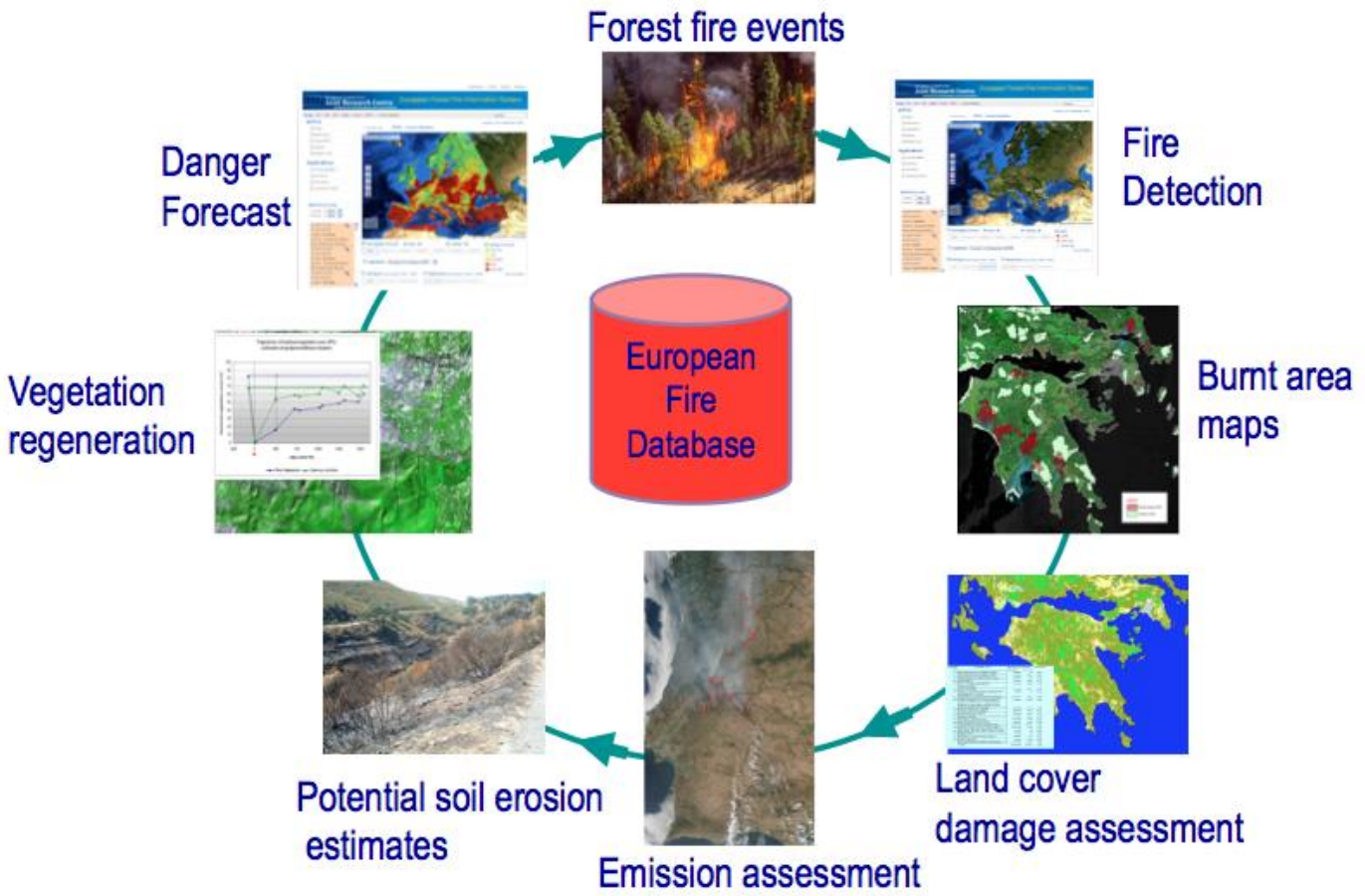
California (USA), Siberia (Russia) (2021)

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)



European Commission

COPERNICUS

Emergency Management Service

European Commission > JRC EU Science Hub > DRM > Copernicus EMS > European Forest Fire Information System (EFFIS)

About EFFIS | Reports and Publications | Applications | Partners | Contact Us

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 Wilfire 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.

New feature

Make your specific requests of data by the new Data Request Form

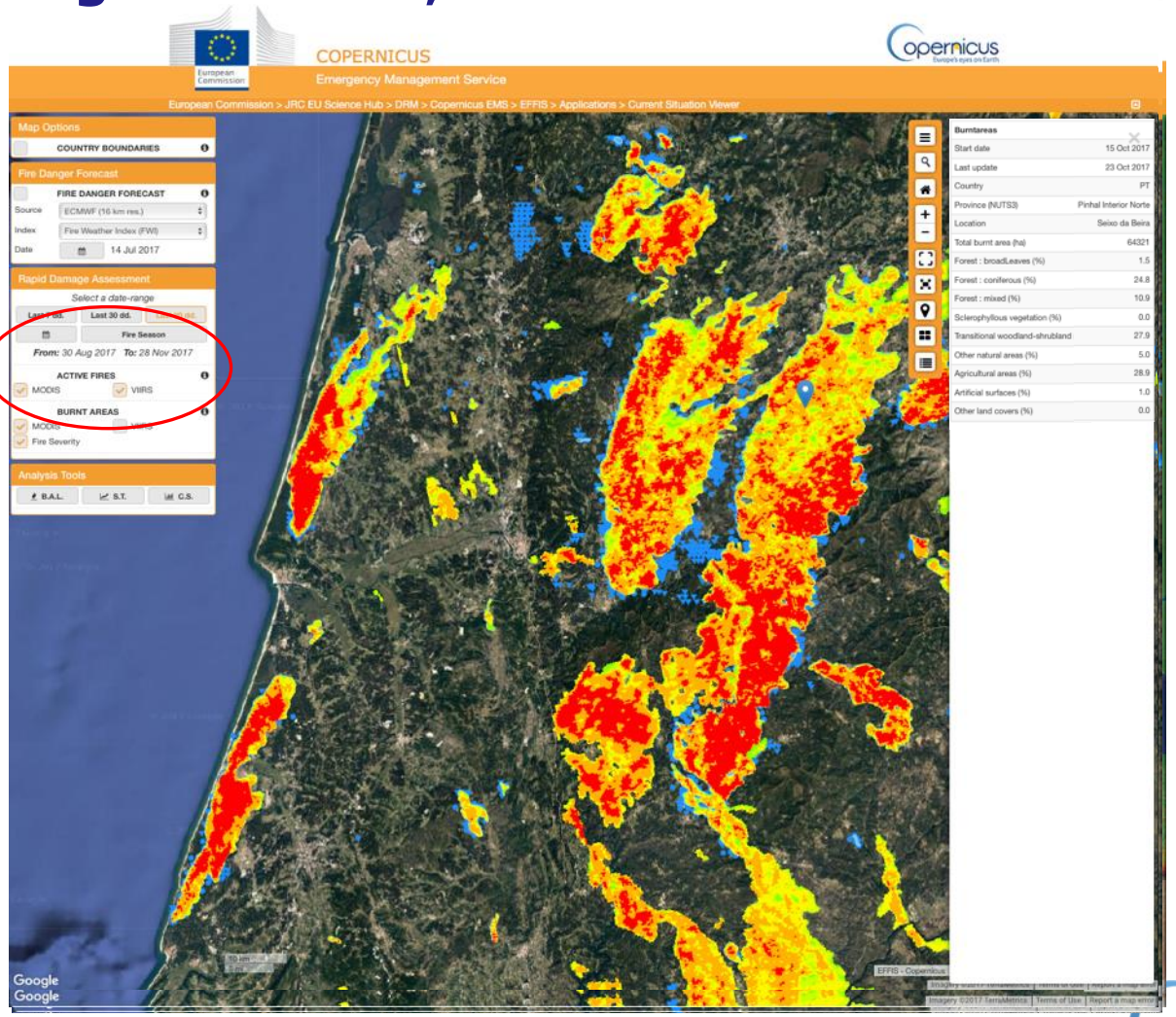
Visit the brand-new Global Wildfire Information System Viewer

EFFIS Damage Assesment

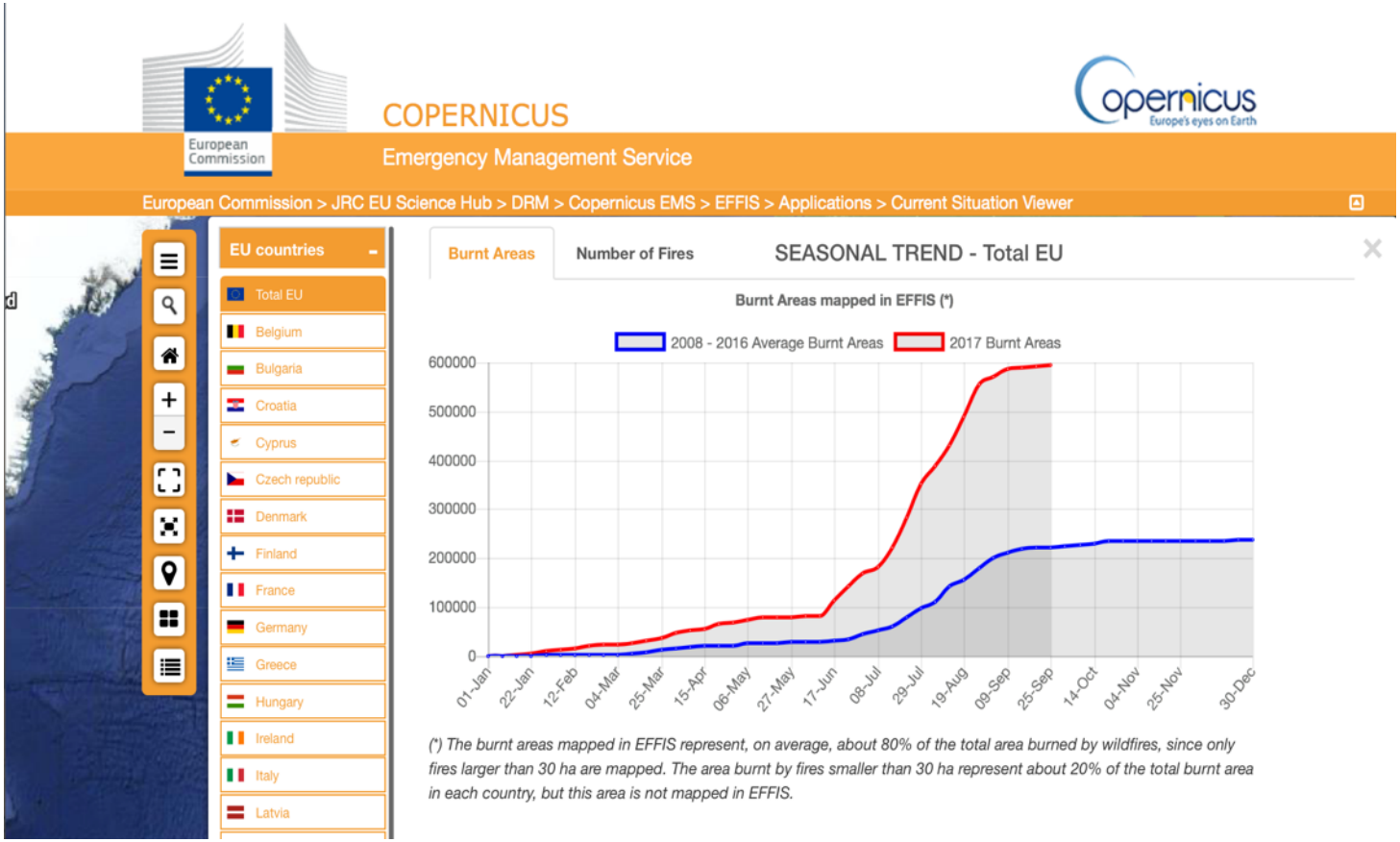
EFFIS Burned Area (ha)
Total EU28 Countries
Mapped: 193741 (19.2 % Forest)
Estimated: 258321.33
Total EFFIS Coverage
Mapped: 264051
Estimated: 352068

(Updated daily)

Fire danger forecast, active fire and burnt area mapping



EFFIS wildfire monitoring



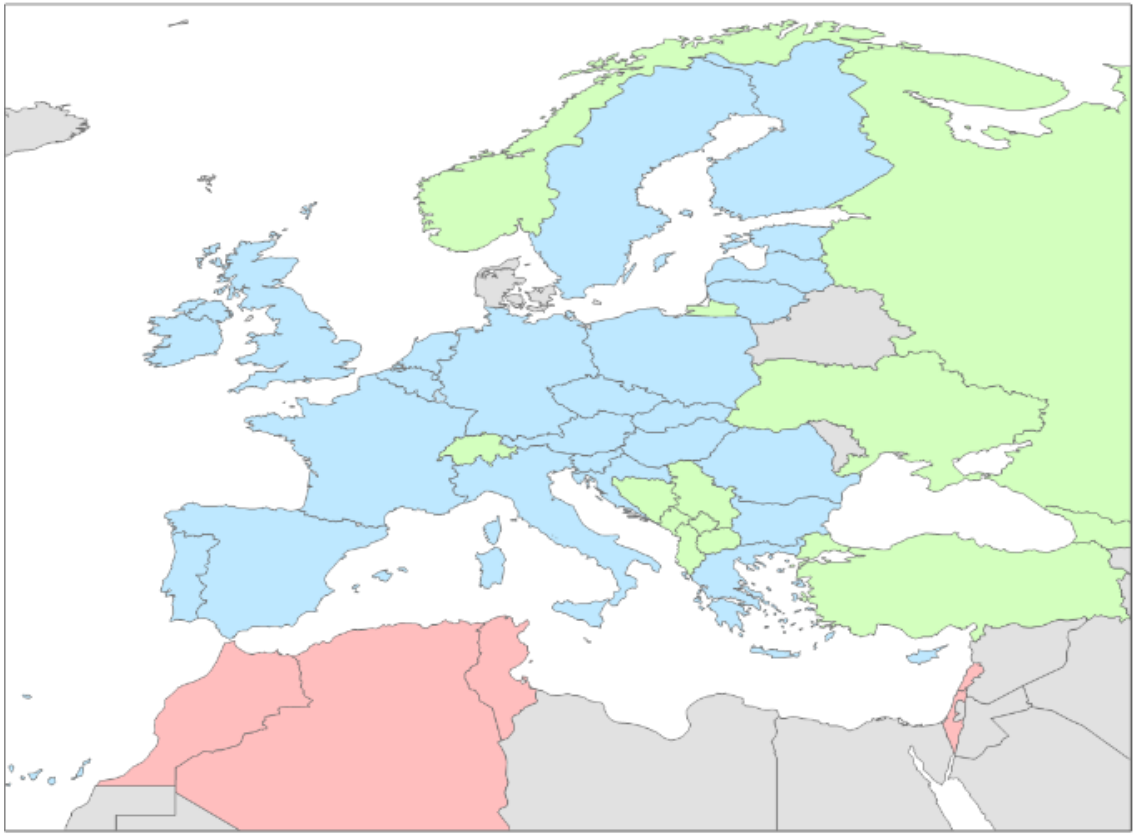
EFFIS Network

Current EFFIS Network of 43 Countries
Extension to MENA countries in collaboration with FAO

EU Countires

European non-EU countries

North Africa & Middle East

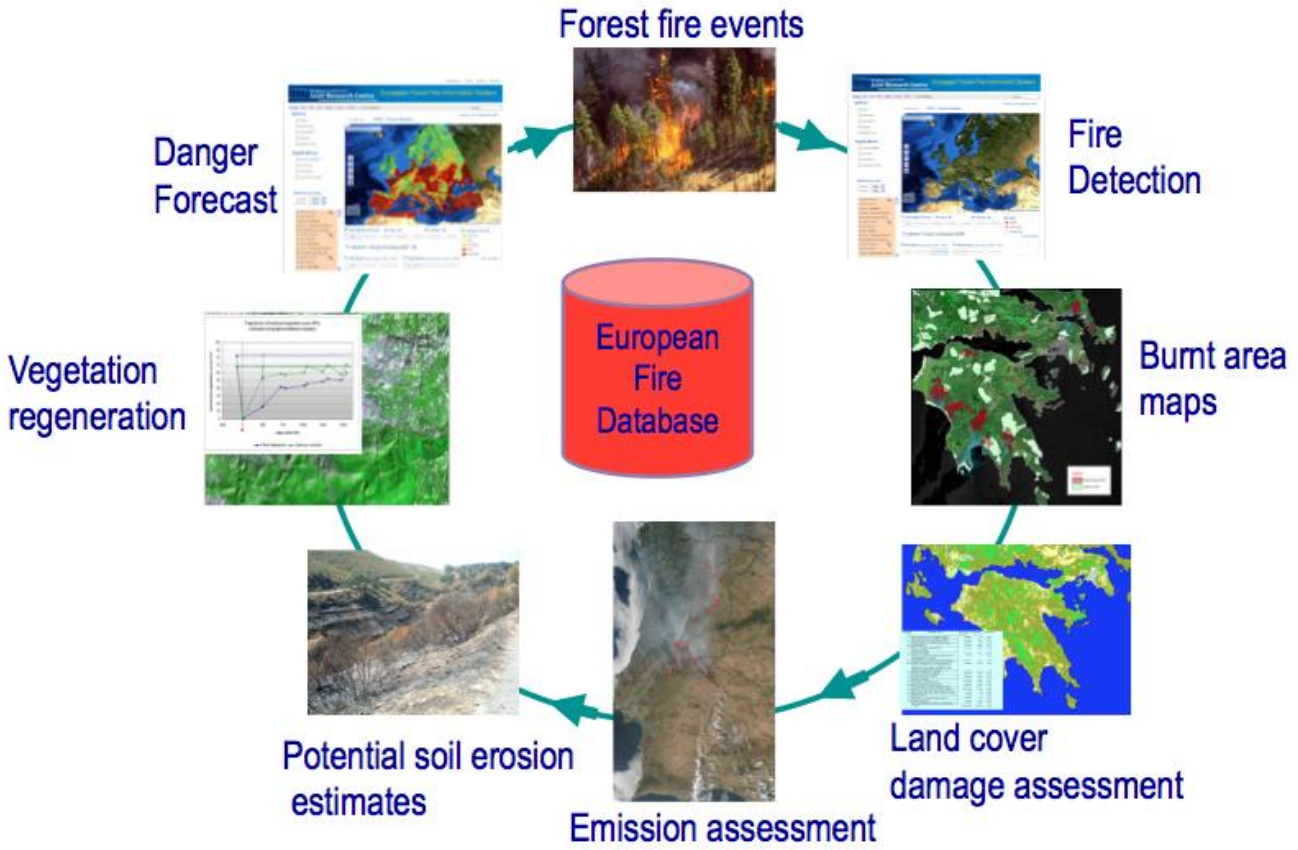


https://ec.europa.eu/commission/presscorner/detail/en/ip_20_1995

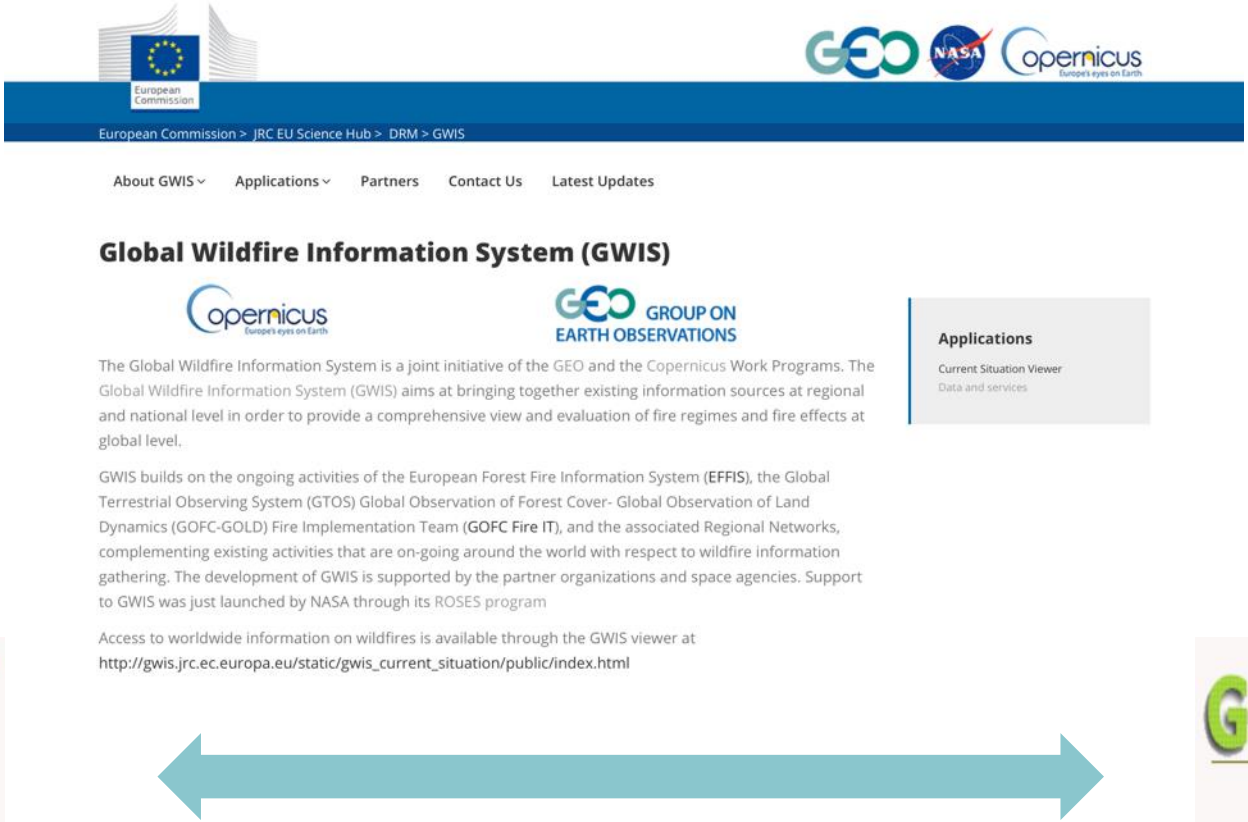
Global Wildfire Information System (GWIS)

GWIS concept:

follows the EFFIS (European Forest Fire Information System) fire cycle:



Joint Research Centre



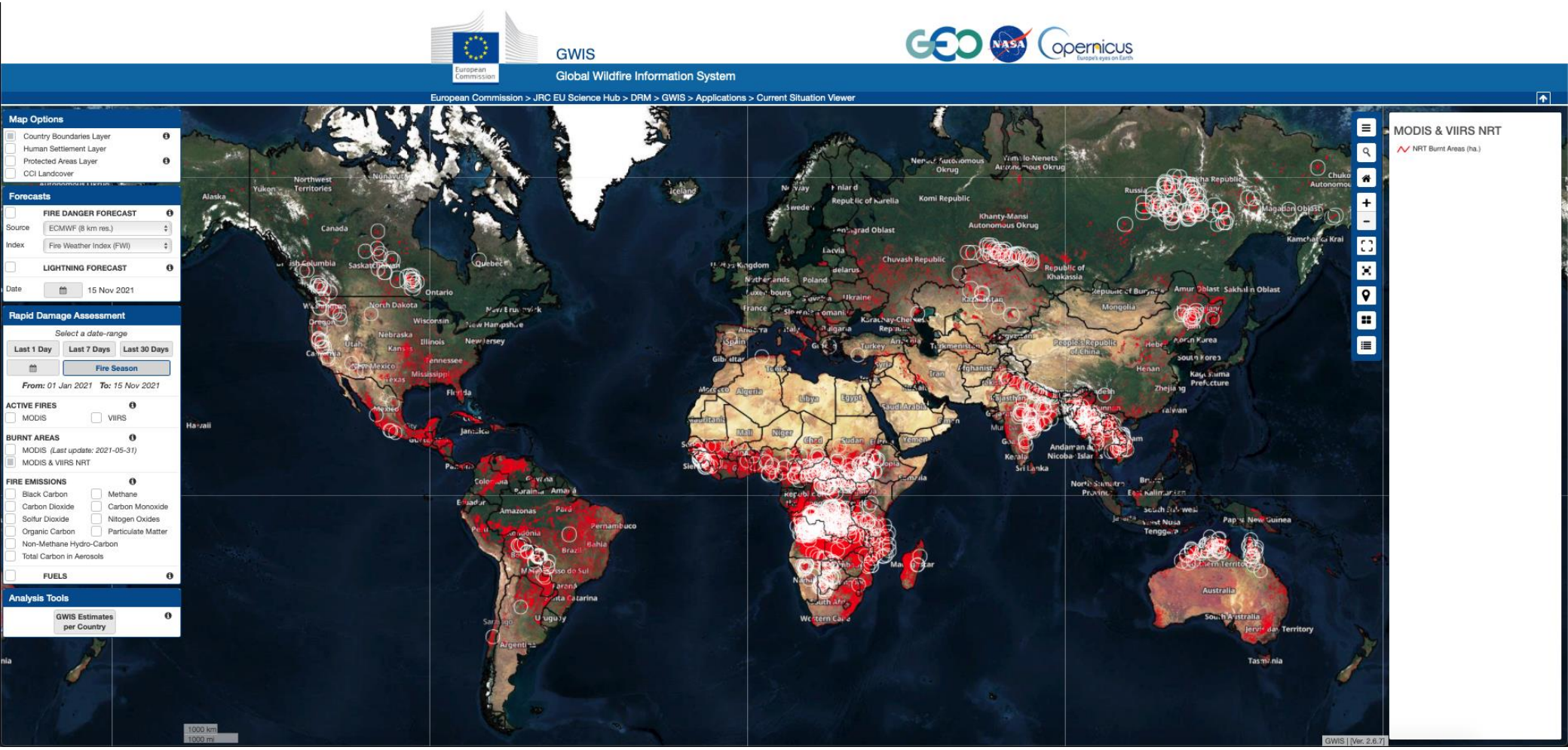
Joint Research Centre

GWIS applications – fire danger forecast

Joint Research Centre

European Commission

GWIS applications – active fire and burnt area mapping

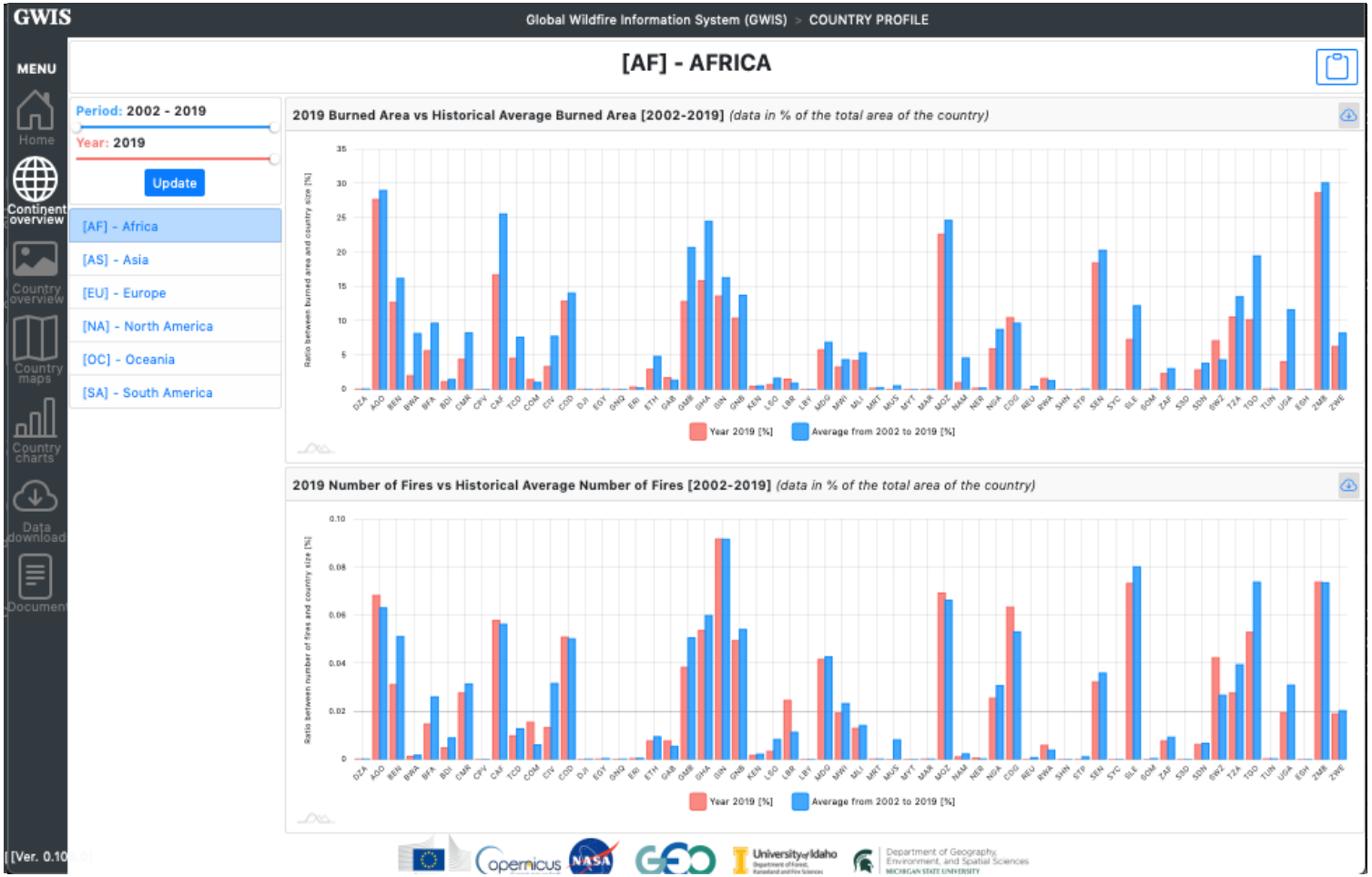


Joint Research Centre

GWIS Country Profiles (launched March 2021)

GWIS – Country Profiles:

Burnt area extent
Fire frequency
Seasonality
Landcover damage
Damage to protected areas
Etc…

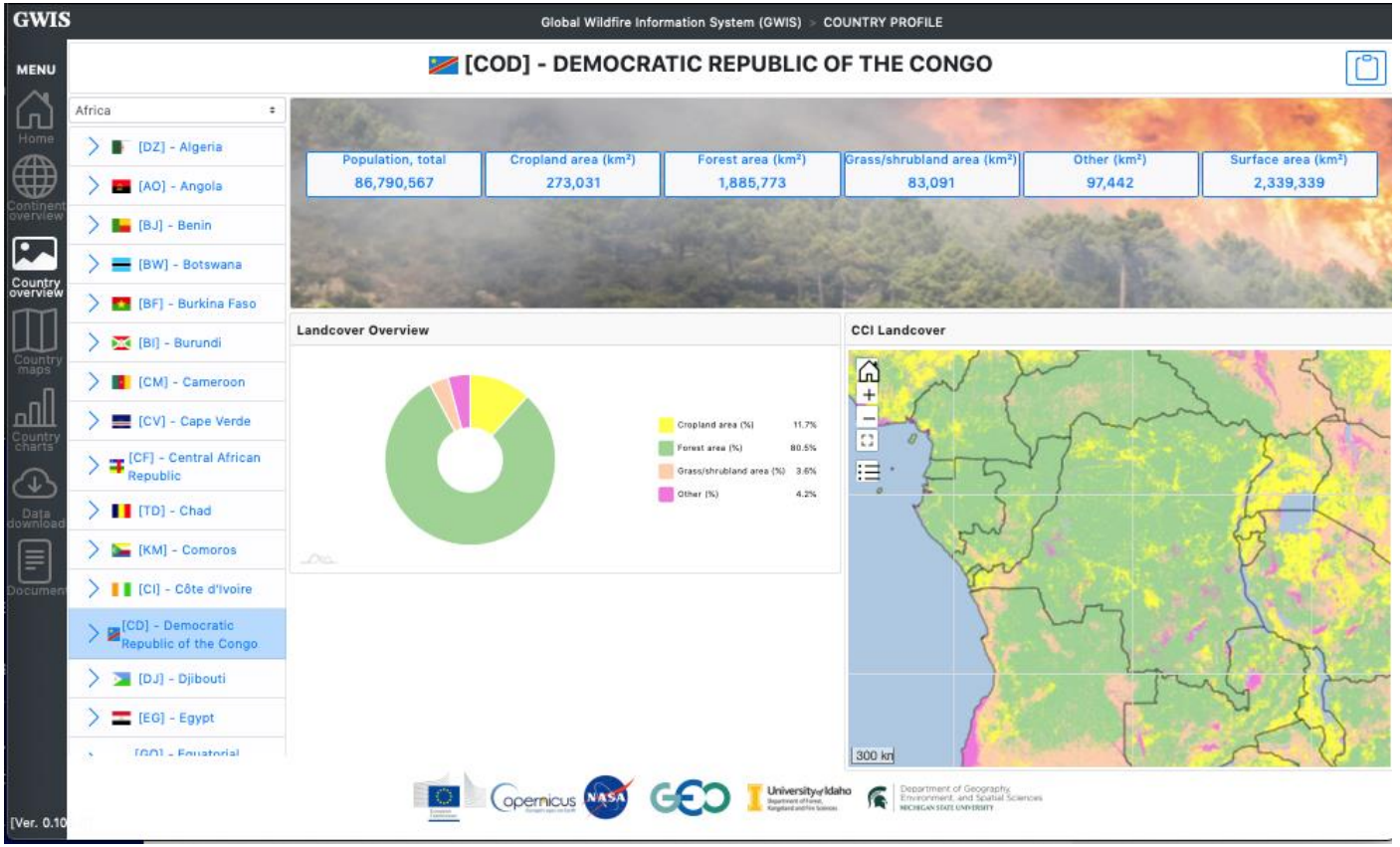


Joint Research Centre

GWIS Country Profiles (launched in 2021)

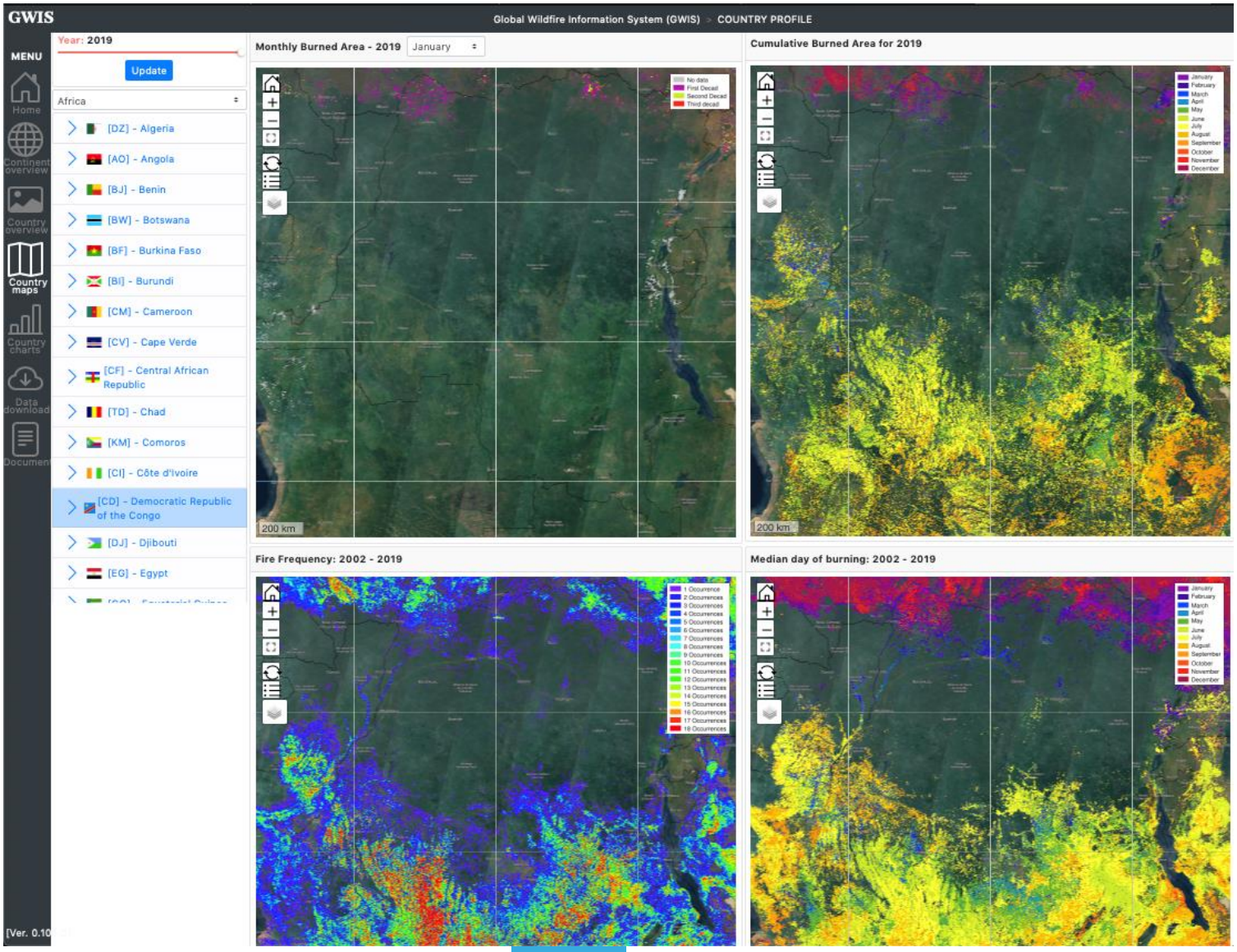
GWIS – Country Profiles:

Burnt area extent
Fire frequency
Seasonality
Landcover damage
Damage to protected areas
Etc…



Joint Research Centre

GWIS Country Profiles (launched in 2021): Maps of burnt areas

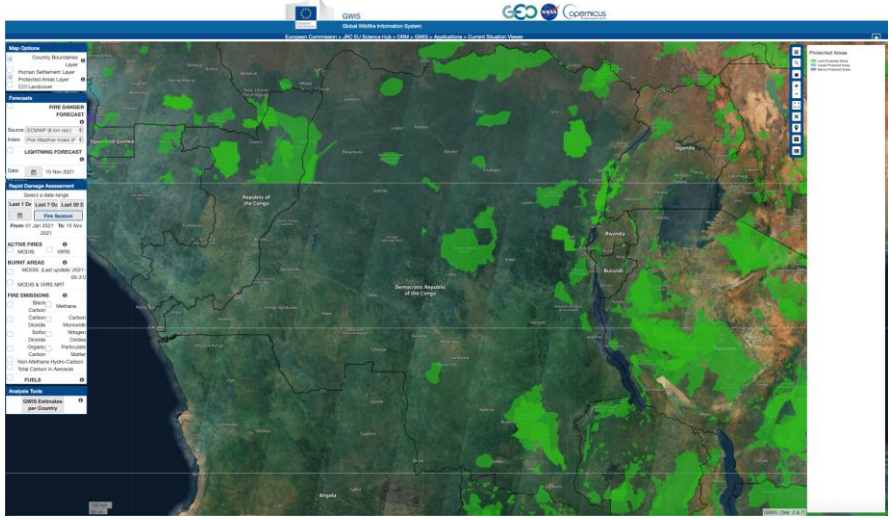


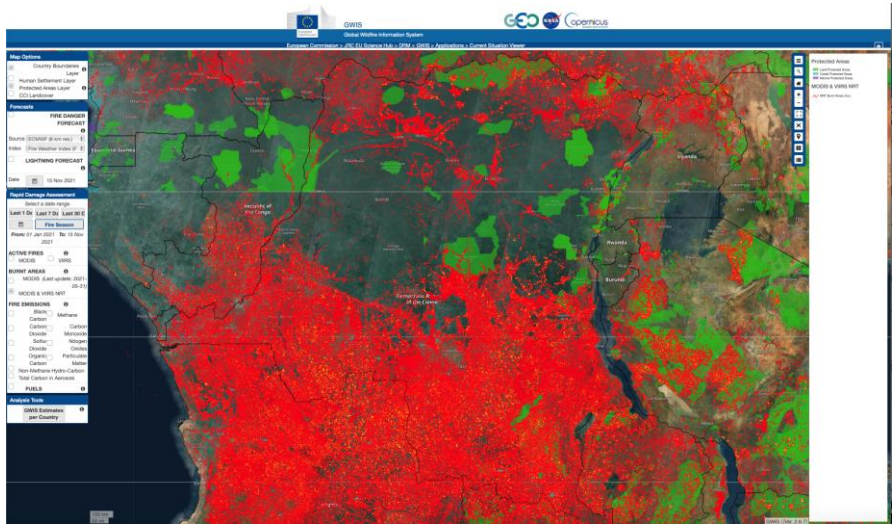
GWIS Country Profiles (launched in 2021): Burnt area, number of fires, fire size

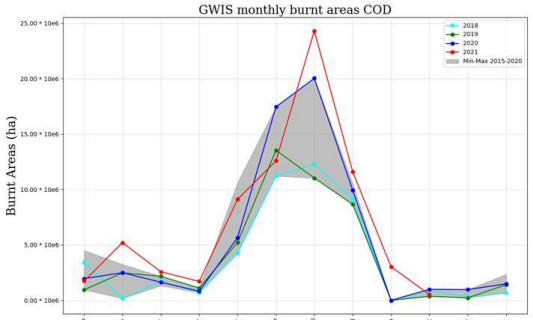
GWIS Country Profiles (launched in 2021): Biomass Emissions

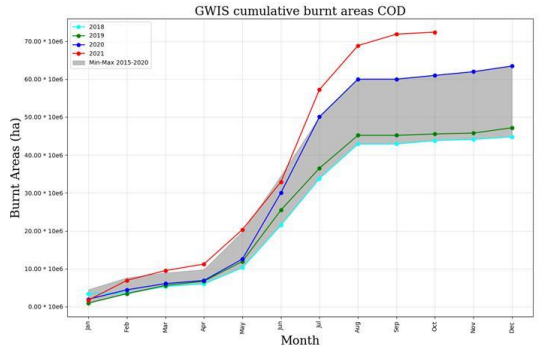
Seasonal Trends (under development, e.g. Democratic Republic of Congo):

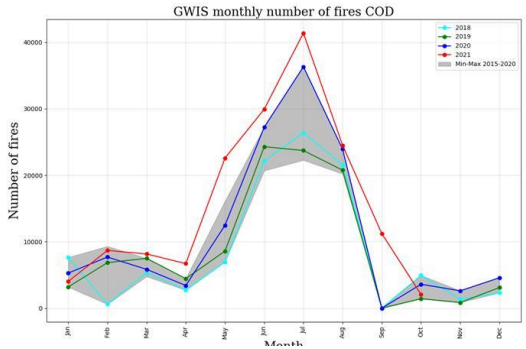
Weekly evolution of: damage to protected areas, burnt areas, active fires, land cover damage, fire danger, fire emissions

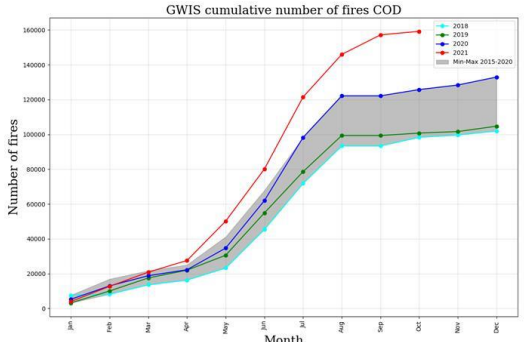


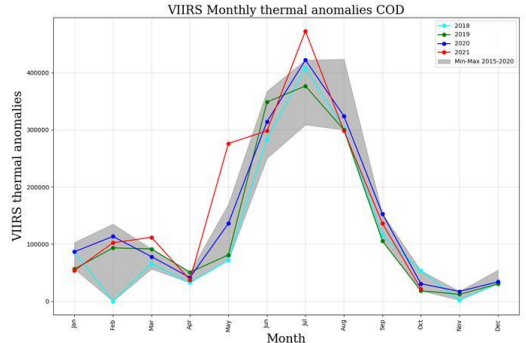


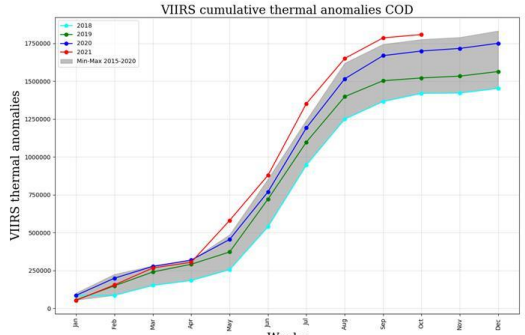






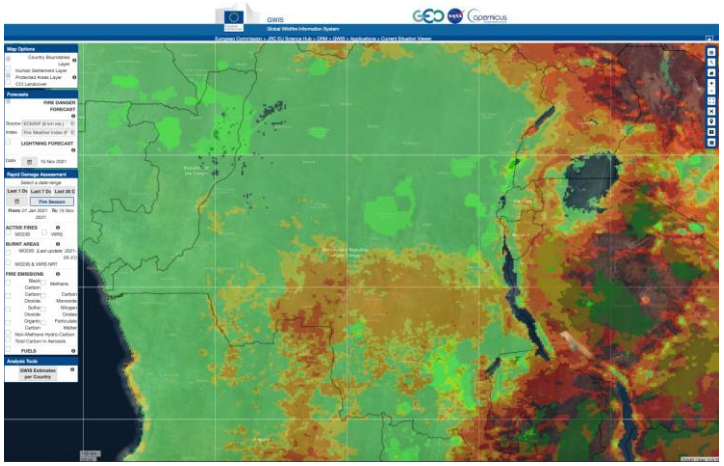






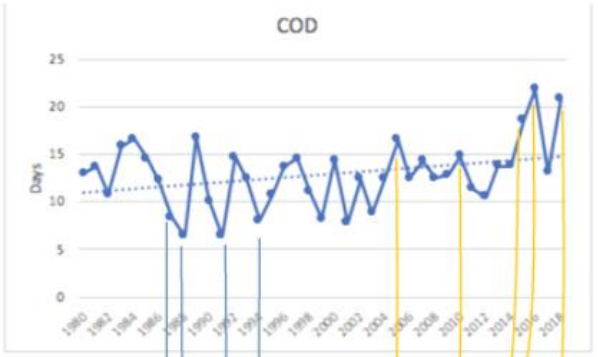
Fire danger forecast and fire danger trends

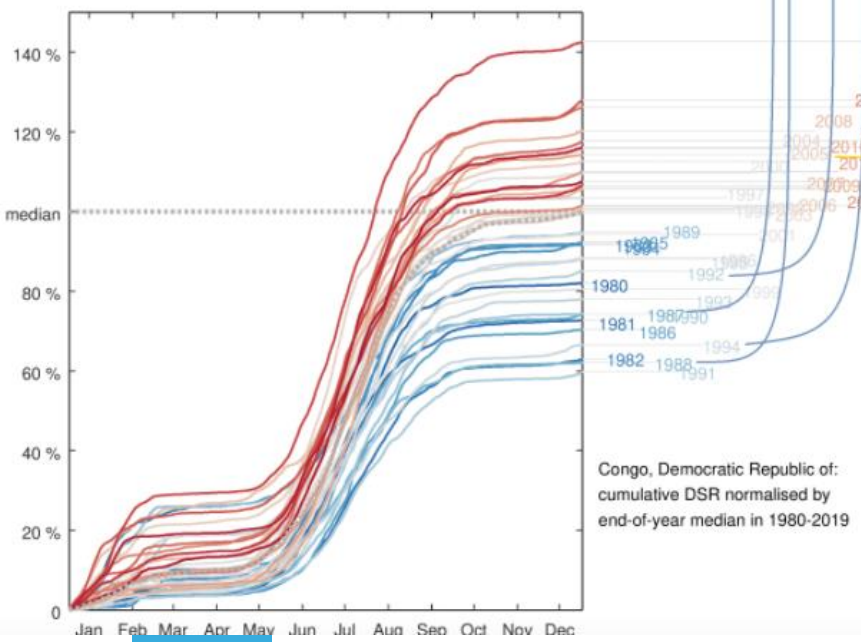
Fire Weather Index



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

jrc-effis@jrc.ec.europa.eu