Global Wildfire Information System (GWIS)

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on behalf of

the EFFIS Team & GWIS Partners

European Commission - Joint Research Centre

Outline:

1. Wildfires: a global issue
2. GWIS concept → follow the EFFIS scheme for Europe, supported by an institutional partnership
3. GWIS 2017-2019 objectives & achievements
4. GWIS 2020-2022 objectives
5. Contribution to the Sendai Framework

Wildfires: a global issue

- Huma
- Wildf ces
- Natu
- Fires
- Wildf is some regio
- Wildf

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Wildfires and climate change

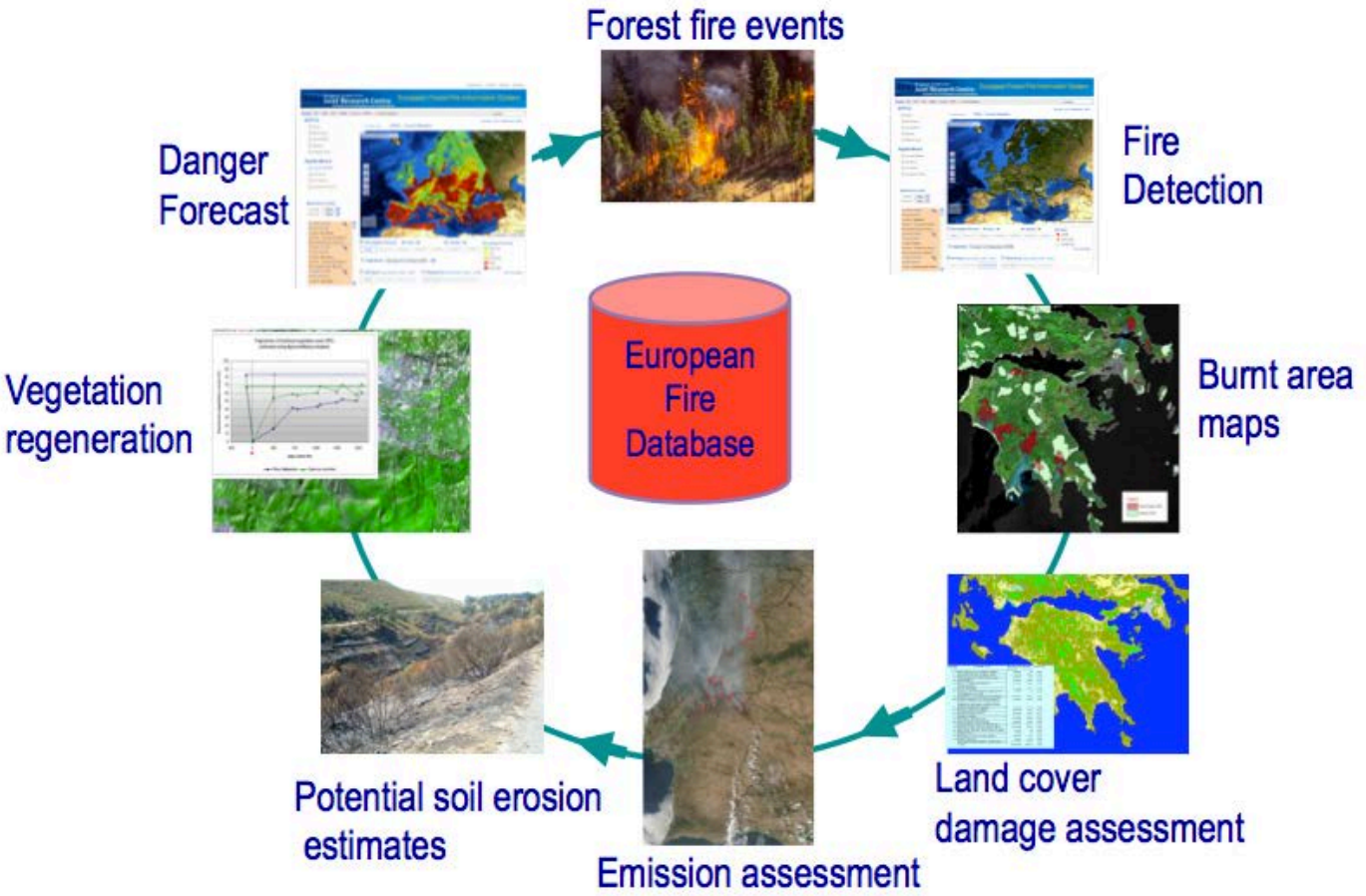
- Lengths of the fire seasons are increasing
- Wildfires are occurring in areas where they never occurred before
- Fire frequency and fire intensity are, overall, increasing
- Critical fire events are no longer rare events
- Climate change is weakening forest species, making them more prone to fires
- Emissions are to become an issue in areas where fires take place
- Climate change is identified as the cause of unprecedented critical fires.
- Some recent critical fires occurred in Alaska & Indonesia (2015), Canada, California, Portugal (2016), Chile, Canada, Australia, USA, Europe (2017), USA, Europe (2018)…

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…

GWIS concept:

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



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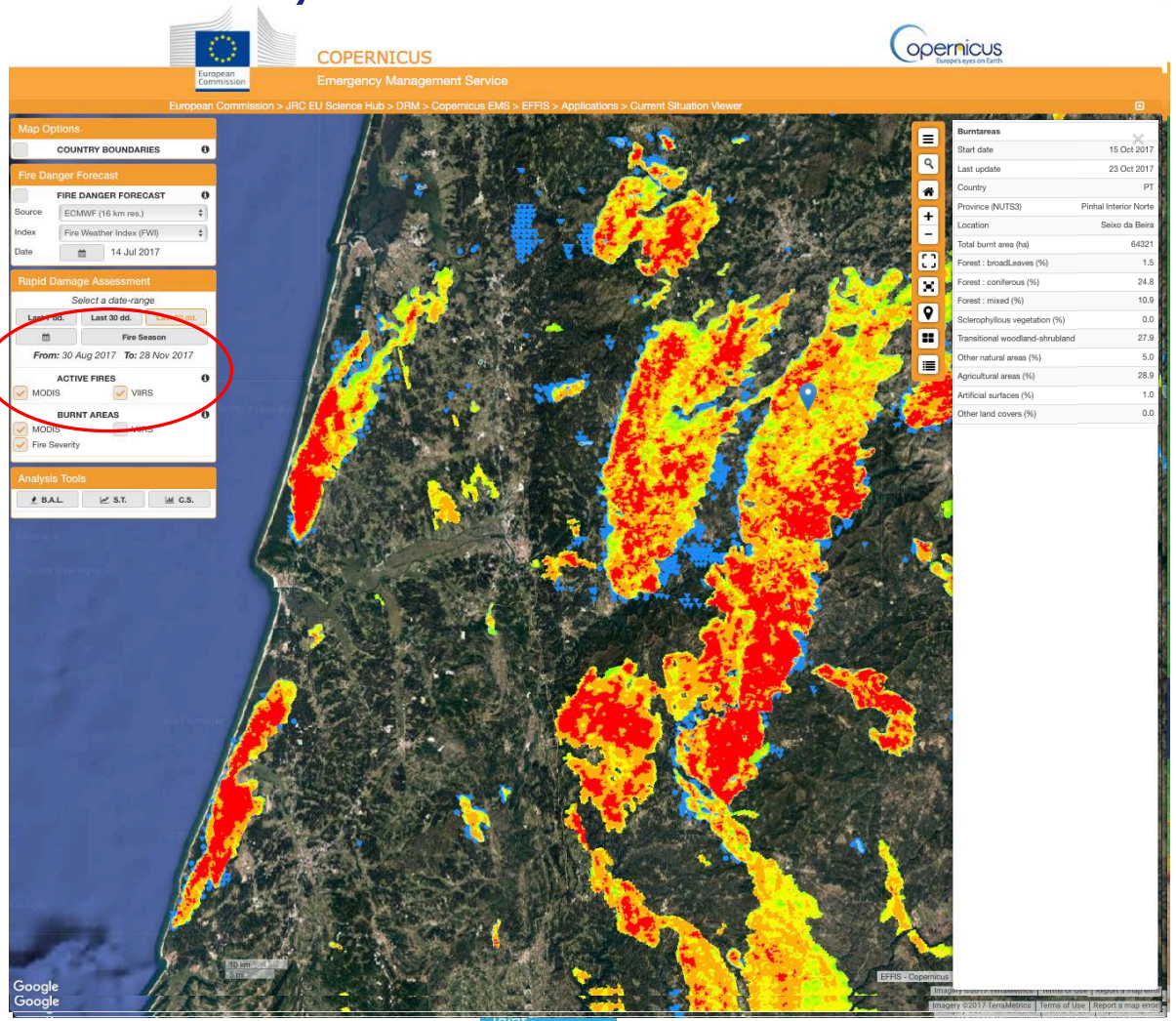
Fire danger forecast, active fire and burnt area mapping



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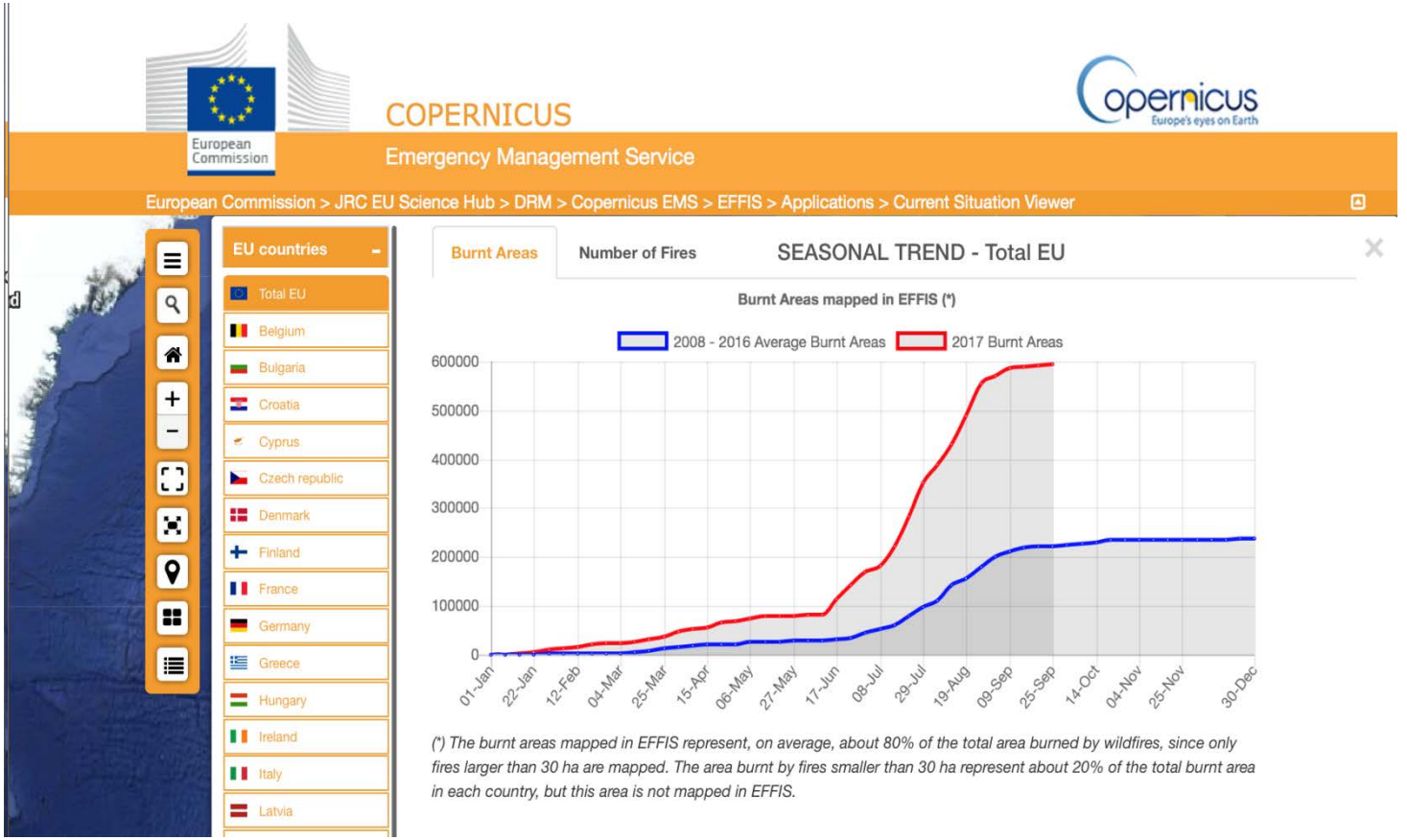
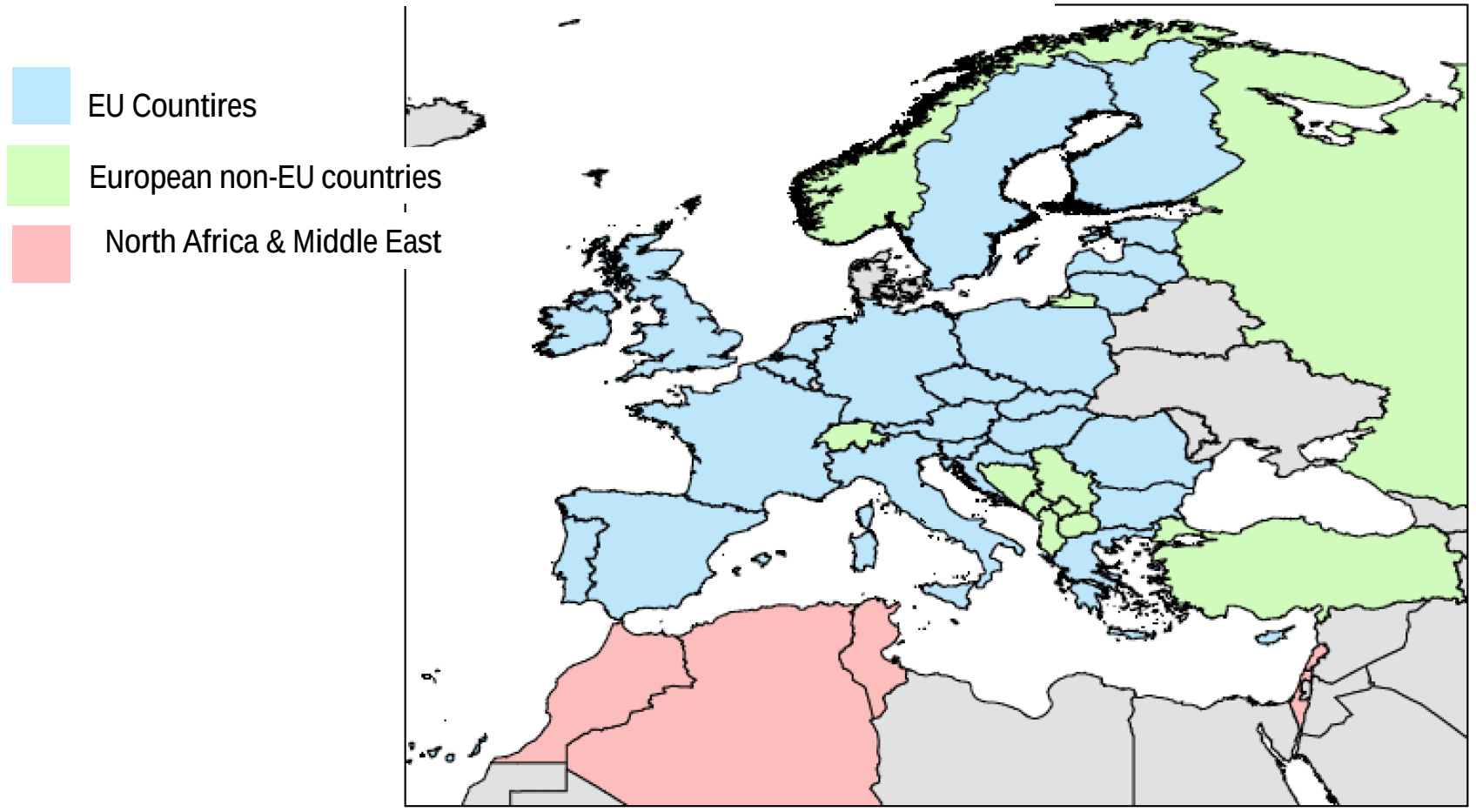
EFFIS wildfire monitoring



EFFIS Network

Current EFFIS Network of 42 Countries

Extension to MENA countries in collaboration with FAO



PT, ES, FR, UK, IT, CH, DE, SE, NO, BE, CZ, AT, SI, HR,FI, PL, SK, HU, MK, GR, EE, LV, LT, RO, BG, TR, CY, IE, MA, LB, ME, BS, KO, AL, RU, ALG, LEB, MOR, TUN, IL

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GWIS approach towards wildfire monitoring at a the global scale

- Build on existing tools/knowledge
- Seek synergies from existing initiatives
- Seek both technical and institutional support & development
- Establish and maintain a global partnership

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Global Wildfire Information System (GWIS)
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GEO GROUP ON EARTH OBSERVATIONS
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
Applications
Current Situation Viewer
Data and services
NASA
GOFC-GOLD
GLOBAL OBSERVATION OF FOREST AND LAND COVER DYNAMICS
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- Provides a science-based support of Remote Sensing products
- Supports the reach out to fire managers through its networks
- Provides a science platform for the development and implementation of GWIS

- Integrates GWIS with other global applications, strengthening GWIS
- Showcases the contribution of GWIS to policy processes, e.g. Sustainable Development Goals, GEOSS interoperability, etc.
- Provides international institutional support to GWIS through its networks

- Supports the development of GWIS through projects for data compilation and Analysis
- Capacity building through training and workshops

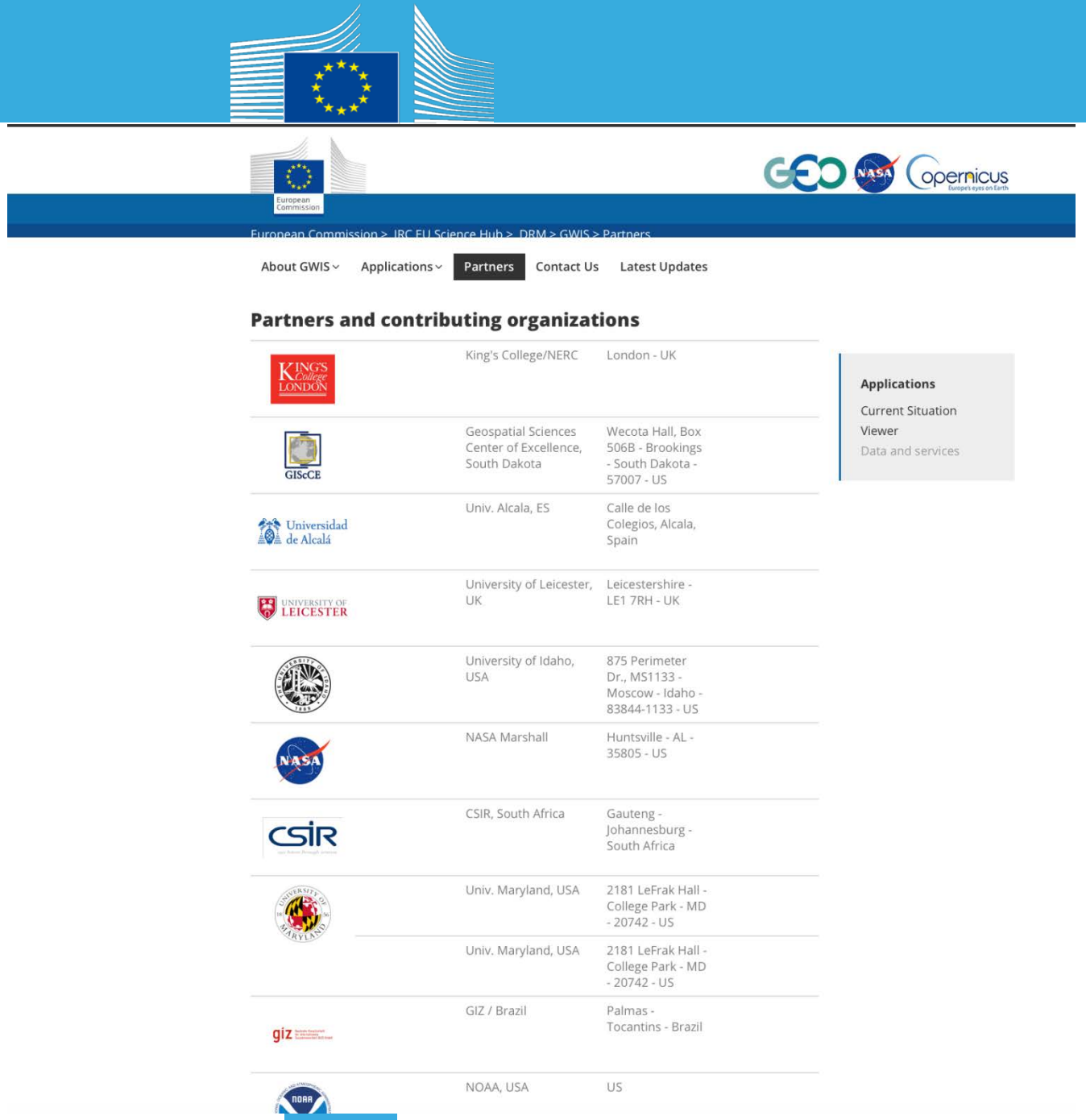
- Provides a legal base for the operation and further development through the Emergency Support Services (EU Copernicus Regulation), including EFFIS and GWIS
- Provides financial support for operation and further development of the systems up to 2020 and beyond (new Copernicus regulation)
- Provides the link to national administrations (Copernicus committee & User Forum)

Objectives of the Global Wildfire Information System program GEO 2017-2019:

1. Establish and further develop a prototype Global Wildfire Information System (GWIS)
2. Promote the networking of major national and regional fire information providers
3. Establish operational links with other wildfire communities
4. Further develop the GWIS by integrating and harmonizing as much as possible regional wildfire information data/sources.
4. Develop, implement and promote the establishment of mechanisms for interoperability and communication following OGC standards and guidelines and the GEOSS Data Sharing Principles.
5. Coordinate and promote capacity building and training activities in close cooperation with the GOFC-GOLD Fire Implementation Team regional networks and the EFFIS network.

Developments in GWIS so far

GWIS partners



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Partners and contributing organizations

	King's College/NERC	London - UK
GIScCE	Geospatial Sciences Center of Excellence, South Dakota	Wecota Hall, Box 506B - Brookings - South Dakota - 57007 - US
Universidad de Alcalá	Univ. Alcala, ES	Calle de los Colegios, Alcala, Spain
University of Leicester	University of Leicester, UK	Leicestershire - LE1 7RH - UK
	University of Idaho, USA	875 Perimeter Dr., MS1133 - Moscow - Idaho - 83844-1133 - US
NASA	NASA Marshall	Huntsville - AL - 35805 - US
CSIR	CSIR, South Africa	Gauteng - Johannesburg - South Africa
	Univ. Maryland, USA	2181 LeFrak Hall - College Park - MD - 20742 - US
	Univ. Maryland, USA	2181 LeFrak Hall - College Park - MD - 20742 - US
giz	GIZ / Brazil	Palmas - Tocantins - Brazil
NOAA	NOAA, USA	US

Applications

Current Situation Viewer

Data and services

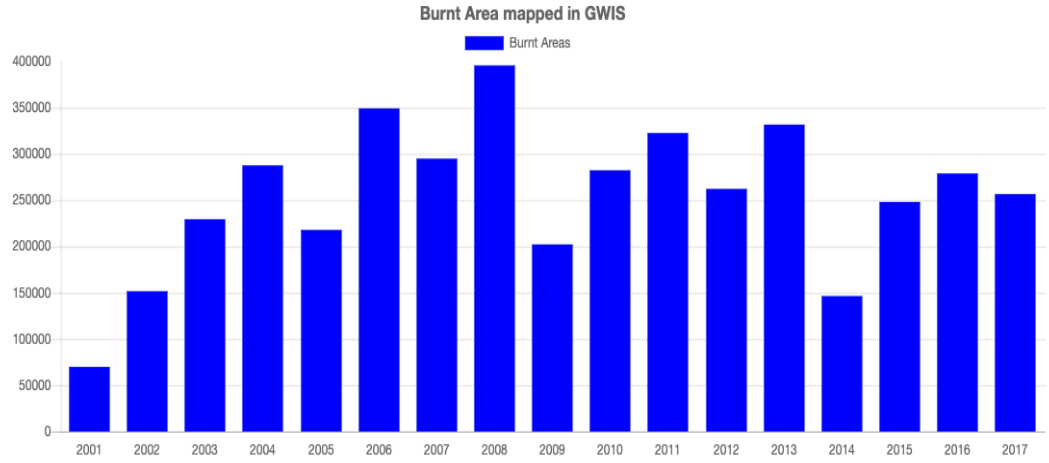
Main achievements of GWIS – 2017-2019

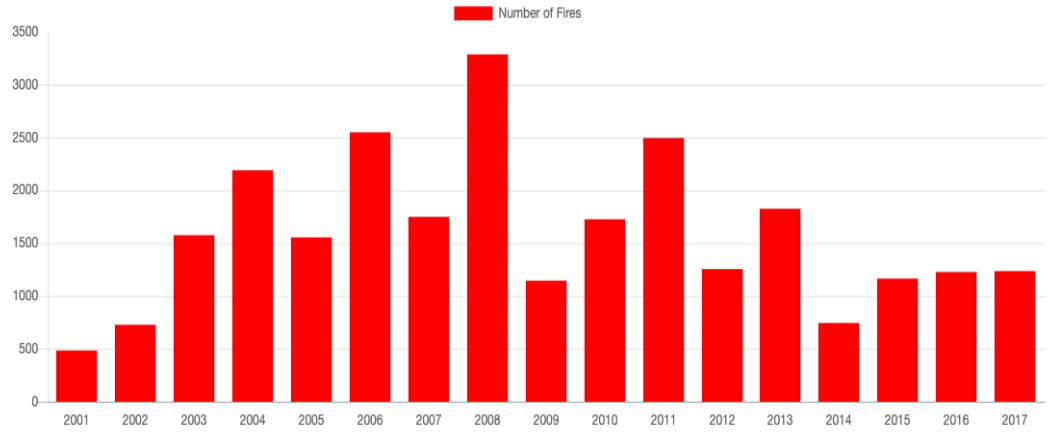
2001 2017

Africa

- Angola [AO]
- Burkina Faso [BF]
- Burundi [BI]
- Benin [BJ]
- Botswana [BW]
- Congo (Democratic Republic of the) [CD]
- Central African Republic [CF]
- Congo [CG]
- CÃ´te d'Ivoire [CI]
- Cameroon [CM]
- Cabo Verde [CV]
- Djibouti [DJ]
- Algeria [DZ]
- Egypt [EG]
- Western Sahara [EH]
- Eritrea [ER]
- Ethiopia [ET]
- Gabon [GA]
- Ghana [GH]
- Gambia [GM]
- Guinea [GN]

GWIS - Country Statistics for Gabon [GA]





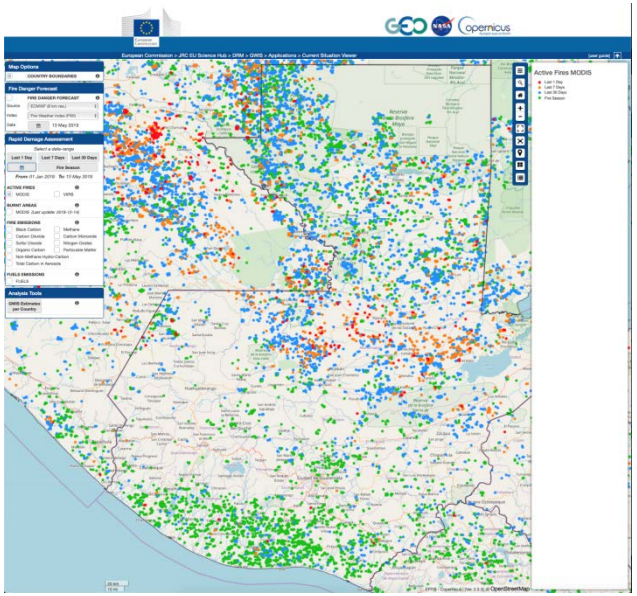
Year	Burnt Areas (ha)	Number of fires
2001	70406	489
2002	152282	733
2003	230113	1580
2004	288435	2195
2005	218579	1559
2006	349999	2554
2007	295741	1754
2008	396453	3291
2009	202874	1150
2010	283024	1731
2011	323390	2500
2012	262997	1260
2013	332399	1831
2014	147092	750
2015	248806	1170
2016	279714	1232
2017	257333	1241

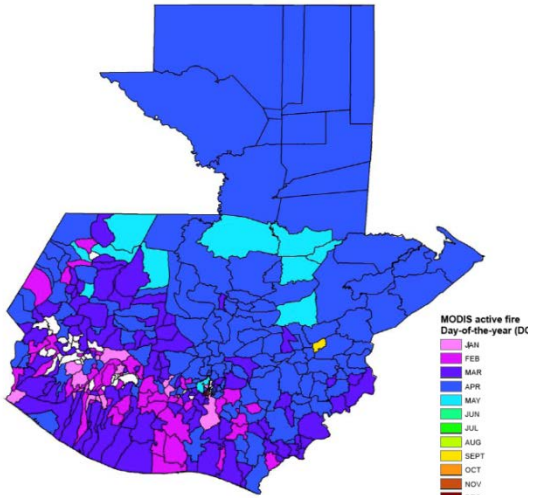
Download Statstics (.csv)

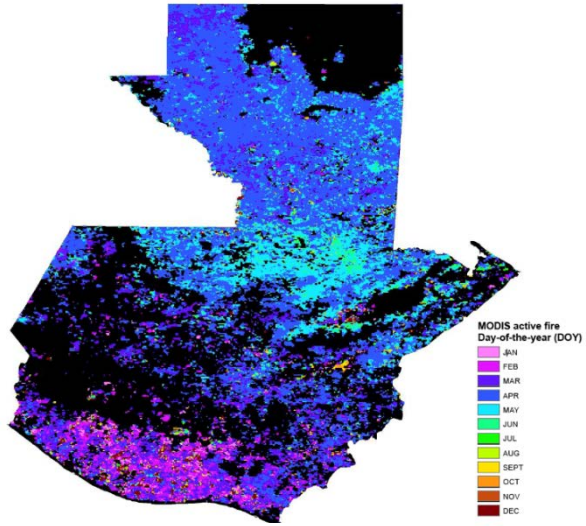
Eritrea [ER]	1520	19308	12115463

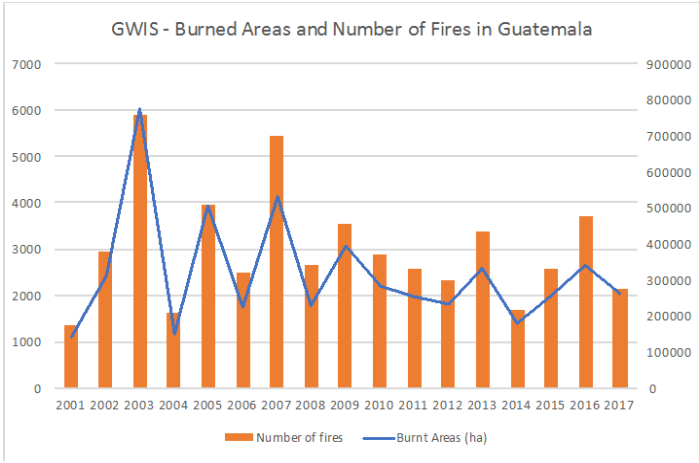
Support to the European Commission Emergency Response Coordinating Centre – 2019

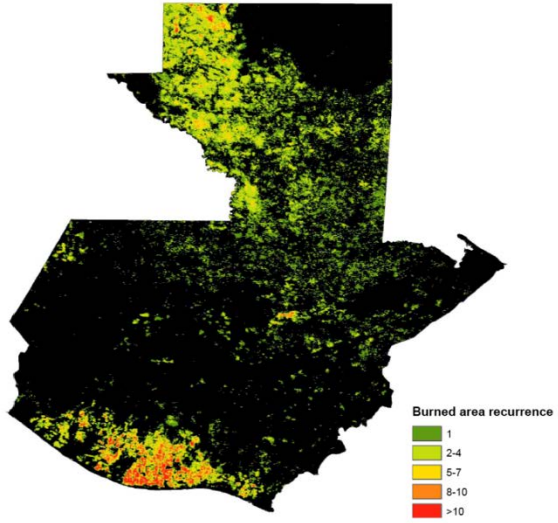
Wildfires in Guatemala











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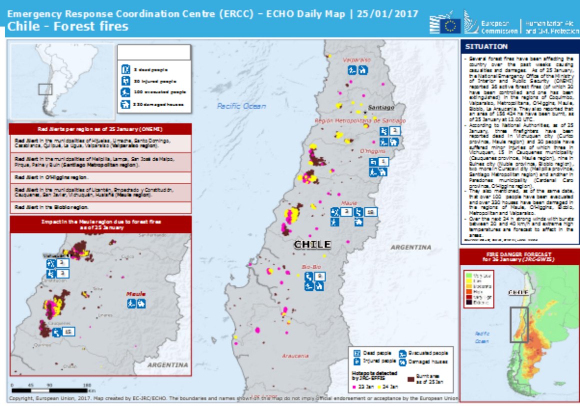
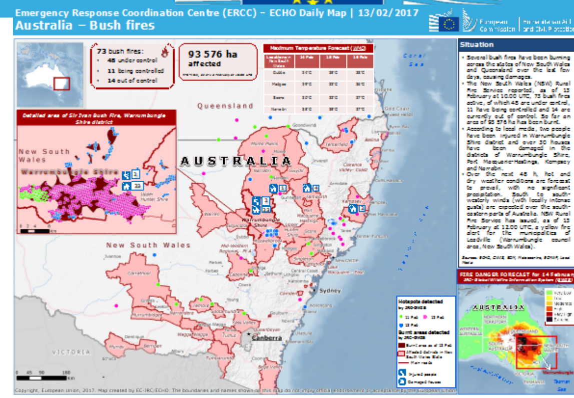
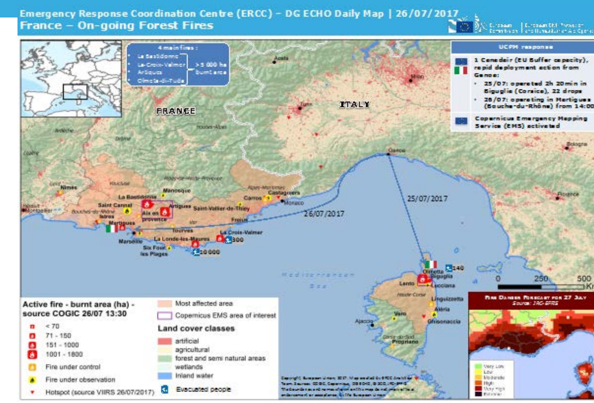
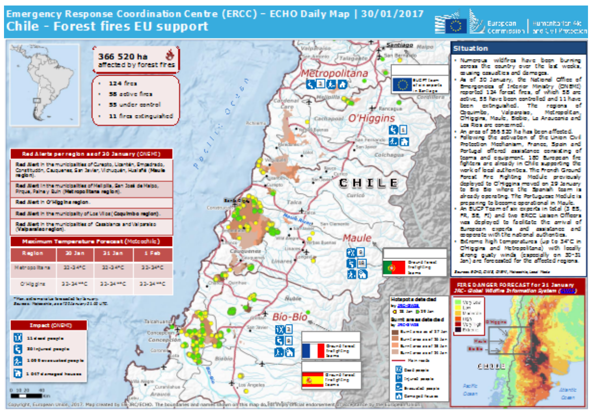
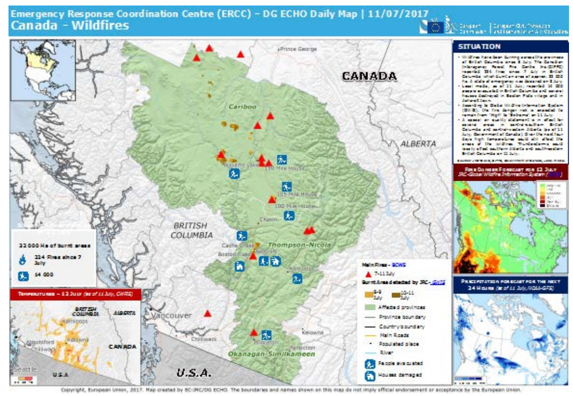
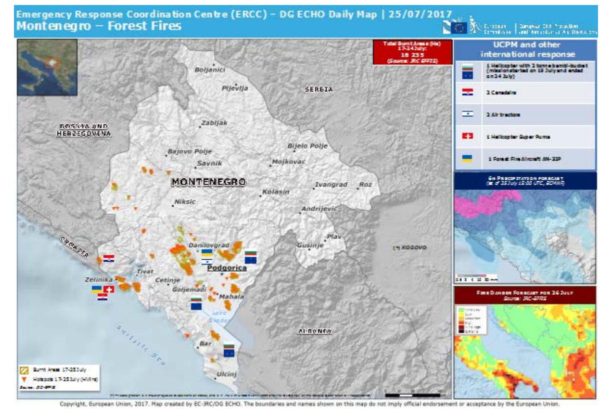

Emergency Response Coordination Centre (ERCC) – ECHO Daily Map | 25/01/2017
Chile – Forest fires
SITUATION
CHILE
ARGENTINA
Pacific Ocean

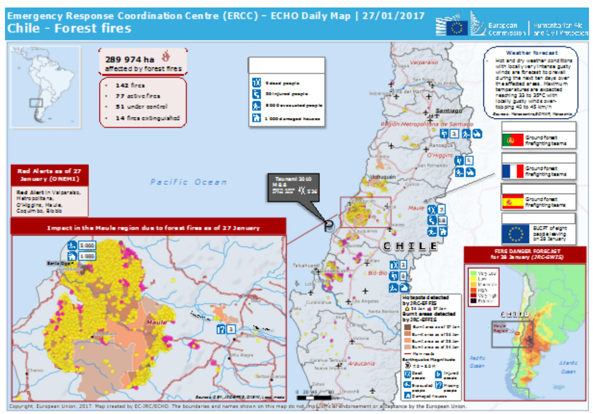

Emergency Response Coordination Centre (ERCC) – ECHO Daily Map | 13/02/2017
Australia – Bush fires
73 bush fires:
93 576 ha affected
Situation
AUSTRALIA
Queensland
New South Wales

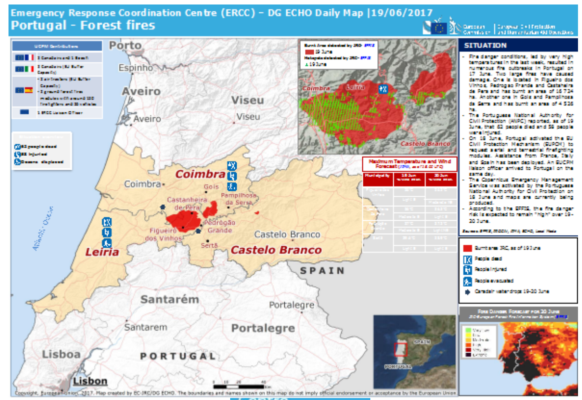

Emergency Response Coordination Centre (ERCC) – DG ECHO Daily Map | 26/07/2017
France – On-going Forest Fires
UCPM response
FRANCE
ITALY
Land cover classes

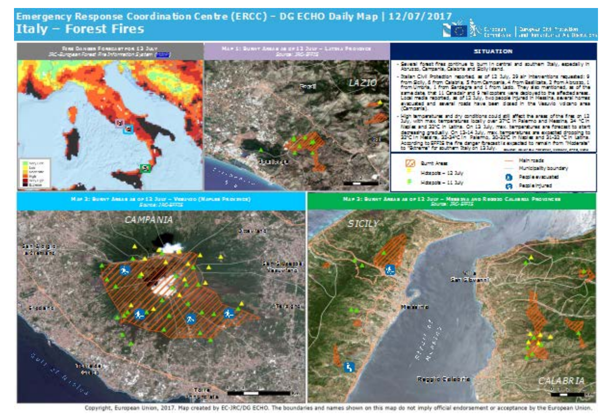

Emergency Response Coordination Centre (ERCC) – ECHO Daily Map | 30/01/2017
Chile - Forest fires EU support
366 520 ha affected by forest fires
Situation
CHILE
Metropolitana
O'Higgins
Maule
Bio-Bio


Emergency Response Coordination Centre (ERCC) – DG ECHO Daily Map | 11/07/2017
Canada – Wildfires
Situation
CANADA
BRITISH COLUMBIA
ALBERTA
U.S.A.


Emergency Response Coordination Centre (ERCC) – DG ECHO Daily Map | 25/07/2017
Montenegro – Forest Fires
UCPM and other international response
MONTENEGRO
SERBIA
Podgorica

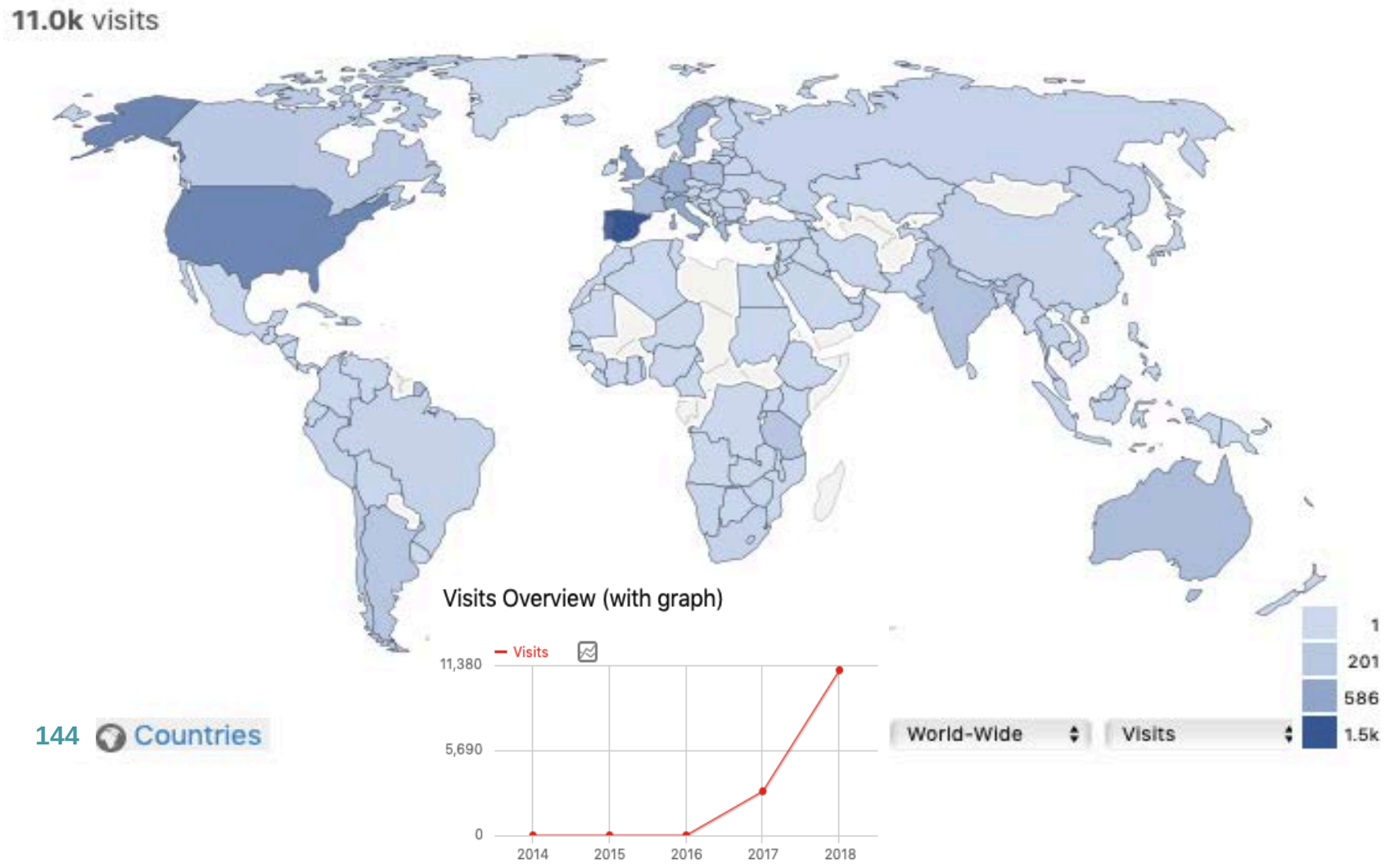

Emergency Response Coordination Centre (ERCC) – ECHO Daily Map | 27/01/2017
Chile - Forest fires
289 974 ha affected by forest fires
Pacific Ocean
CHILE


Emergency Response Coordination Centre (ERCC) – DG ECHO Daily Map |19/06/2017
Portugal - Forest fires
SITUATION
Porto
Aveiro
Viseu
Coimbra
Leiria
Castelo Branco
SPAIN
Santarém
Portalegre
Lisboa
PORTUGAL


Emergency Response Coordination Centre (ERCC) – DG ECHO Daily Map | 12/07/2017
Italy – Forest Fires
SITUATION
LAZIO
CAMPANIA
SICILY
CALABRIA

Centre

Main achievements of GWIS – 2017-2019



Contribution to the Sendai Framework

	GWIS & SDGs	
	**Goal 1. End poverty in all its forms everywhere**	
	1.5 By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters	Better preparedness as regards wildfire exposure and vulnerability, building a more resilian society towards wildfires.
	**Goal 3. Ensure healthy lives and promote well-being for all at all ages**	
	3.d Strengthen the capacity of all countries, in particular developing countries, for early warning, risk reduction and management of national and global health risks	Strengthen the capacity of the countries for early warning by adapting technologies and develop risk reduction strategies to prepare for climate change
	**Goal 11. Make cities and human settlements inclusive, safe, resilient**	
	11.5 By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations	Contribution to early warning, climate change adaptation and resiliance.
	11.b By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015-2030, holistic disaster risk management at all levels	Contribution to early warning, climate change adaptation and resiliance

Contribution to the Sendai Framework

Goal 13. Take urgent action to combat climate change and its	
13.1 Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries	Analysis of wildifre regimes and adaptation measures; training and capacity building
13.2 Integrate climate change measures into national policies, strategies and planning	Provision of historical and current data supporting the planning and implementation of national and international policies
13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning	Training and capacity building as regards wildfire prevention and early warning
Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and	
15.2 By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally	Assessment of wildfire impacts, including deforestation and degradation.
15.3 By 2030, combat desertification, restore degraded land and soil, including land affected by desertification, drought and floods, and strive to achieve a land degradation-neutral world	Assessment of wildfire impacts, including land degradation and desertificaiton in arid regions.
15.5 Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species	Assessment of wildfire impacts on natural habitats and promotion of good practices on fire management
Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	
Technology	
17.6 Enhance North-South, South-South and triangular regional and international cooperation on and access to science, technology and innovation and enhance knowledge-sharing on mutually agreed terms, including through improved coordination among existing mechanisms, in particular at the United Nations level, and through a global technology facilitation mechanism	Technology transfer and capacity building activities, training and networking, including transfer of knowledge on wildfires early warning.
Capacity-building	
17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and	Technology transfer and capacity building activities, training and networking, including transfer of knowledge on wildfires early warning.

Main objectives for the GEO WP 2020-2022

1. Maintain and further develop the Global Wildfire Information System (GWIS), providing harmonized fire information e.g. fire danger, active fires, burned areas, emissions, as well as reports on wildfire regimes and statistics at national, regional and global level.
2. Integration of NASA Earth Science, Applied Science Program-supported GEO GWIS Project results into operation:
    - Global Active Fire monitoring from geostationary satellites
    - Fire danger prediction – specific calibration for regional scales
    - National/regional/global GWIS services for fire managers and fire administrations.
3. Develop methods for the global assessment of wildfire risk and implementation of this assessment at the global scale → feeding the UNDRR Global Risk Assessment Framework (GRAF)
4. Integration of global wildfire products from all sources, including e.g. ESA Fire CCI and Copernicus products
5. Promote, dissemination, and training on the use of GWIS methods and tools to the wildfire community and the general public, in cooperation with FAO, NASA ARSET, the Copernicus Communication Services and the GEO Secretariat.
6. Follow up on: Integration of regional systems, organization of an annual workshop with partners and networks, capacity building, support the GEO data sharing principles

Thank you

GWIS: http://gwis.jrc.ec.europa.eu

4th GWIS/GOFC Fire IT Annual Workshop
at the Italian National Research Council, Rome, on October 1st-2nd , 2019

GWIS Special Session at the 7th International Wildland Fire Conference, Campo Grande, Brazil, on November 29th, 2019