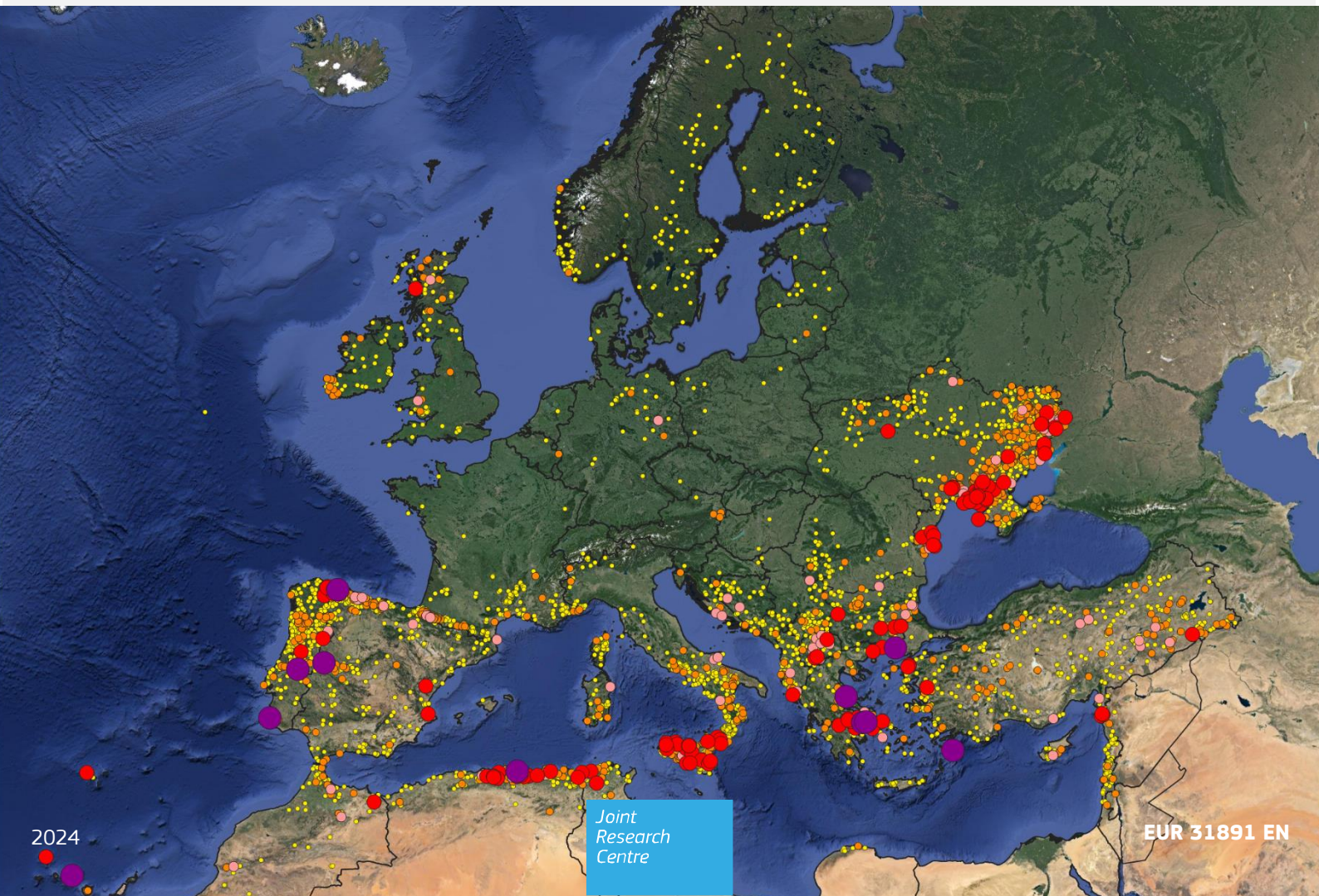




JRC TECHNICAL REPORT

Advance report on Forest Fires in Europe, Middle East and North Africa 2023



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Cover page illustration: EFFIS – Distribution of burnt areas mapped in 2023.

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Abstract

This report contains the annual summary of the wildfire season of 2023 on the basis of data from the European Forest Fire Information System (EFFIS). It is published early in 2024 to provide an advance comprehensive analysis of the wildfire season 2023. The analysis and data in the report complement the near-real time data provided in the web applications of EFFIS during 2023 and precede the complete analysis of the 2023 wildfire season that will be published in collaboration with the EFFIS country network in the last quarter of 2024.

The report includes an analysis of the fire danger situation in 2023 and correlates this with the impact of wildfires, which is represented by the burnt areas mapped in the European Forest Fire Information System (EFFIS). Furthermore, the report provides a time series comparison of the fire danger situation and the impact of wildfires in 2023 in relation to the historical overview of the data series in EFFIS.

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1 The European Forest Fire Information System (EFFIS)

The European Forest Fire Information System (EFFIS) has been established jointly by the European Commission services (DG ENV and JRC) and the relevant fire services in the EU Member States and European countries (Forest Services and Civil Protection services). Research activities for the development of the system initiated at JRC in 1998 and the first EFFIS operations were in the year 2000.

In 2003, EFFIS was embedded in the new Regulation (EC) No 2152/2003 (Forest Focus) of the European Council and Parliament on monitoring of forests and environmental interactions until it expired in 2006. Since then, EFFIS operated as a voluntary system of information on wildfires until the end of 2015, when it became part of the EU Copernicus program, under the Emergency Management Services.

Acting as the focal point of information on forest fires, EFFIS supports the national services in charge of wildfire management. Currently, the EFFIS network is made up of 43 countries in Europe, Middle East and North Africa. EFFIS provides specific support to the Emergency Response Coordinating Centre (ERCC) (formerly Monitoring and Information Centre (MIC)) of Civil Protection as regards near-real time information on wildfires during the fire campaigns, and assists other DGs through the provision both pre-fire and post-fire information on wildfire regimes and impacts. It provides information that supports the needs of the European Parliament with regards to wildfire management, impact in natural protected areas and harmonized information on forest fires in the EU.

EFFIS also centralises the national fire data that the countries collect through their national forest fire programmes in the so-called EFFIS Fire Database. The EFFIS web services¹ allow users to access near-real time and historical information on wildfires in Europe, Middle East and North Africa.

EFFIS provides a continuous monitoring of the fire situation in Europe and the Mediterranean area, and regularly sends updates to EC services during the main fire season. The information about the on-going fire season is continuously updated on the EFFIS web site (up to 8 times, daily), which can be interactively queried². EFFIS provides daily meteorological fire danger maps and forecasts of fire danger up to 9 days in advance, updated maps of the latest active fires, wildfire perimeters and post-fire evaluation of damage.

The EFFIS module for the assessment of meteorological forest fire danger is the EFFIS Danger Forecast. This module forecasts forest fire danger in Europe, part of North Africa and the Middle East, on the basis of the Canadian Fire Weather Index (FWI), allowing a harmonized evaluation to be made of the forest fire danger situation throughout Europe and neighbouring countries.

The damage caused by forest fires in Europe and neighbouring countries is estimated using the EFFIS Rapid Damage Assessment (RDA) module. Since 2000, cartography of the burnt areas is produced every year through the processing of satellite imagery. After 2003 the processing chain was further automated to process MODIS data in near-real time. Daily, two full image mosaics of the European territory are processed in EFFIS to derive burnt area maps, every day. Additionally, since 2018, Sentinel-2 imagery is used to map fires, which allows the mapping of fires smaller than 30 ha and refining the final perimeters of those fires initially mapped from MODIS 250 m imagery. The burnt area mapped by EFFIS corresponds, on average, to around 95 % of the total area burnt in Europe each year. Further to the mapping of burnt areas, the analysis of which types of land cover classes are affected by fires is performed.

¹ <http://effis.jrc.ec.europa.eu>

² see <http://effis.jrc.ec.europa.eu/current-situation>

2 Wildfires in 2023: Country reports from EFFIS

The EFFIS Danger Forecast

The EFFIS Danger Forecast was developed to support the Commission's Directorate-General for the Environment and the forest fire-fighting services in the EU Member States. From 2002, at the request of the Member States, operation of the EFFIS Danger Forecast was extended to six months starting on 1 May and ending on 31 October, and in 2006 to nine months, from 1 February to 31 October. From 2008 the EFFIS Danger Forecast system has run continuously throughout the year without interruption.

The geographic extent has been enlarged over the years from the initial extent that covered only the Mediterranean region. Now the system covers the whole of Europe and MENA (Middle East & North Africa) countries.

The meteorological data used to run the model has also changed during the years. At the beginning the system started using forecasted data provided by Météo-France³ with a spatial resolution of around 50 km. Then over time other providers were included, such as DWD (Deutscher Wetterdienst)⁴ and ECMWF (European Centre for Medium-Range Weather Forecast)⁵ and the resolution has improved. Now the system runs with three different data sets from three providers: ECMWF (the primary), Météo-France and DWD; with a spatial resolution in a range from around 10 km to 25 km.

In the following chapters the fire danger trends assessed by EFFIS in the different countries during the 2023 fire season are presented, comparing them with long term trends. To make this analysis we use the Fire weather Index (FWI) calculated on the base of the ECMWF ERA5 reanalysis dataset. The link can be found here:

<https://cds.climate.copernicus.eu/cdsapp#!/dataset/cems-fire-historical?tab=overview>

Through the Danger Forecast module of EFFIS the situation has been continuously monitored and the risk level analysed and mapped.

In the charts we present fire weather index data for the current year, showing how it compares against the long-term minimum and maximum, the 10-90 percentiles, and the long-term average (measured from 1980-2022). This makes it possible to see whether and when extreme conditions occur in the current year.

The current methodology is based on the calculation of the FWI of each country day by day for the whole

time series. Then for each country we calculate the statistics - min, max, average, the 10th percentile and the 90th percentile.

Mapped burnt areas

The country chapters also detail the burnt areas mapped in each country in 2023.

European countries (EU and non-EU) are listed alphabetically, followed by the MENA countries.

Burnt areas are split into different land cover types using the CORINE Land Cover (CLC) 2018 database unless otherwise specified.

The figures may also include agricultural and urban areas that were burned during the wildfires, or prescribed fires, which may not strictly be considered forest fires in the countries concerned. The breakdown of totals into the different land cover types gives some ideas of the different areas affected.

NOTE

In 2023, fires smaller than 30 ha were mapped. These figures are displayed in the tables of land cover types and the charts of monthly numbers of fires/burnt areas.

However, when comparing the latest data with the historic records of previous years, a filter has been applied excluding fires under 30 ha, in order to make consistent comparisons. This applies to the charts showing the annual time series of mapped numbers of fires/burnt areas.

It is also worth noting, however, that almost all burnt area results from fires larger than 30 ha.

³ <https://meteofrance.com/>

⁴ <https://www.dwd.de>

⁵ <https://www.ecmwf.int/>

2.1 EFFIS Rapid Damage Assessment: 2023 results

The Rapid Damage Assessment module of EFFIS was set up to provide reliable and harmonized estimates of the areas affected by wildfires during the fire season. The methodology and the spatial resolution of the satellite sensor data used for this purpose, from the MODIS sensor, at 250 metre spatial resolution, allowed fires of about 30 ha or larger to be mapped. This methodology was enhanced in 2018 through the use of Sentinel 2 imagery, at 20 metre spatial resolution, which allowed the mapping of fires of about 5 ha or larger.

In order to maintain the comparability of the area burnt nowadays with the area mapped prior to 2018, when current results are compared with those of previous years, only the number and the area burnt by fires above 30 ha is used, while the higher resolution is reported for the 2023 season.

Although the number of fires mapped in EFFIS is only a fraction of the total number of fires in the countries, the area burned by these fires represent approximately 95 % of the total burnt area reported by the countries.

The fires mapped in EFFIS include all those fires that burned natural land, including prescribed fires that are set for management or conservation purposes.. Non-wildland fires are excluded from the statistics published in the system. Accordingly, fires that burn grassland, shrub land and other wooded land are included in the EFFIS statistics. If a portion of a mapped fire includes agricultural or urban areas, these land covers are included in the estimation of the area of the event. Information on each type of land cover that is affected by the fires mapped in EFFIS is provided for each fire event. However, total figures of burnt areas may not correspond with national statistics that consider only areas burned in forest areas.

In order to obtain the statistics of the burnt area by land cover type, the data from the European CORINE Land Cover database were used. Therefore, the mapped burnt areas were overlaid with the CLC data, making it possible to derive damage assessment results comparable for all the EU countries.

The results for each of the countries affected by forest fires are given in the following paragraphs in alphabetical order, followed by a section on the MENA countries.

The total area burned in 2023, as shown by the analysis of satellite imagery, is shown in Table 1.

Figure 1 shows the scars caused by forest fires during the 2023 season. In 2023, fires were mapped in 43 countries and a total burnt area of 907 674 ha was mapped, around two thirds the area mapped in 2022.

Table 1. Areas mapped in 2023 estimated from satellite imagery.

Country	Area (Ha)	Number of Fires
Albania	6012	80
Algeria	73725	620
Austria	403	6
Belgium	240	2
Bosnia & Herzegovina	3543	50
Bulgaria	16828	148
Croatia	2873	24
Cyprus	2010	19
Czechia	22	1
Denmark	144	6
Estonia	219	8
Finland	531	48
France	27872	675
Germany	1194	39
Greece	175759	174
Hungary	161	3
Ireland	5203	117
Israel	706	15
Italy	107231	1378
Kosovo under UNSCR 1244	1341	47
Latvia	207	15
Lebanon	1889	90
Libya	417	11
Lithuania	342	12
Montenegro	624	29
Morocco	8127	92
Netherlands	53	2
North Macedonia	13322	87
Norway	1372	59
Palestinian Territory	480	2
Poland	214	27
Portugal	43049	938
Romania	17491	124
Serbia	2909	79
Slovenia	131	2
Spain	101184	1397
Sweden	641	61
Switzerland	68	1
Syria	11449	37
Tunisia	6805	130
Türkiye	35813	424
UK	9343	112
Ukraine	226421	2185
Total	908368	9376

Summary	Total Area (Ha)
EU27	504002
Other European countries	300768
Middle East and North Africa	103598
Natura2000/other protected sites	210237

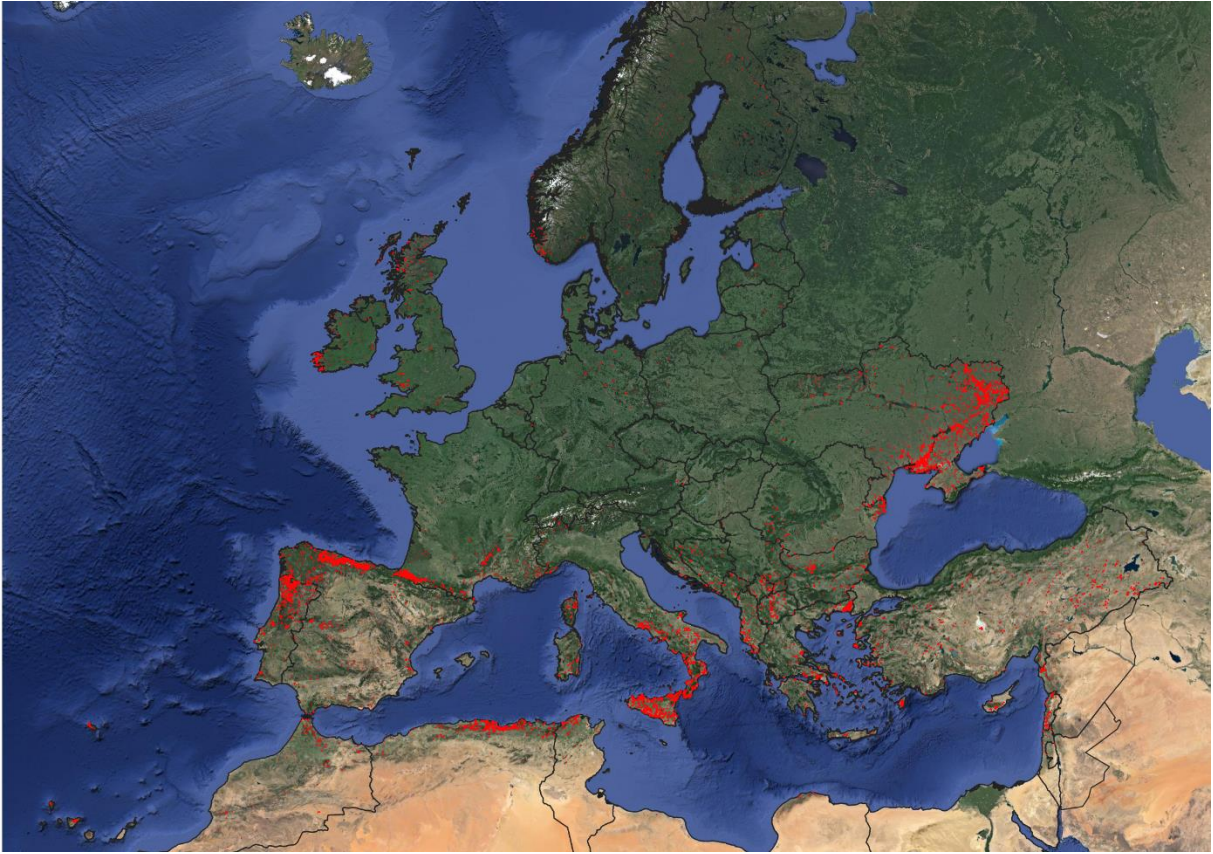


Figure 1. Burnt scars produced by wildland fires during the 2023 fire season.

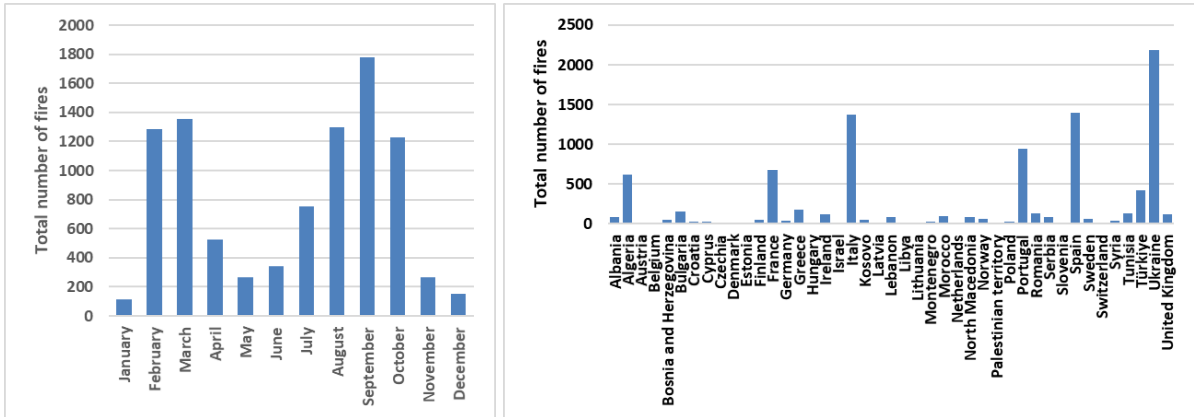


Figure 2. Total number of fires mapped by month and country in 2023.

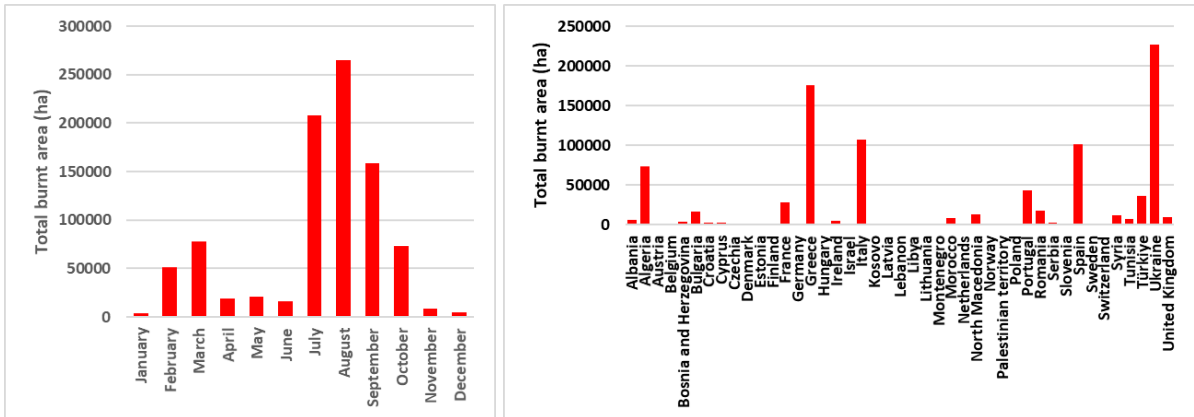


Figure 3. Total burnt area of fires mapped by month and country in 2023.

Damage to Natura2000 sites

Of particular interest is the analysis of the damage caused by fires to the areas protected within the Natura2000 network, as they include habitats of especial interest which are home for endangered plant and animal species.

The category of Natura2000 areas only exists in the countries of the European Union, but some other countries also report equivalent protected areas. The area burnt within the Natura2000 sites and other protected areas for which there is information is presented below.

Note: mapped burnt areas from all fires are presented, including also those that are prescribed for fire management or conservation purposes.

Country	Area (Ha)	% of Natura2000 Area	Number of Fires
Austria	403.0	0.026	6
Belgium	240.0	0.056	2
Bulgaria	11508.6	0.205	84
Croatia	629.9	0.019	15
Cyprus	544.8	0.229	4
Czechia	22.0	0.001	1
Denmark	144.0	0.024	6
Estonia	29.0	0.003	1
Finland	34.0	0.001	6
France	16367.4	0.175	403
Germany	1137.0	0.016	31
Greece	70640.3	1.467	84
Hungary	161.0	0.006	3
Ireland	1850.1	0.161	59
Italy	30680.3	0.419	398
Latvia	181.1	0.024	6
Netherlands	53.0	0.007	2
Poland	166.0	0.002	19
Portugal	14324.0	0.590	363
Romania	15707.5	0.202	78
Slovenia	131.0	0.011	2
Spain	42664.8	0.253	519
Sweden	69.7	0.001	7
EU27 total	207688.5		2099
Algeria	1484.4	0.892	11
Lebanon	23.9	0.088	5
Morocco	1.0	0.000	1
UK	1039.1	0.041	23
Non-EU total	2548.4		40
Total (all)	210236.9		2139

Fires were mapped in 23 of the 27 EU member states (all except Estonia, Luxembourg, Malta and Slovakia).

The total burnt area in Natura2000 and other protected sites in 2023 was 210 237 ha, around 60 % of the amount recorded in 2022.

Greece was the most affected country in 2023, followed by Spain and Italy. These three countries accounted for two thirds of the total area burnt in protected areas in 2023 (Figure 4, Figure 5).

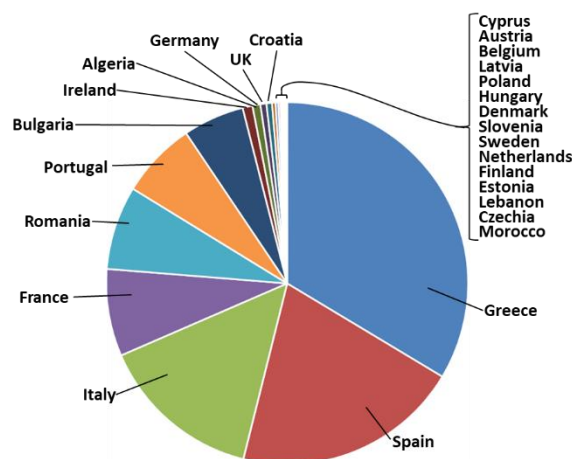


Figure 4. Total area burnt in Natura2000 sites and other protected areas in 2023.

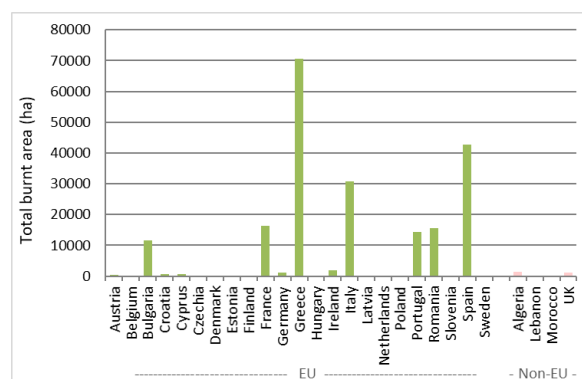


Figure 5. Total mapped burnt area in Natura2000 sites and other protected areas in 2023.

Affected land cover types

In 2023, across the whole region mapped by EFFIS, over half of the total burnt area occurred either in Other Natural Land or Agricultural Land as identified by the 2018 CORINE Land Cover Type classification system and the 2019 Copernicus Globcover classification in regions where Corine was not available (Figure 7).

A further 25 % was mapped in forest (Broadleaf, Conifer or Mixed). (Figure 6, Figure 7).

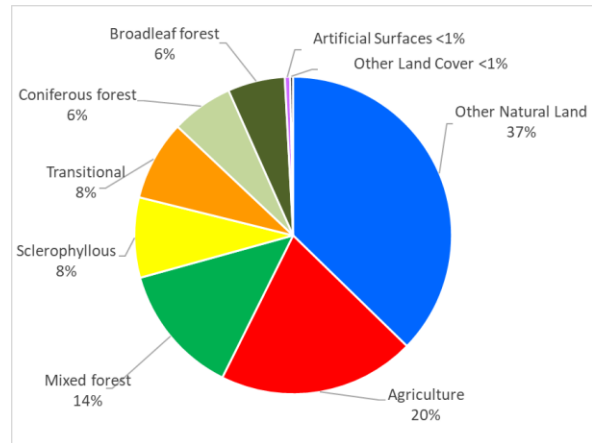


Figure 6. Proportions of land cover types affected in 2023 (all countries).

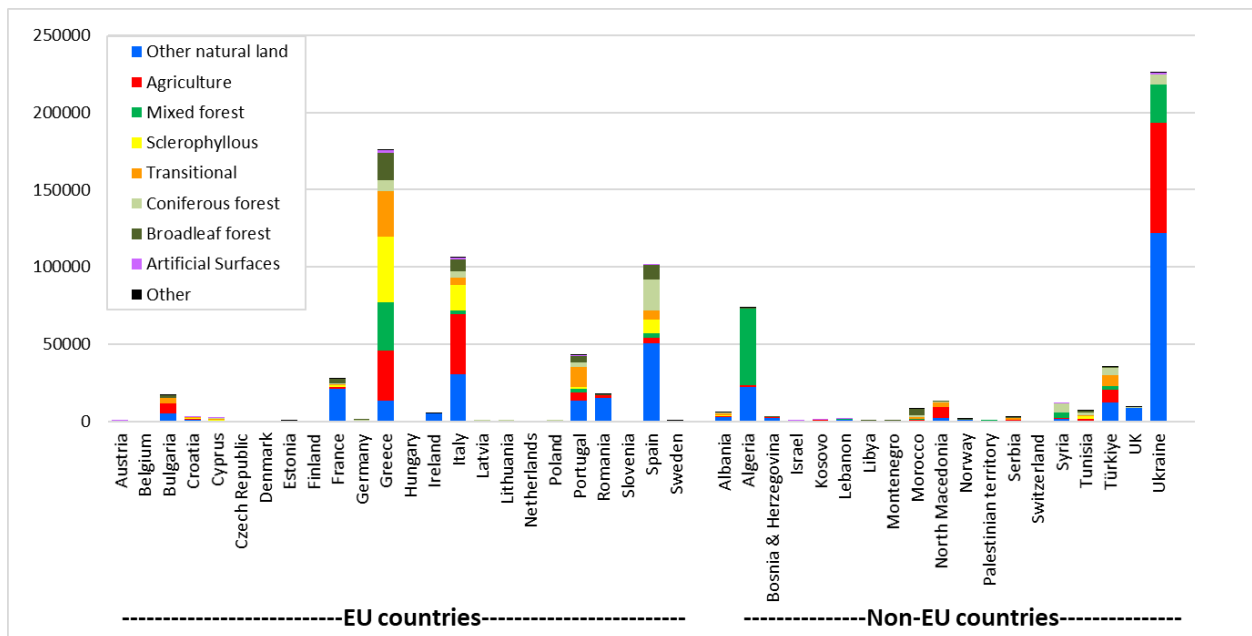


Figure 7. Burnt area in each country in 2023 by CORINE land class.

European countries

In 2023, fires were mapped in 24 of the EU27 countries (all except Luxembourg, Malta and Slovakia), burning 504 002 ha in total, less than the amount recorded in 2022 (837 202 ha).

The main peak occurred during the summer months when some extremely large fires were recorded, including the largest fire ever mapped in EFFIS in Greece in August.

Of this total, 207 689 ha occurred on Natura2000 sites, somewhat less than was recorded in 2022 (350 437 ha). This is equivalent to around 40 % of the total burnt area in European countries. Two-thirds of the damage to protected areas came from three countries (Greece, Spain and Italy).

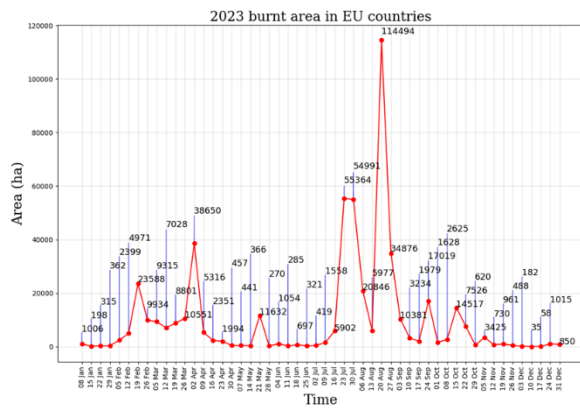


Figure 8. Burnt area weekly evolution in EU27 countries in 2023.

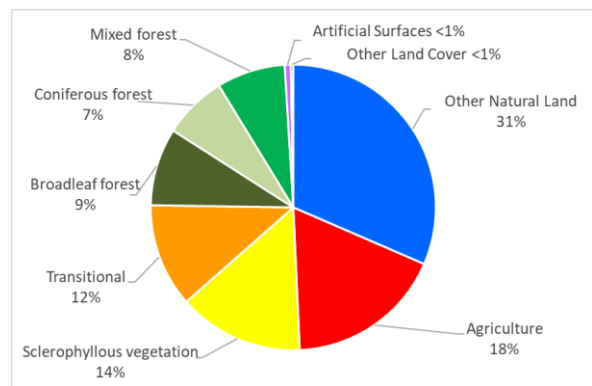


Figure 9. Proportions of land cover types affected in EU27 countries in 2023.

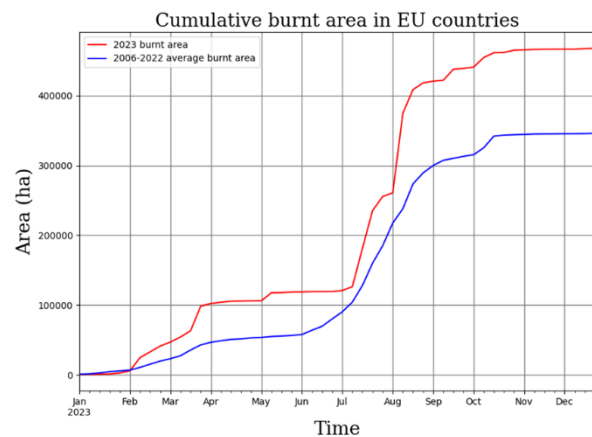
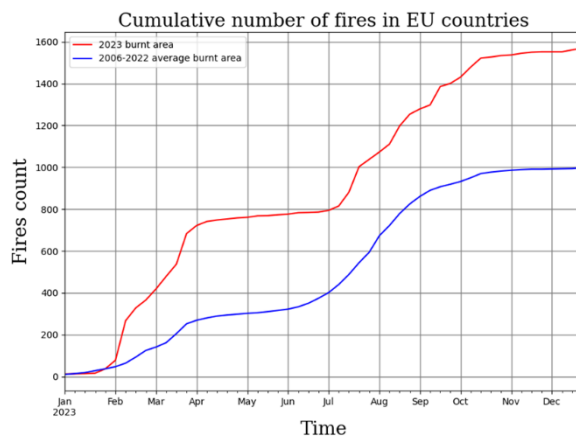


Figure 10. Cumulative number of fires and burnt area in 2023 in EU27 countries (red line) compared with 2008-2021 average (blue line). Fires are filtered to include only those ≥ 30 ha to allow the comparison with previous years.

2.1 Country reports

2.1.1 Albania

80 fires were mapped in Albania, resulting in a total burnt area of 6 012 ha, less than a third of the total mapped in 2022 and the lowest total since 2018 (Figure 13).

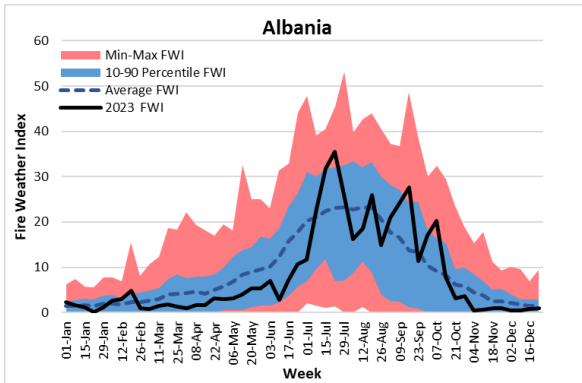


Figure 11. Fire weather index information for Albania.

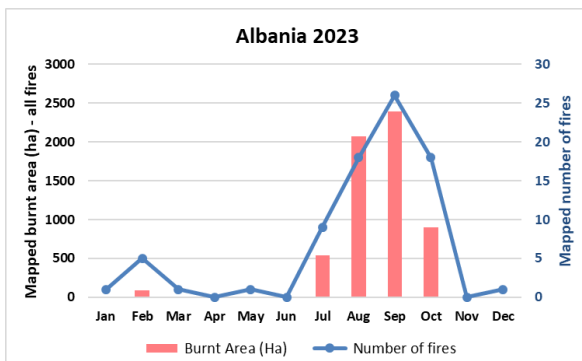


Figure 12. Monthly numbers of fires and burnt area in Albania in 2023.

Table 2. Distribution of burnt area (ha) in Albania by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	188	3.1
Coniferous forest	730	12.2
Mixed forest	9	0.2
Other Natural Land	2613	43.5
Sclerophyllous vegetation	650	10.8
Transitional	888	14.8
Agriculture	924	15.4
Artificial Surfaces	5	0.1
Other Land Cover	2	0.0
TOTAL	6012	100

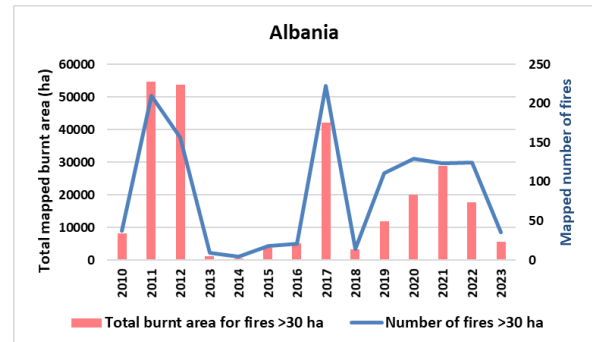


Figure 13. Annual mapped burnt area of fires ≥ 30 ha in Albania.

Almost all of the damage occurred in the summer months (Figure 12), including two fires over 500 ha.

Over 40 % of the total was mapped in Other Natural Land (Table 2). Mapped locations of the fires in 2023 can be seen in Figure 14.

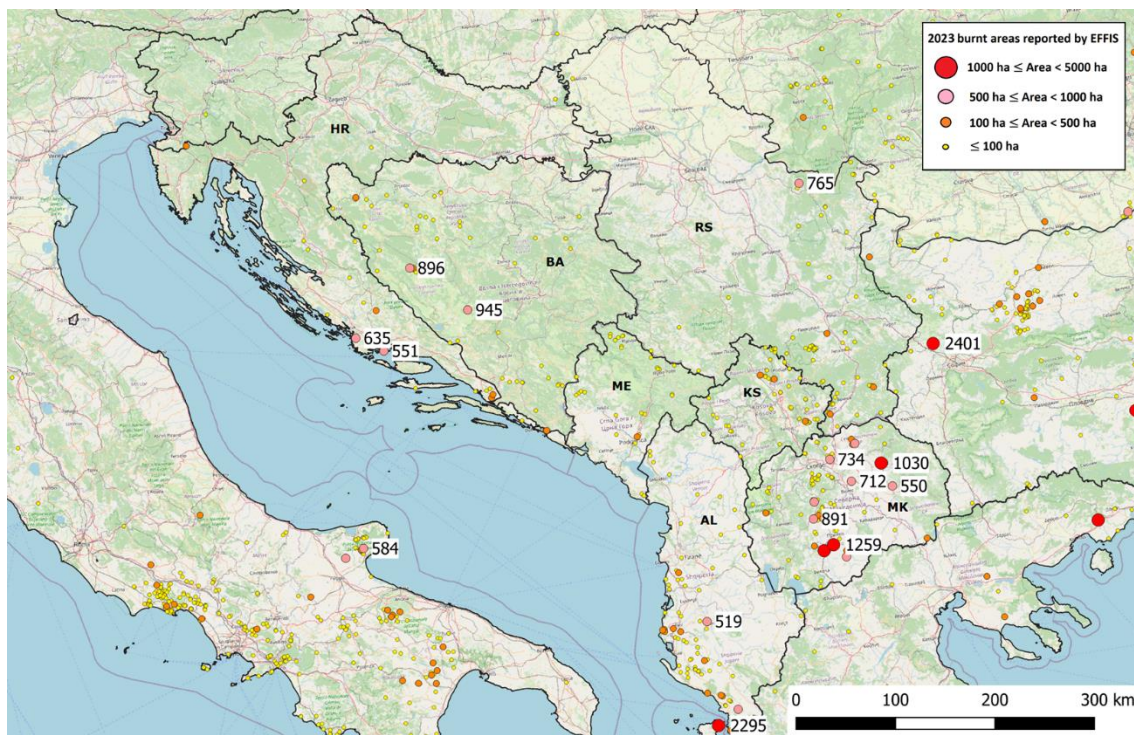


Figure 14. Locations of mapped fires in the Balkans in 2023. Largest fires are indicated in ha. AL=Albania; BA=Bosnia & Herzegovina; HR=Croatia; KS=Kosovo under UNSCR 1244; ME=Montenegro; MK=North Macedonia; RS=Serbia.

2.1.2 Austria

After a hard season in 2022, the total burnt area mapped in Austria in 2023 was significantly lower. 403 ha was mapped from six fires in February and March, all on Natura2000 sites and mostly affecting Other Natural Land (Table 3).

Table 3. Distribution of burnt area (ha) in Austria by land cover types in 2023.

Land cover	Area burned	% of total
Coniferous forest	2	0.5
Mixed forest	12	3.0
Other Natural Land	357	88.6
Agriculture	31	7.7
Artificial Surfaces	1	0.3
TOTAL	403	100

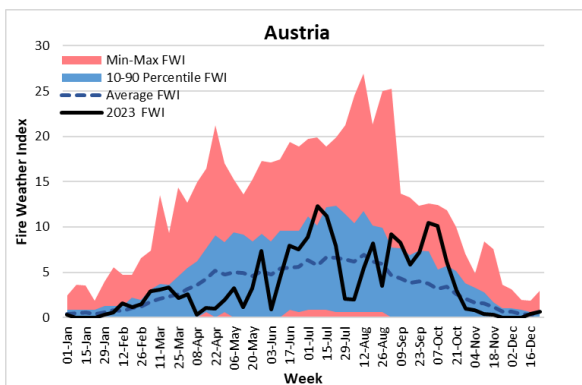


Figure 15. Fire weather Index information for Austria.

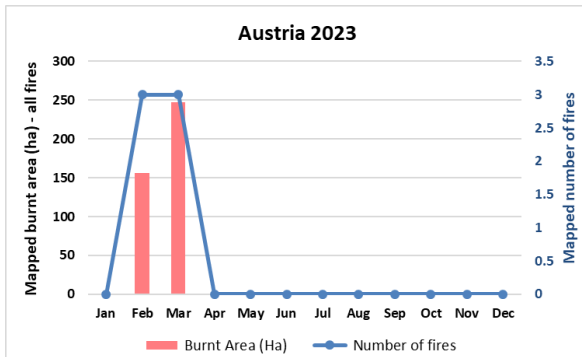


Figure 16. Monthly numbers of fires and burnt area in Austria in 2023.

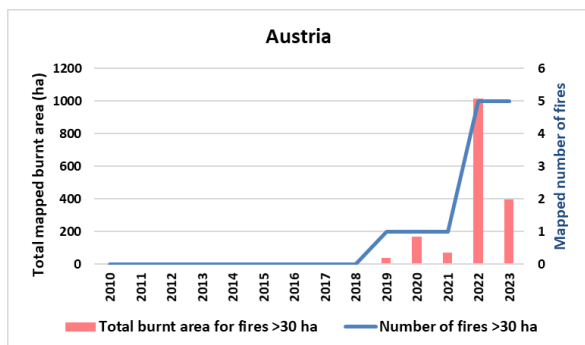


Figure 17. Annual mapped burnt area of fires ≥ 30 ha in Austria.

2.1.3 Belgium

Two fires were mapped in Belgium, in March and May and resulted in a total of 240 ha burnt. Both fires occurred on Natura2000 sites, representing 0.056 % of the protected area in the country.

Table 4. Distribution of burnt area (ha) in Belgium by land cover types in 2023.

Land cover	Area burned	% of total
Other Natural Land	166	69.2
Transitional	74	30.8
TOTAL	240	100

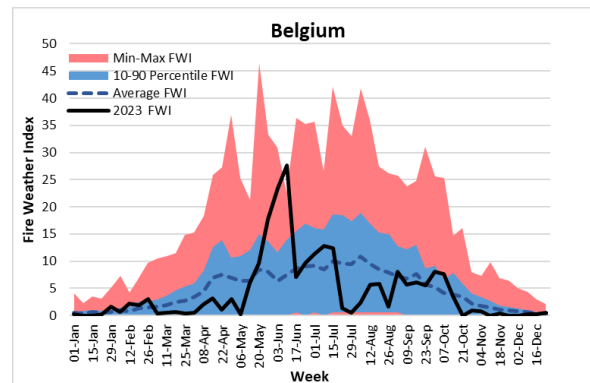


Figure 18. Fire weather Index information for Belgium.

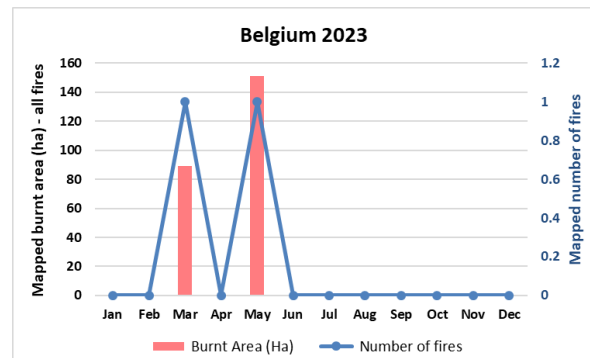


Figure 19. Monthly mapped burnt area and number of fires in Belgium in 2023.

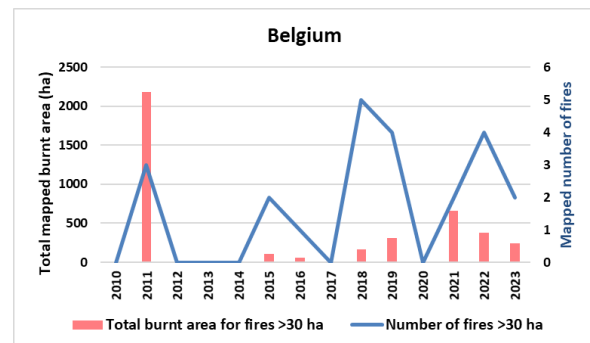


Figure 20. Annual mapped burnt area of fires ≥ 30 ha in Belgium.

2.1.4 Bosnia and Herzegovina

After several hard fire seasons in Bosnia, 2023 was very light in terms of the total mapped burnt area. 50 mapped fires resulted in a total burnt area of 3 543 ha, around 5 % of the 2022 total. Much of the damage occurred early in the year, although there was a second peak of activity in December, mostly caused by a fire of 945 ha in Prozor-Rama region. One other fire of almost 900 ha was recorded in Glamoč region in March. Two-thirds of the annual total occurred in Other Natural Land.

Table 5. Distribution of burnt area (ha) in Bosnia-Herzegovina by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	461	13.0
Other Natural Land	2363	66.7
Sclerophyllous vegetation	125	3.5
Transitional	345	9.8
Agriculture	248	7.0
TOTAL	3543	100

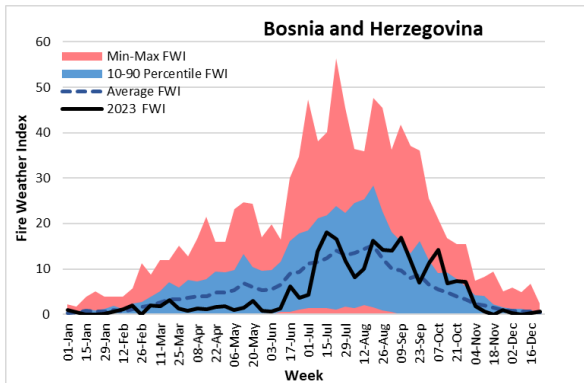


Figure 21. Fire weather Index information for Bosnia.

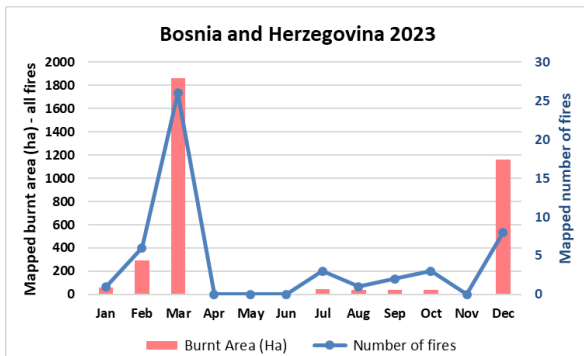


Figure 22. Monthly mapped burnt area and number of fires in Bosnia & Herzegovina in 2023.

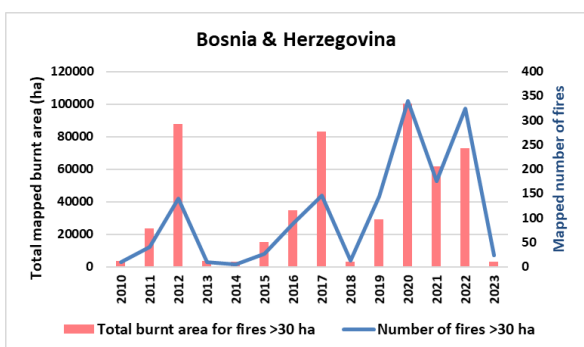


Figure 23. Annual mapped burnt area of fires ≥ 30 ha in Bosnia & Herzegovina.

2.1.5 Bulgaria

In Bulgaria 16 828 ha was mapped from 148 fires, making it the worst season for a decade. Large fires were mapped over a long summer season (Figure 25), and included a fire of 2 400 ha in October in Sofia region. Three other fires exceeded 1 000 ha and a further three were over 500 ha. Of the annual total, around two-thirds (11 509 ha) occurred on Natura2000 sites, amounting to 0.204 % of the total protected land in Bulgaria.

Table 6. Distribution of burnt area (ha) in Bulgaria by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	1245	7.4
Coniferous forest	153	0.9
Mixed forest	352	2.1
Other Natural Land	5380	32.0
Transitional	3329	19.8
Agriculture	6245	37.1
Artificial Surfaces	37	0.2
Other Land Cover	88	0.5
TOTAL	16828	100

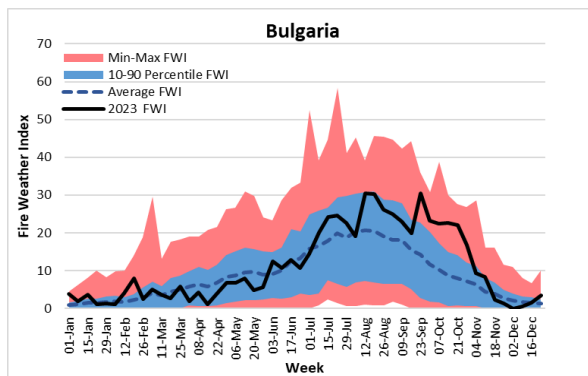


Figure 24. Fire weather Index information for Bulgaria.

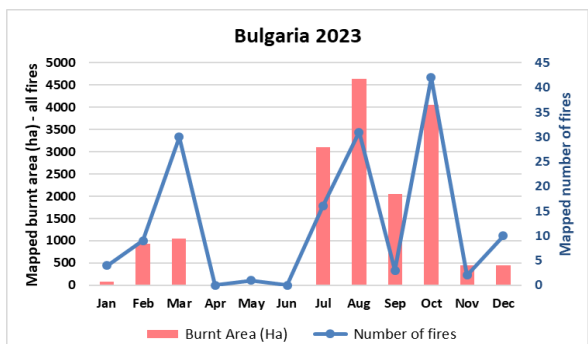


Figure 25. Monthly mapped burnt area and number of fires in Bulgaria in 2023.

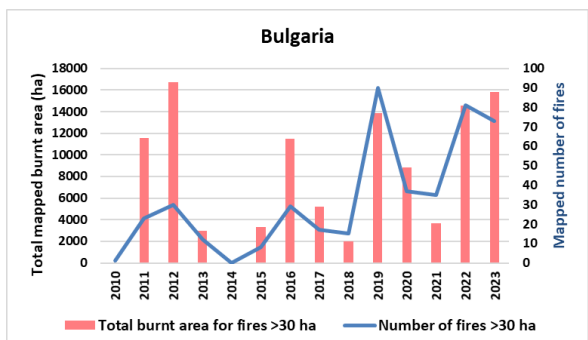


Figure 26. Annual mapped burnt area of fires ≥ 30 ha in Bulgaria.

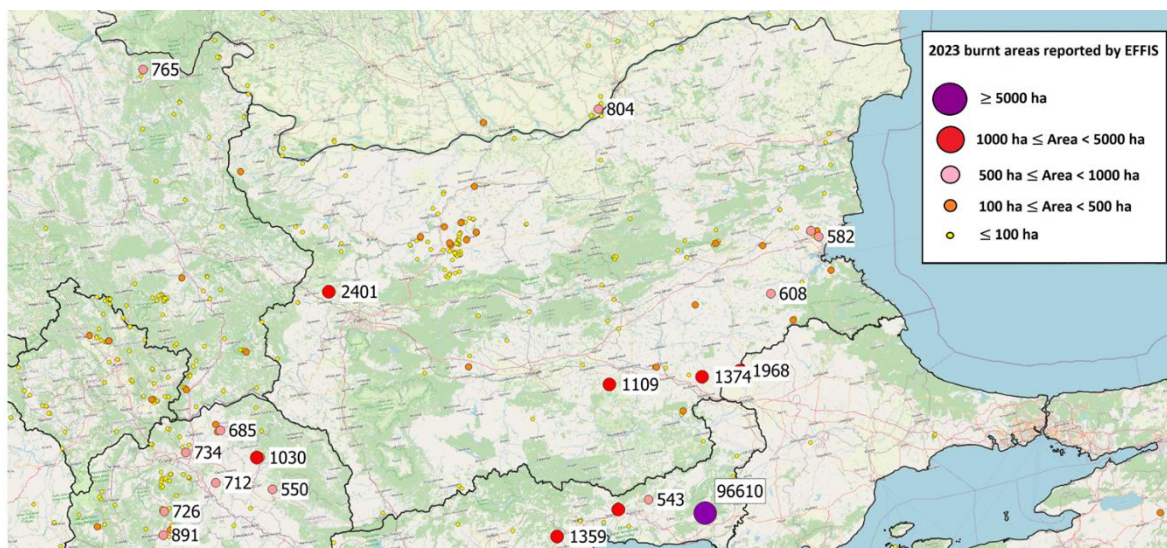


Figure 27. Locations of mapped burnt areas in Bulgaria in 2023.

2.1.6 Croatia

The total mapped burnt area in Croatia was 2 873 ha from 24 fires, only a tenth of the amount recorded in 2022 and one of the lowest amounts in recent years (Figure 30). 40 % of this total came from two large fires over 500 ha in July in Sibenik and Split region. Of the total, 630 ha (22 % of the total) occurred on Natura2000 sites, amounting to 0.019 % of the protected areas in the country. The locations of these mapped fires can be seen in Figure 14 on page 10.

Table 7. Distribution of burnt area (ha) in Croatia by land cover types in 2023.

<i>Land cover</i>	<i>Area burned</i>	<i>% of total</i>
Broadleaf forest	84	2.9
Coniferous forest	97	3.4
Mixed forest	110	3.8
Other Natural Land	1237	43.0
Sclerophyllous vegetation	336	11.7
Transitional	623	21.7
Agriculture	345	12.0
Artificial Surfaces	39	1.4
TOTAL	2873	100

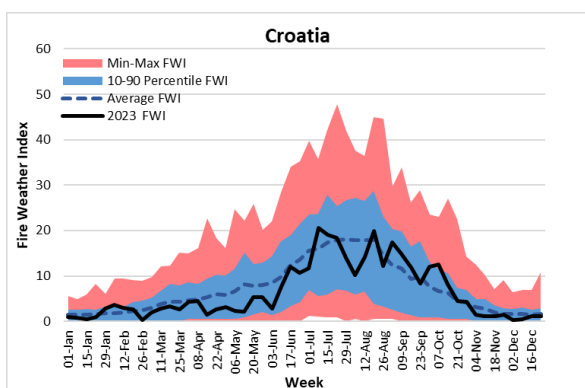


Figure 28. Fire weather Index information for Croatia.

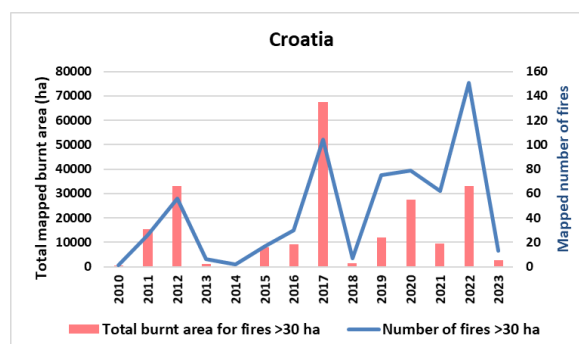


Figure 30. Annual mapped burnt area of fires \geq 30 ha in Croatia.

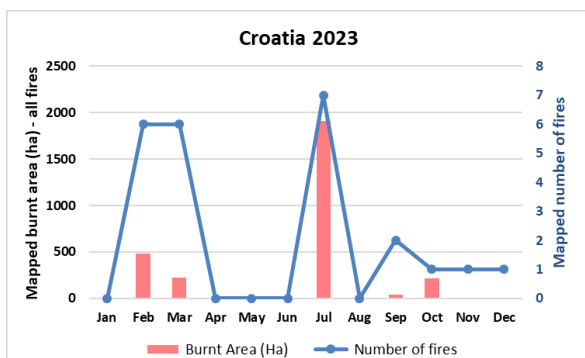


Figure 29. Monthly mapped burnt area and number of fires in Croatia in 2023.

2.1.7 Cyprus

The 2023 fire season in Cyprus was somewhat better than the previous three years. 19 fires were mapped, burning a total of 2 010 ha. 82 % of the damage occurred in the months of August and September, including the largest fire of the season which covered over 650 ha in Limassol district. 545 ha burned on Natura2000 sites, accounting for a quarter of the total and 0.229 % of the total protected land of the country.

Table 8. Distribution of burnt area (ha) in Cyprus by land cover types in 2023.

Land cover	Area burned	% of total
Coniferous forest	572	28.5
Other Natural Land	7	0.3
Sclerophyllous vegetation	691	34.4
Transitional	614	30.6
Agriculture	121	6.0
Artificial Surfaces	4	0.2
TOTAL	2010	100

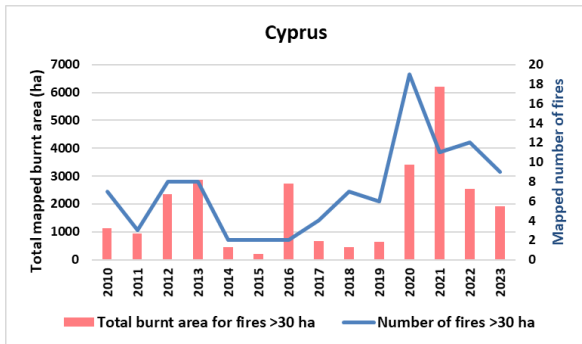


Figure 31. Annual mapped burnt area of fires ≥ 30 ha in Cyprus.

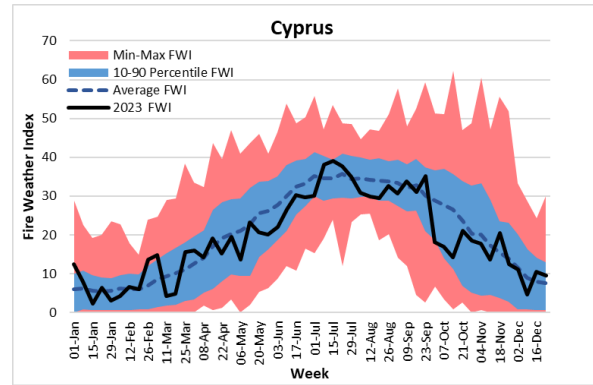


Figure 32. Fire weather index information for Cyprus.

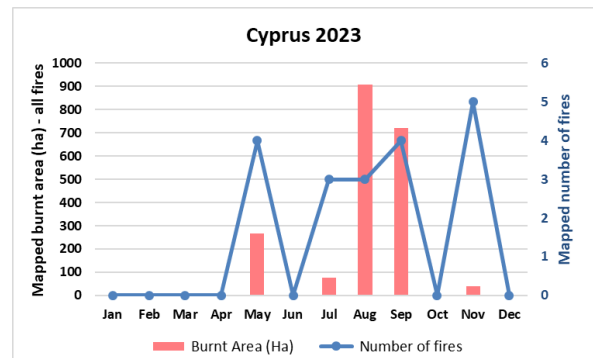


Figure 33. Monthly mapped burnt area and number of fires in Cyprus in 2023.

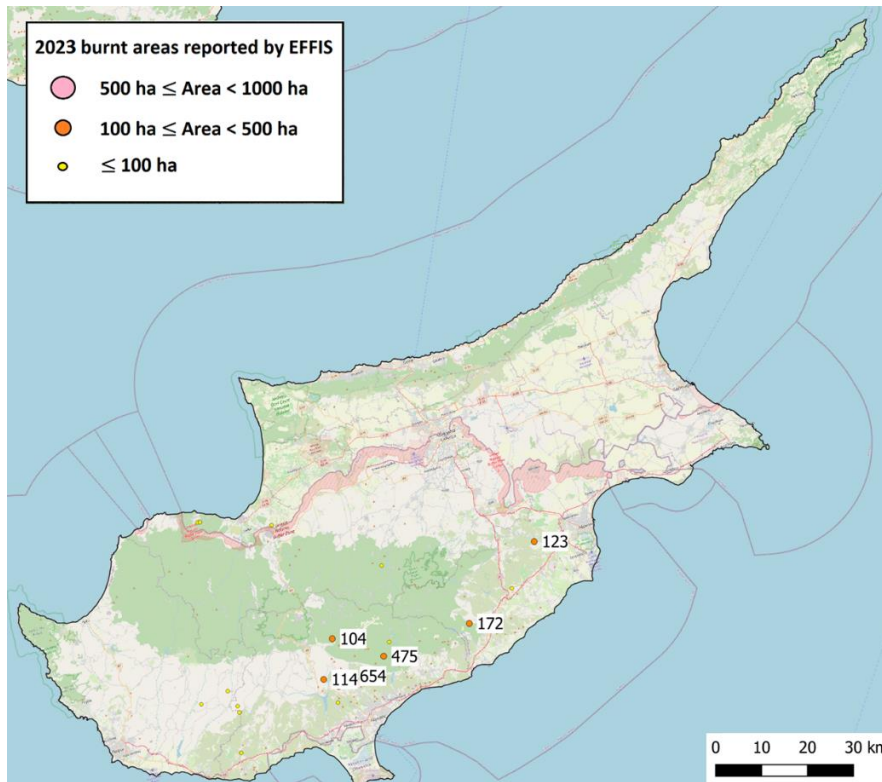


Figure 34. Mapped burnt areas in Cyprus in 2023.

2.1.8 Czechia

After a bad year in 2022, the 2023 fire season in Czechia was very light. A single fire of 22 ha was mapped in July, affecting Coniferous Forest in a Natura2000 site.

Table 9. Distribution of burnt area (ha) in Czechia by land cover types in 2023.

Land cover	Area burned	% of total
Coniferous forest	22	100.0
TOTAL	22	100

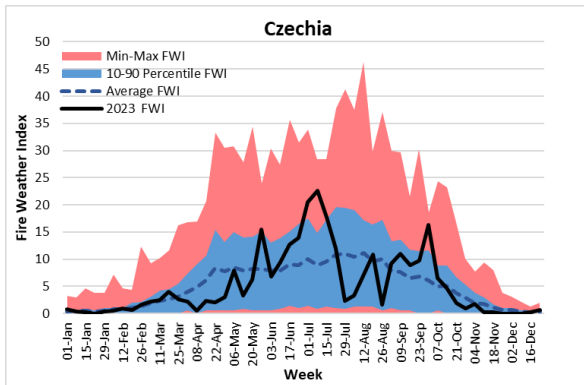


Figure 35. Fire weather Index information for Czechia.

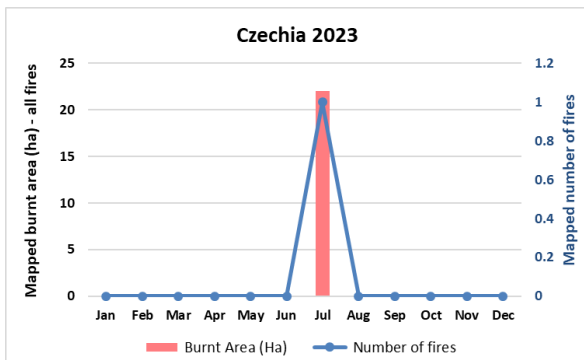


Figure 36. Monthly mapped burnt area and number of fires in Czechia in 2023.

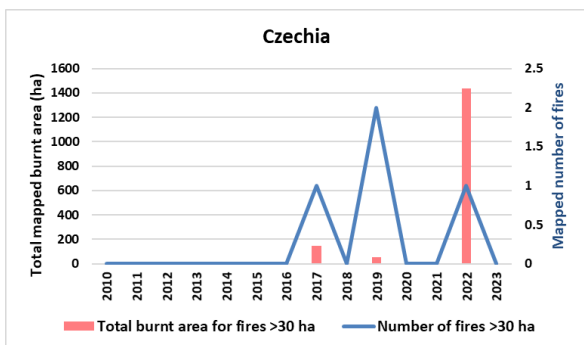


Figure 37. Annual mapped burnt area of fires ≥ 30 ha in Czechia.

2.1.9 Denmark

In Denmark, six fires burned 144 ha in Other Natural Land, mostly in March. All of the annual total was on Natura2000 sites, amounting to 0.024 % of the total protected area in the country.

Table 10. Distribution of burnt area (ha) in Denmark by land cover types in 2023.

Land cover	Area burned	% of total
Other Natural Land	144	100.0
TOTAL	144	100

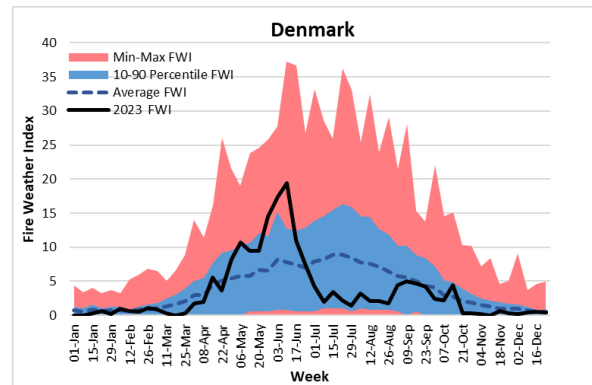


Figure 38. Fire weather Index information for Denmark.

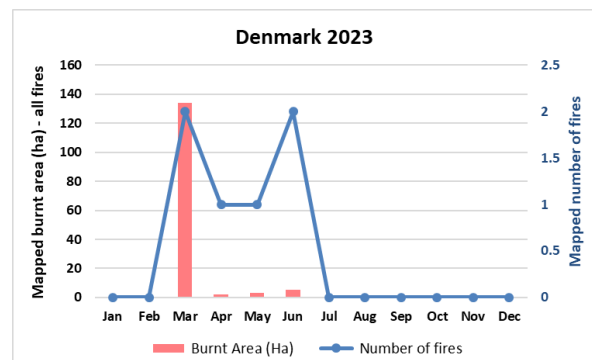


Figure 39. Monthly mapped burnt area and number of fires in Denmark in 2023.

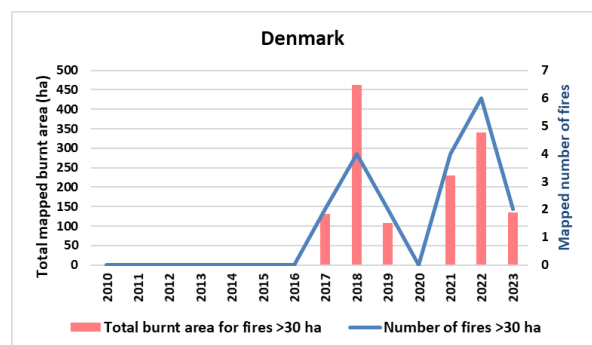


Figure 40. Annual mapped burnt area of fires ≥ 30 ha in Denmark.

2.1.10 Estonia

Eight fires were mapped in Estonia, covering 219 ha mostly in Transitional vegetation. Of this only 29 ha was in Natura2000 land (0.003 % of the total protected area in the country).

Table 11. Distribution of burnt area (ha) in Estonia by land cover types in 2023.

Land cover	Area burned	% of total
Coniferous forest	4	1.8
Mixed forest	2	1.0
Other Natural Land	9	4.0
Transitional	201	92.0
Other Land Cover	3	1.3
TOTAL	219	100

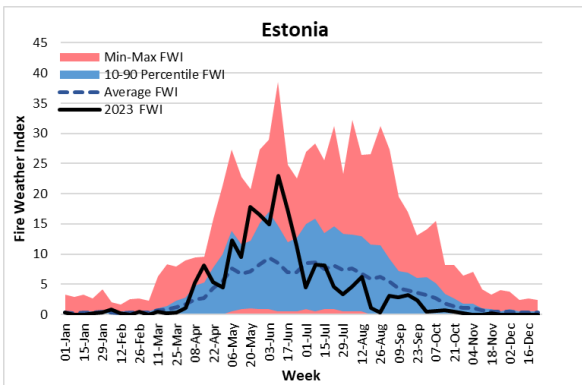


Figure 41. Fire weather Index information for Estonia.

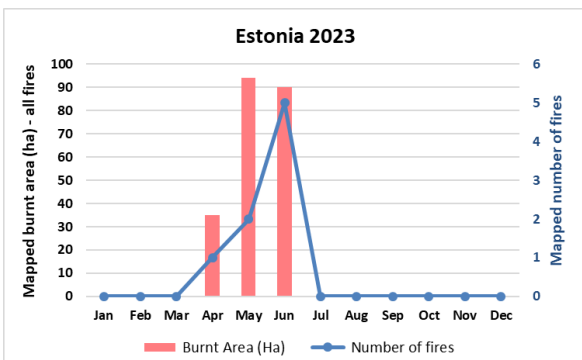


Figure 42. Monthly mapped burnt area and number of fires in Estonia in 2023.

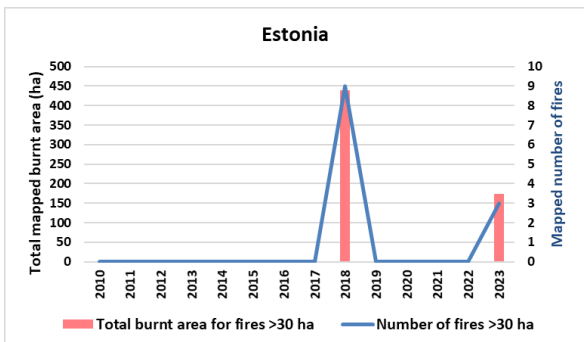


Figure 43. Annual mapped burnt area of fires ≥ 30 ha in Estonia.

2.1.11 Finland

The 2023 fire season in Finland was light and similar to that of 2022. A total burnt area of 531 ha was mapped from 48 fires, of which only 34 ha was on Natura2000 land. Similar to 2022, the 2023 fire season ran from May to August (Figure 45).

Table 12. Distribution of burnt area (ha) in Finland by land cover types in 2023.

Land cover	Area burned	% of total
Coniferous forest	461	86.8
Mixed forest	28	5.2
Other Natural Land	23	4.4
Transitional	19	3.7
TOTAL	531	100

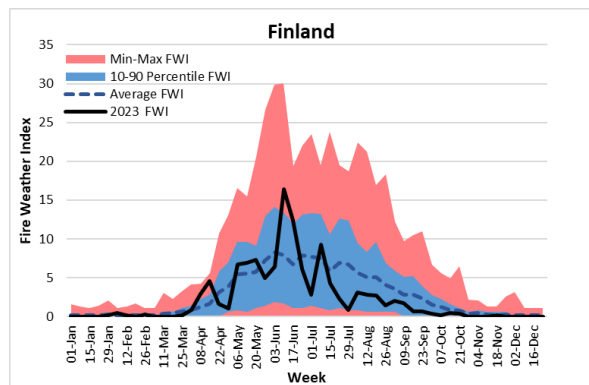


Figure 44. Fire weather Index information for Finland.



Figure 45. Monthly mapped burnt area and number of fires in Finland in 2023.



Figure 46. Annual mapped burnt area of fires ≥ 30 ha in Finland.

2.1.12 France

After a bad year in 2022, the 2023 fire season in France was much less severe. A total of 27 872 ha was mapped from 675 fires, less than 40 % of the 2022 season total. The three largest fires of the season, all over 500 ha, occurred in the early part of the year in the Pyrenees region as is usual, but the summer was quiet.

16 367 ha (59 %) of the annual total occurred on Natura2000 sites, which corresponds to 0.175 % of the total Natura2000 areas in the country.

Table 13. Distribution of burnt area (ha) in France by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	3428	12.3
Coniferous forest	231	0.8
Mixed forest	176	0.6
Other Natural Land	21094	75.7
Sclerophyllous vegetation	817	2.9
Transitional	892	3.2
Agriculture	1204	4.3
Artificial Surfaces	25	0.1
Other Land Cover	3	0.0
TOTAL	27872	100

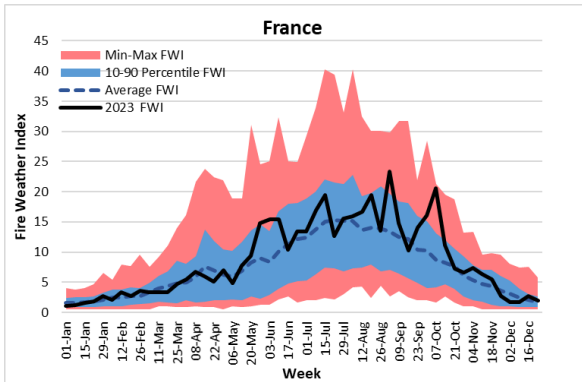


Figure 47. Fire weather Index information for France.

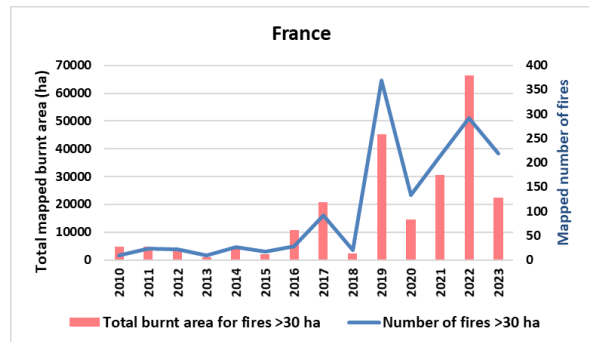


Figure 49. Annual mapped burnt area of fires ≥ 30 ha in France.

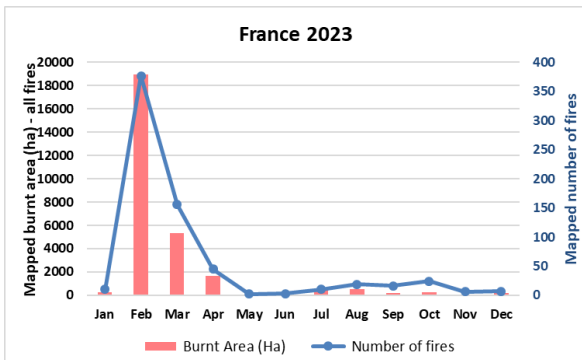


Figure 48. Monthly mapped burnt area and number of fires in France in 2023.

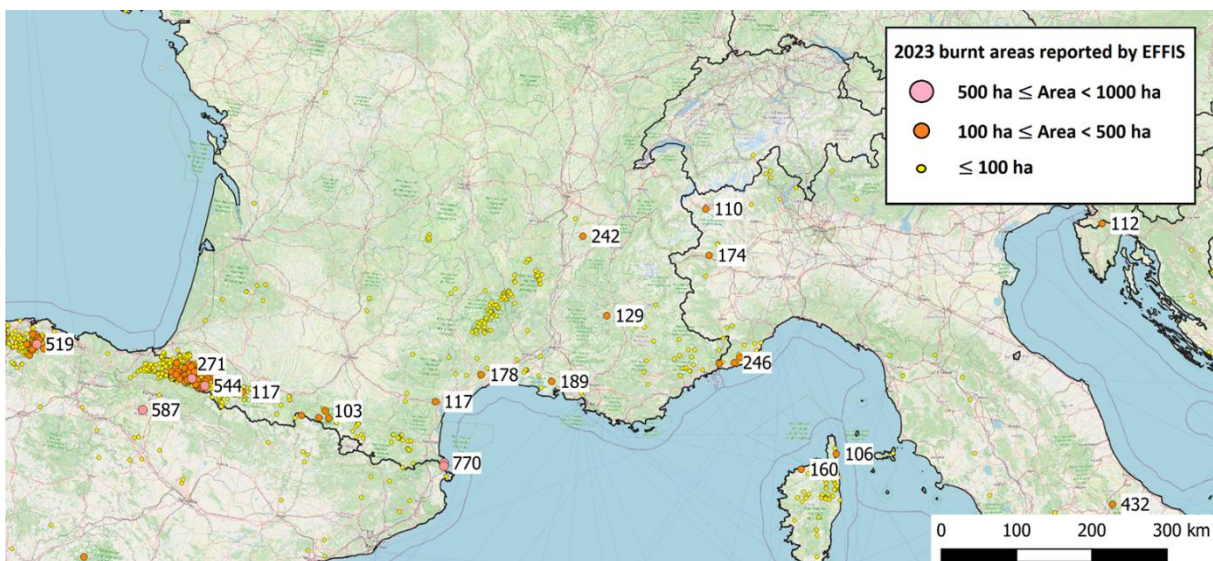


Figure 50. Locations of the mapped burnt areas in the south of France and Corsica in 2023.

2.1.13 Germany

The 2023 fire season in Germany was relatively light after the extreme year of 2022. 39 fires were mapped, burning a total of 1 194 ha. Half of this total came from a single fire in June which covered over 600 ha. Most of the year's total (1 137 ha, 95 %) occurred on Natura2000 sites, amounting to 0.016 % of the protected area in the country.

Table 14. Distribution of burnt area (ha) in Germany by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	228	19.1
Coniferous forest	312	26.1
Mixed forest	91	7.6
Other Natural Land	416	34.8
Transitional	145	12.2
Agriculture	2	0.2
TOTAL	1194	100

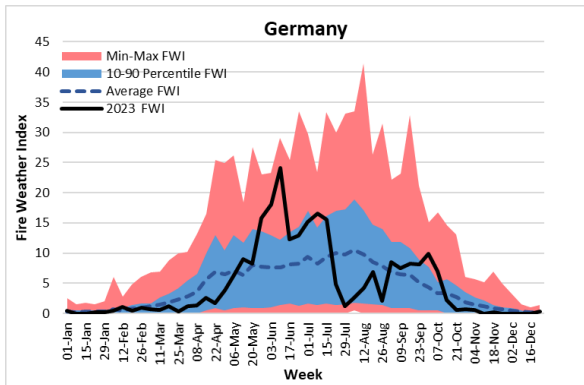


Figure 51. Fire weather Index information for Germany.

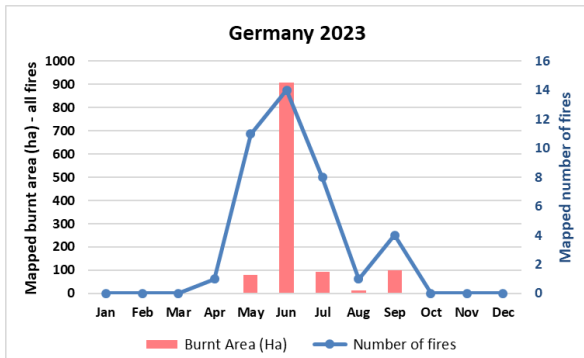


Figure 52. Monthly mapped burnt area and number of fires in Germany in 2023.

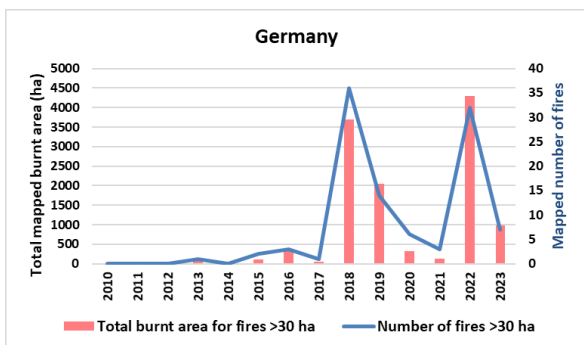


Figure 53. Annual mapped burnt area of fires ≥ 30 ha in Germany.

2.1.14 Greece

It was the most extreme season in Greece for many years. Although the number of mapped fires was lower than in the previous three years, the size of some of the fires was exceptionally high, resulting in a total burnt area of 175 759 ha, the highest recorded since the extreme year of 2007 and making Greece the most affected European country in terms of burnt area in 2023. Practically all of the damage occurred during July and August, including the largest fire ever mapped in EFFIS at over 96 000 ha. Another two fires were mapped over 10 000 ha and there were a further 18 that exceeded 5 000 ha.

Of the total, 70 640 ha occurred on Natura2000 sites, amounting to 40 % of the total and 1.467 % of the total protected area of Greece.

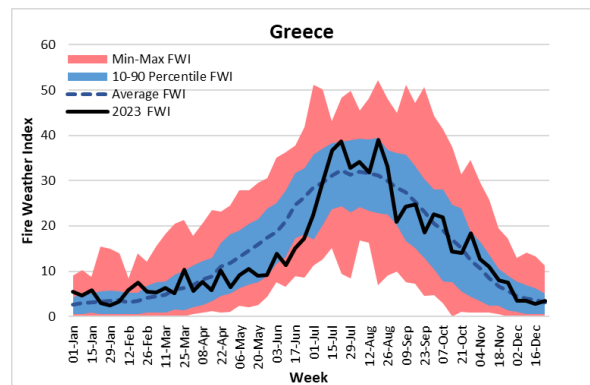


Figure 54. Fire weather Index information for Greece.



Figure 55. Monthly mapped burnt area and number of fires in Greece in 2023.

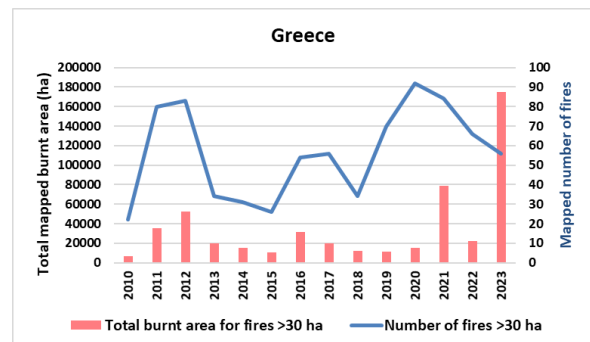


Figure 56. Annual mapped burnt area of fires ≥ 30 ha in Greece.

Table 15. Distribution of burnt area (ha) in Greece by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	17646	10.0
Coniferous forest	6855	3.9
Mixed forest	31021	17.7
Other Natural Land	13744	7.8
Sclerophyllous vegetation	42586	24.2
Transitional	29457	16.8
Agriculture	32357	18.4
Artificial Surfaces	1722	1.0
Other Land Cover	369	0.2
TOTAL	175759	100

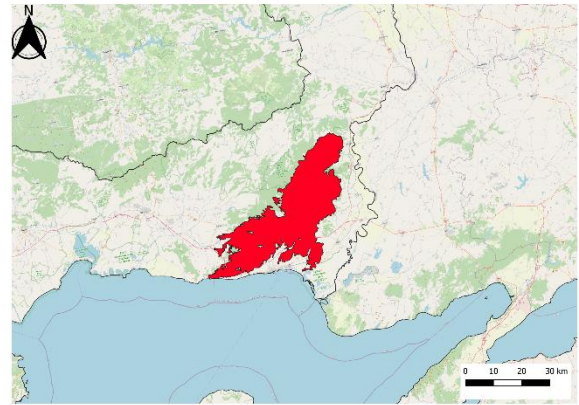


Figure 57. Mapped perimeter of the largest fire in Greece in 2023.

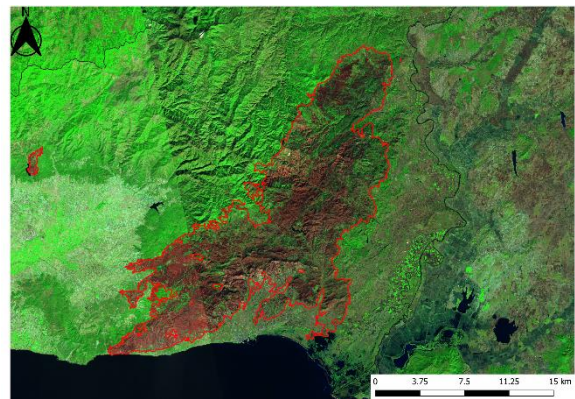
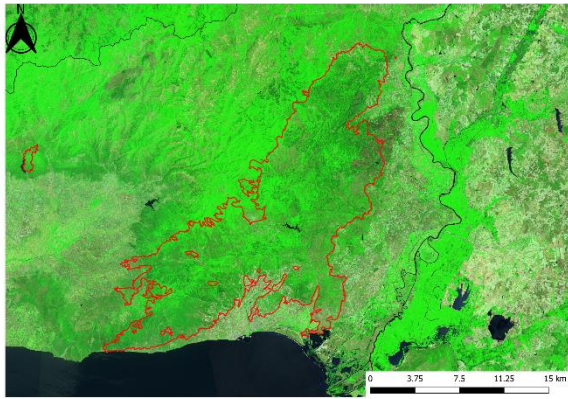


Figure 58. Pre- and post-fire images of the largest fire in Greece in 2023.

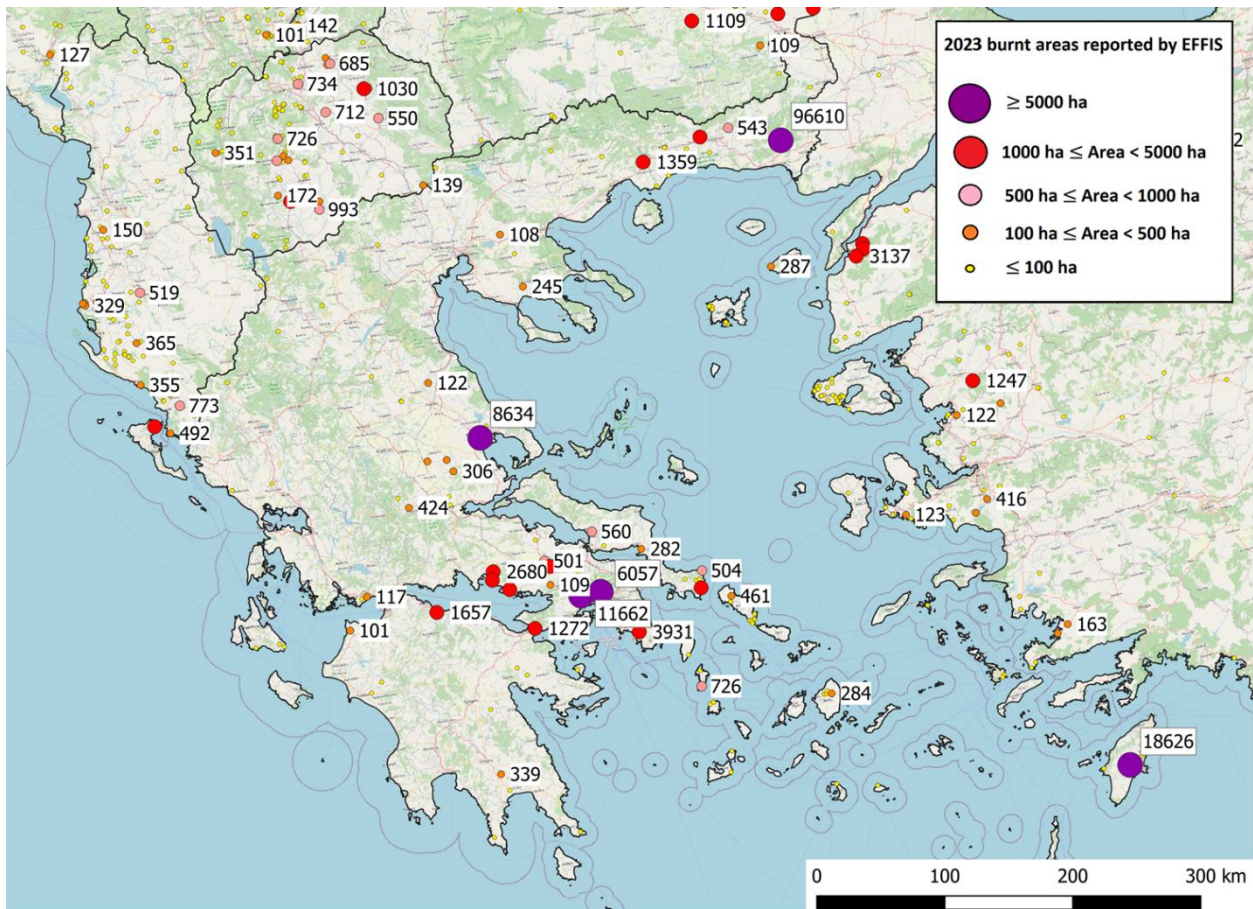


Figure 59. Locations of mapped fires in Greece in 2023.

2.1.15 Hungary

After a bad season in 2022, 2023 was very quiet for Hungary. Only three fires were mapped giving a total of 161 ha burnt, all in Natura2000 land and mostly covering Other Natural Land.

Table 16. Distribution of burnt area (ha) in Hungary by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	3	1.9
Other Natural Land	158	98.1
TOTAL	161	100

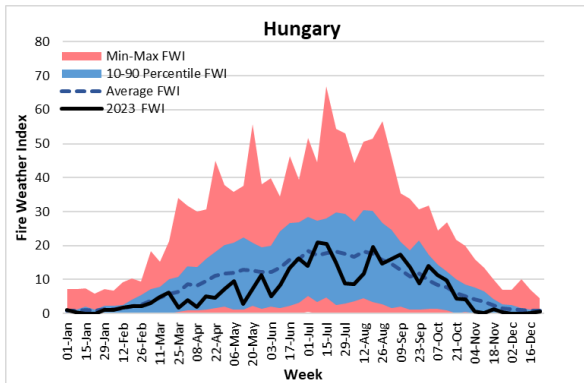


Figure 60. Fire weather Index information for Hungary.

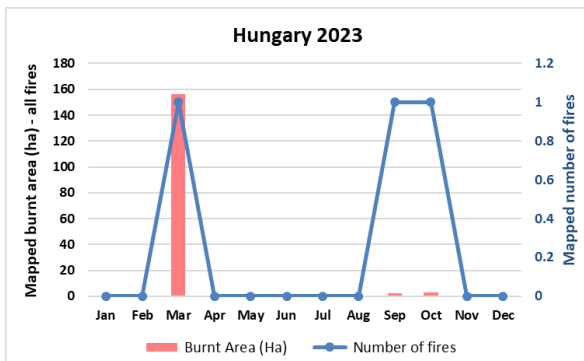


Figure 61. Monthly mapped burnt area and number of fires in Hungary in 2023.

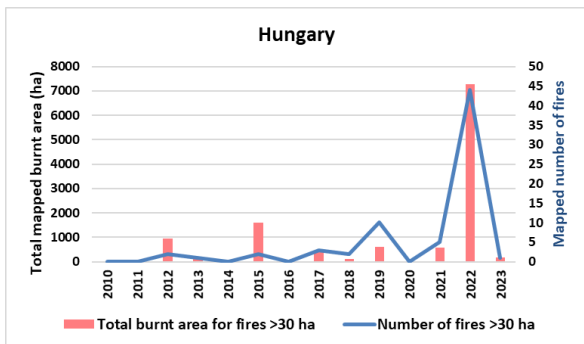


Figure 62. Annual mapped burnt area of fires ≥ 30 ha in Hungary.

2.1.16 Ireland

117 fires were mapped in Ireland, covering 5 203 ha, slightly above recent years. The main peak of activity was in February. Around 36% of the burnt area (1 850 ha) was recorded in Natura2000 sites, which corresponds to 0.161% of the total Natura2000 land in the country. Locations of the burnt areas can be seen in Figure 127 on page 32.

Table 17. Distribution of burnt area (ha) in Ireland by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	4	0.1
Coniferous forest	28	0.5
Mixed forest	1	0.0
Other Natural Land	4975	95.6
Transitional	92	1.8
Agriculture	98	1.9
Other Land Cover	6	0.1
TOTAL	5203	100

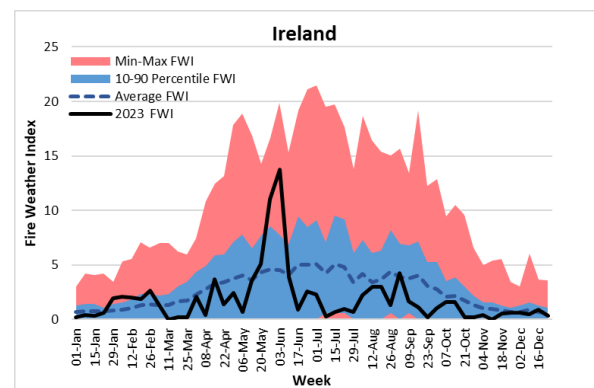


Figure 63. Fire weather Index information for Ireland.

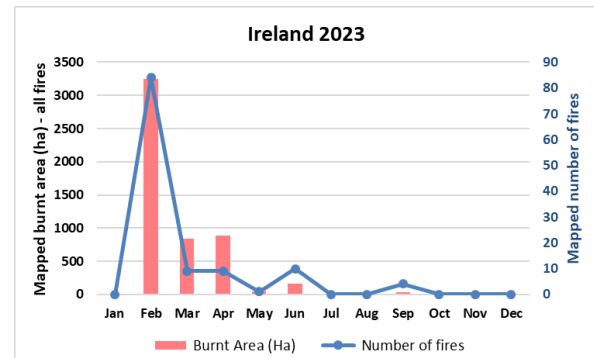


Figure 64. Monthly mapped burnt area and number of fires in Ireland in 2023.

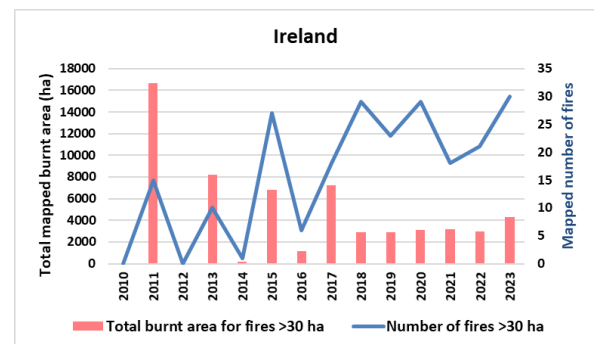


Figure 65. Annual mapped burnt area of fires ≥ 30 ha in Ireland.

2.1.17 Italy

The 2023 fire season in Italy was somewhat worse than last year and resulted in it being the second most affected European country in terms of burnt area (after Greece), although the total was still well below the extreme year of 2021. The season started late, reflected in average or below average values of the Fire Weather Index until July, after which they were mostly above average until the end of the year. The total burnt area at the end of the year was 107 231 ha from 1 378 fires.

Most of the total came from fires in Sicily, including three quarters of the 36 fires mapped over 500 ha, although the largest fire of the year (over 3 000 ha) was in Reggio di Calabria (Figure 69).

30 680 ha of the total occurred on Natura2000 sites, corresponding to 29 % of the total and 0.419 % of the Natura2000 land in Italy.

Table 18. Distribution of burnt area (ha) in Italy by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	7420	6.9
Coniferous forest	4407	4.1
Mixed forest	1866	1.7
Other Natural Land	30614	28.5
Sclerophyllous vegetation	16867	15.7
Transitional	4740	4.4
Agriculture	39354	36.7
Artificial Surfaces	1276	1.2
Other Land Cover	686	0.6
TOTAL	107231	100

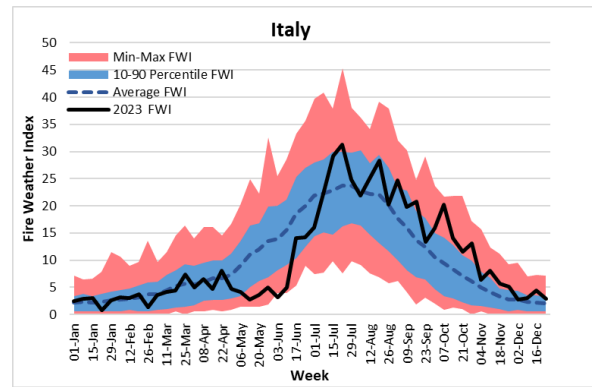


Figure 66. Fire weather Index information for Italy.

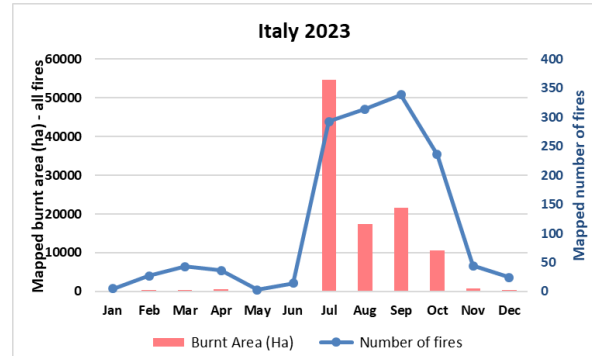


Figure 67. Monthly mapped burnt area and number of fires in Italy in 2023.

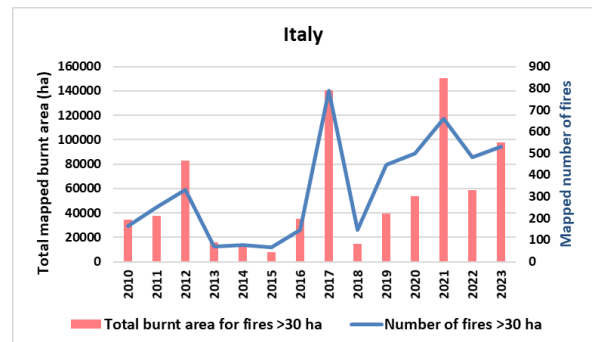


Figure 68. Annual mapped burnt area of fires ≥ 30 ha in Italy.

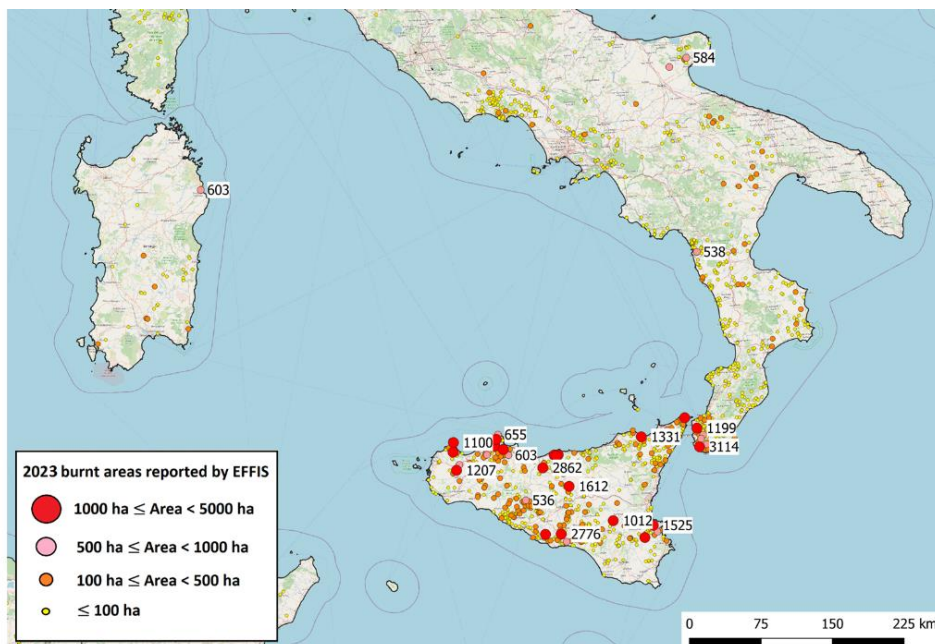


Figure 69. Major fires mapped in southern Italy, Sicily and Sardinia in 2023.

2.1.18 Kosovo under UNSCR 1244

A total of 47 fires were mapped in Kosovo resulting in a total mapped burnt area of 1 341 ha, the lowest amount in recent years (Figure 72). The season started late and most of the damage (90 %) was seen in September and October. Locations of the fires can be seen in Figure 14 on page 10.

Table 19. Distribution of burnt area (ha) in Kosovo by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	131	9.8
Other Natural Land	549	40.9
Transitional	347	25.9
Agriculture	313	23.3
Artificial Surfaces	1	0.1
TOTAL	1341	100

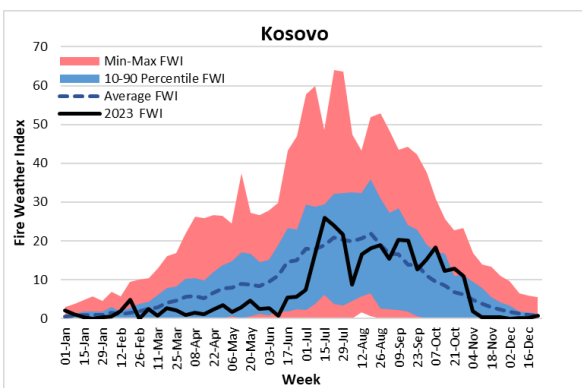


Figure 70. Fire weather Index information for Kosovo.

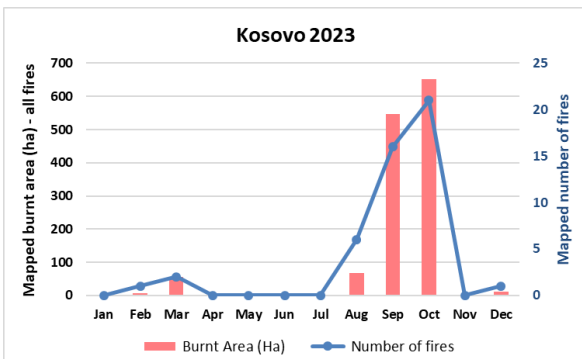


Figure 71. Monthly mapped burnt area and number of fires in Kosovo in 2023.

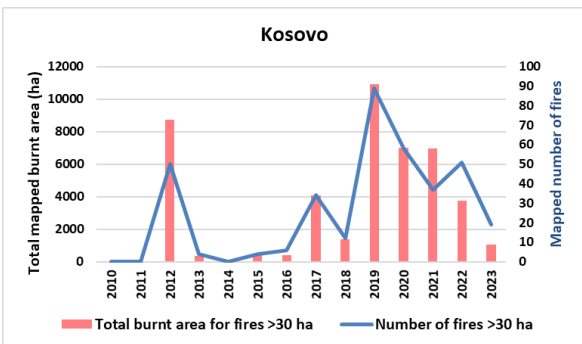


Figure 72. Annual mapped burnt area of fires ≥ 30 ha in Kosovo.

2.1.19 Latvia

A short fire season from April to June covered Latvia's fire season, when 207 ha were mapped from 15 fires, a similar result to 2022.

181 ha of this total occurred in Natura2000 sites, corresponding to 88 % of the total burnt area and 0.024 % of the total protected area in the country.

Table 20. Distribution of burnt area (ha) in Latvia by land cover types in 2023.

Land cover	Area burned	% of total
Coniferous forest	10	4.8
Mixed forest	2	1.0
Other Natural Land	169	81.6
Sclerophyllous vegetation	0	0.0
Transitional	26	12.6
TOTAL	207	100

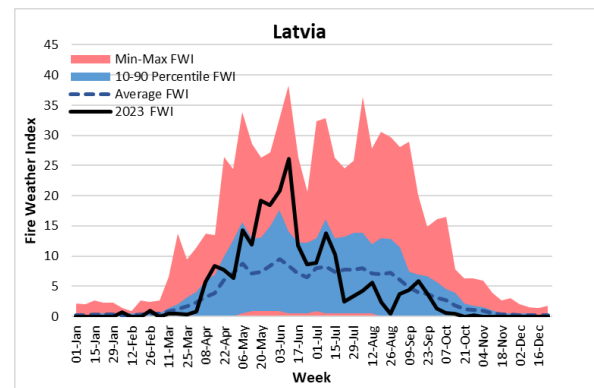


Figure 73. Fire weather Index information for Latvia.

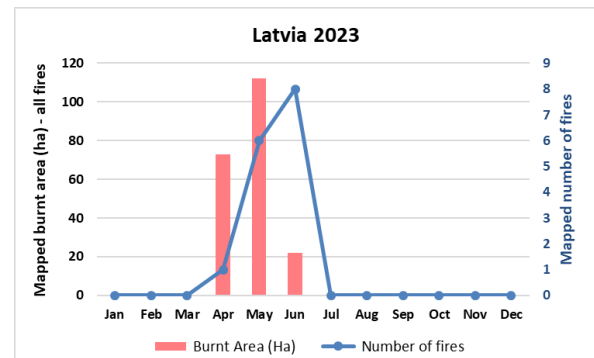


Figure 74. Monthly mapped burnt area and number of fires in Latvia in 2023.

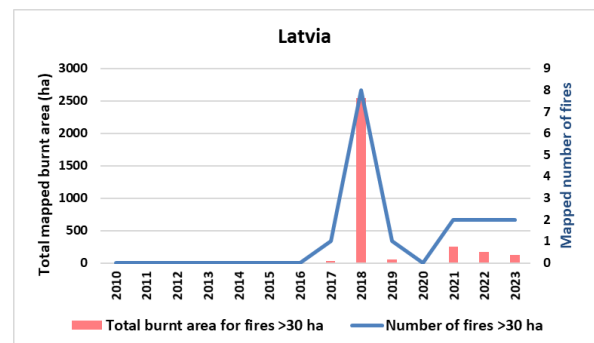


Figure 75. Annual mapped burnt area of fires ≥ 30 ha in Latvia.

2.1.20 Lithuania

12 fires were mapped in Lithuania, burning a total of 342 ha, the highest amount for several years. Most of the damage occurred in May and Other Natural Land was the most affected land type. No Natura2000 land was affected.

Table 21. Distribution of burnt area (ha) in Lithuania by land cover types in 2023.

Land cover	Area burned	% of total
Coniferous forest	23	6.7
Mixed forest	3	0.9
Other Natural Land	294	86.0
Transitional	22	6.4
TOTAL	342	100

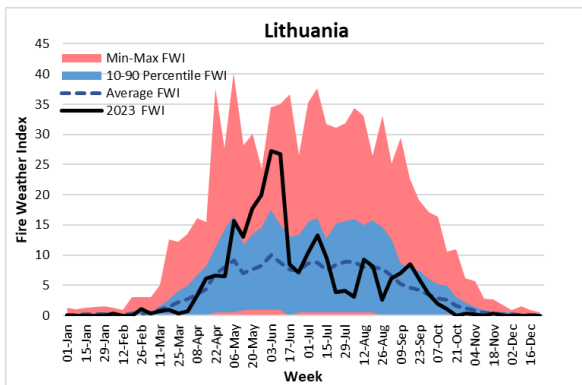


Figure 76. Fire weather Index information for Lithuania.

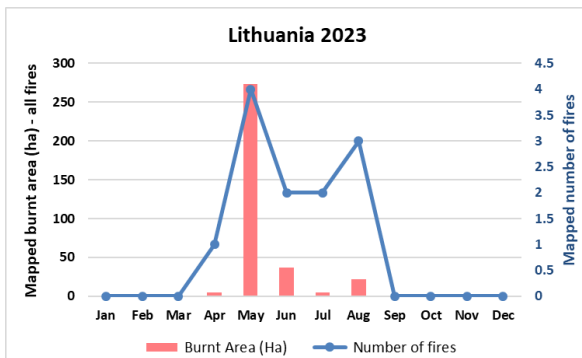


Figure 77. Monthly mapped burnt area and number of fires in Lithuania in 2023.

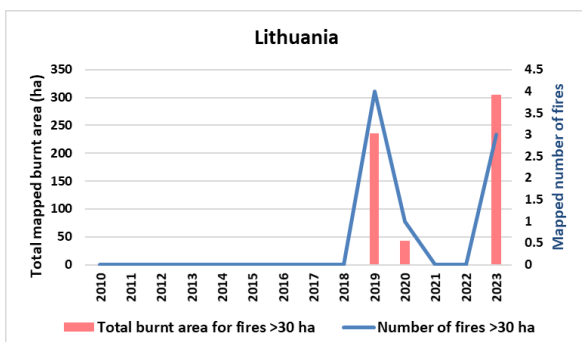


Figure 78. Annual mapped burnt area of fires ≥ 30 ha in Lithuania.

2.1.21 Montenegro

The 2023 fire season in Montenegro was the lightest in nearly a decade. 624 ha were mapped from 29 fires, mostly from two bursts of activity in March and July (Figure 80). Locations of the fires can be seen in Figure 14 on page 10.

Table 22. Distribution of burnt area (ha) in Montenegro by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	174	27.8
Coniferous forest	5	0.8
Mixed forest	1	0.2
Other Natural Land	263	42.2
Transitional	163	26.1
Agriculture	18	2.9
TOTAL	624	100

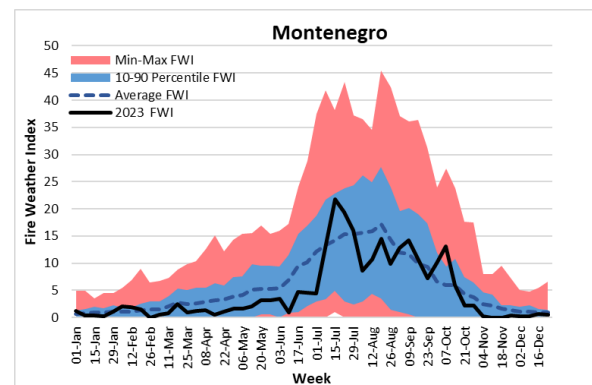


Figure 79. Fire weather Index information for Montenegro.

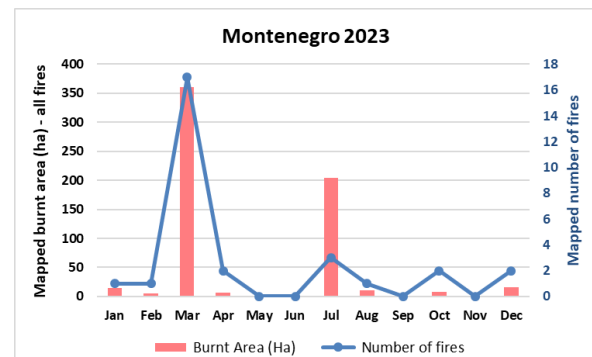


Figure 80. Monthly mapped burnt area and number of fires in Montenegro in 2023.

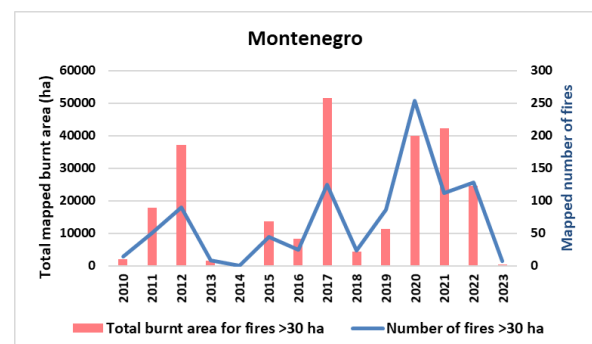


Figure 81. Annual mapped burnt area of fires ≥ 30 ha in Montenegro.

2.1.22 The Netherlands

2023 was a quiet year in the Netherlands. Only 2 fires were mapped in March, resulting in a total burnt area of 53 ha, all of which occurred on Other Natural Land on Natura2000 sites, amounting to 0.007 % of the total protected area of the country.

Table 23. Distribution of burnt area (ha) in the Netherlands by land cover types in 2023.

Land cover	Area burned	% of total
Other Natural Land	53	100.0
TOTAL	53	100

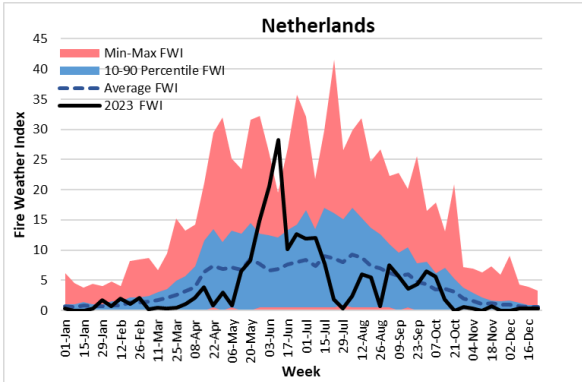


Figure 82. Fire weather Index information for the Netherlands

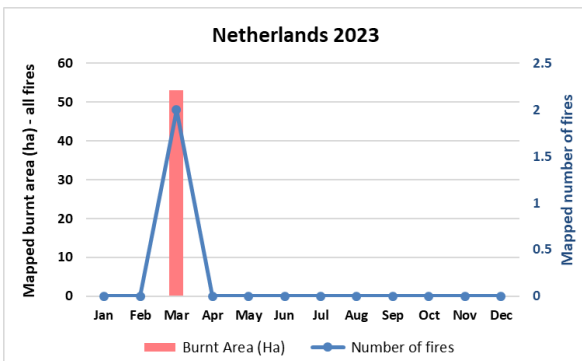


Figure 83. Monthly mapped burnt area and number of fires in the Netherlands in 2023.

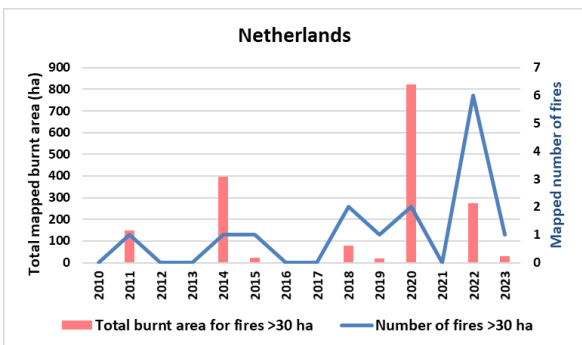


Figure 84. Annual mapped burnt area of fires ≥ 30 ha in the Netherlands.

2.1.23 North Macedonia

North Macedonia continued to follow a pattern of alternating good and bad years. 13 322 ha were mapped from 87 fires, over three times the amount recorded in 2022 but less than was mapped in 2021. Locations of the fires can be seen in Figure 14 on page 10.

Table 24. Distribution of burnt area (ha) in North Macedonia by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	609	4.6
Coniferous forest	161	1.2
Mixed forest	27	0.2
Other Natural Land	2145	16.1
Sclerophyllous vegetation	5	0.0
Transitional	3040	22.8
Agriculture	7336	55.1
TOTAL	13322	100

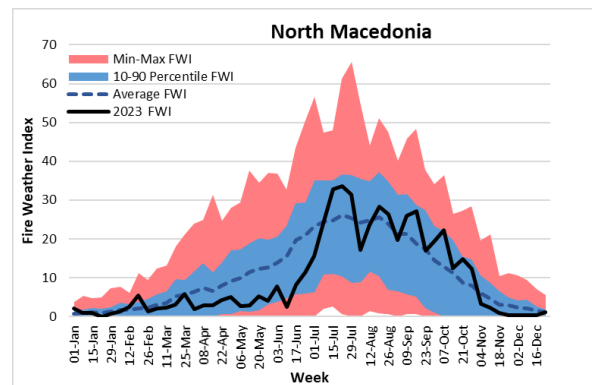


Figure 85. Fire weather Index information for North Macedonia.

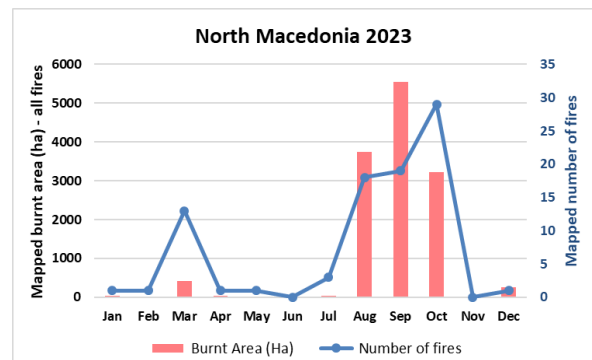


Figure 86. Monthly mapped burnt area and number of fires in North Macedonia in 2023.

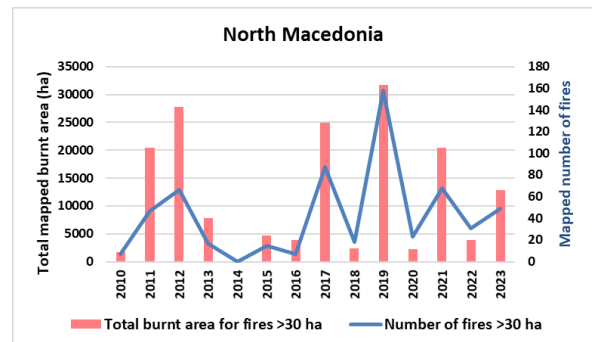


Figure 87. Annual mapped burnt area of fires ≥ 30 ha in North Macedonia.

2.1.24 Norway

In 2023 there were 1 372 ha mapped from 59 fires in Norway, around half that recorded in 2022. The season lasted from March to May, with over half of the damage occurring in April (Figure 89). Other Natural Land was the most affected land cover type (Table 25).

Table 25. Distribution of burnt area (ha) in Norway by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	44	3.2
Coniferous forest	38	2.8
Mixed forest	14	1.0
Other Natural Land	1259	91.8
Agriculture	13	0.9
Artificial Surfaces	3	0.2
Other Land Cover	1	0.1
TOTAL	1372	100

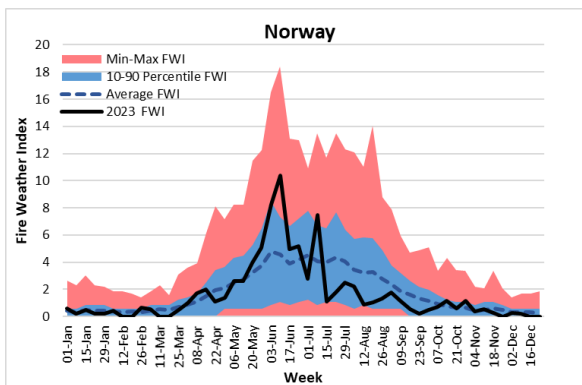


Figure 88. Fire weather Index information for Norway.

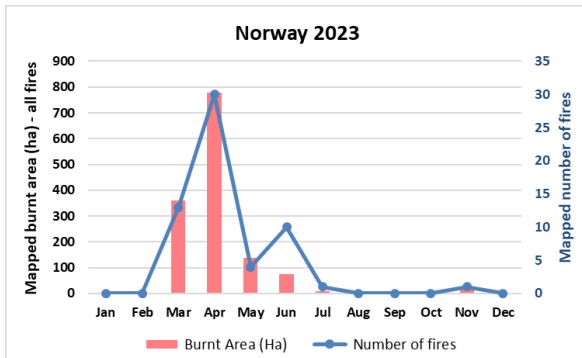


Figure 89. Monthly mapped burnt area and number of fires in Norway in 2023.

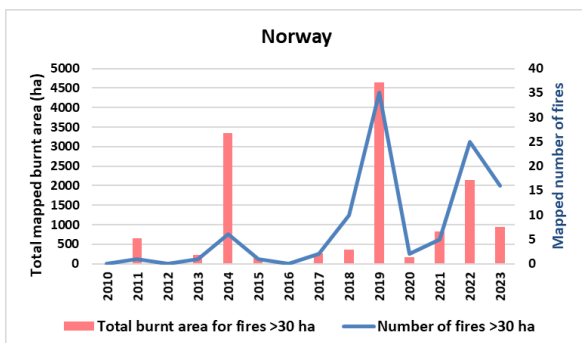


Figure 90. Annual mapped burnt area of fires ≥ 30 ha in Norway.

2.1.25 Poland

It was a quiet year in Poland. 27 fires were mapped, resulting in a total burnt area of only 214 ha, of which 166 ha (78 %) was on Natura2000 land, amounting to 0.002 % of the Natura2000 area of the country.

Table 26. Distribution of burnt area (ha) in Poland by land cover types in 2023.

Land cover	Area burned	% of total
Coniferous forest	4	1.6
Mixed forest	7	3.3
Other Natural Land	198	92.5
Transitional	5	2.6
TOTAL	214	100

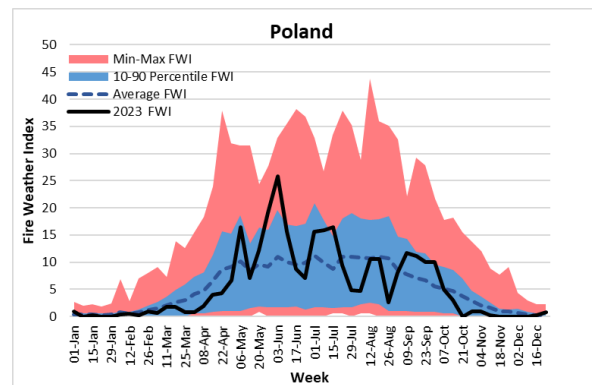


Figure 91. Fire weather Index information for Poland.

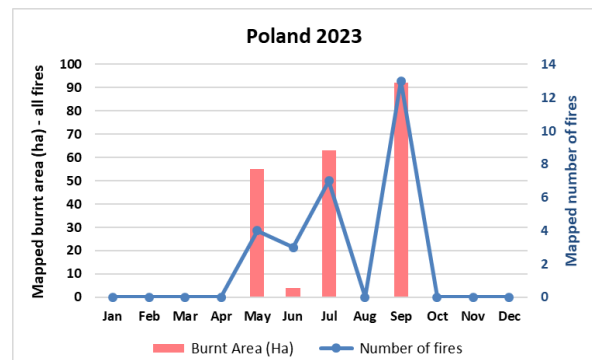


Figure 92. Monthly mapped burnt area and number of fires in Poland in 2023.

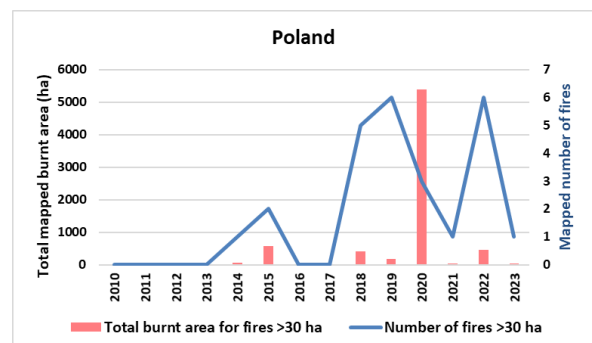


Figure 93. Annual mapped burnt area of fires ≥ 30 ha in Poland.

2.1.26 Portugal

The total burnt area of 43 049 ha from 938 fires was one of the lowest recorded in recent years (Figure 96). Although fires were mapped in every month, half of the damage occurred in August, when the largest fires of the year occurred. These include two of over 5 000 ha that broke out on the same day. The island of Madeira was also affected by a fire of almost 5 000 ha in October (Figure 98).

14 324 ha of the mapped total occurred on Natura2000 sites, corresponding to 33 % of the total area burnt, and 0.59 % of the total Natura2000 areas in Portugal.

Table 27. Distribution of burnt area (ha) in Portugal by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	4245	9.9
Coniferous forest	3112	7.3
Mixed forest	2376	5.5
Other Natural Land	13418	31.2
Sclerophyllous vegetation	1412	3.0
Transitional	12872	30.0
Agriculture	5291	12.3
Artificial Surfaces	319	0.7
Other Land Cover	4	0.0
TOTAL	43049	100

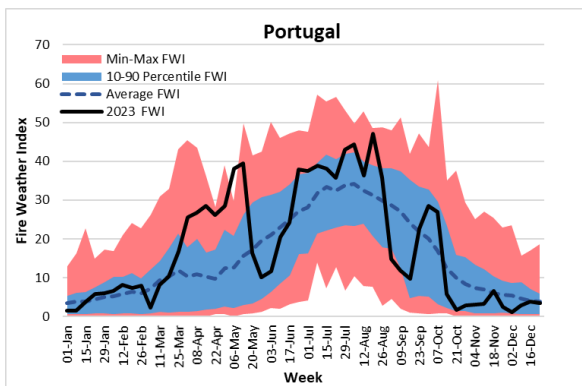


Figure 94. Fire weather Index information for Portugal.

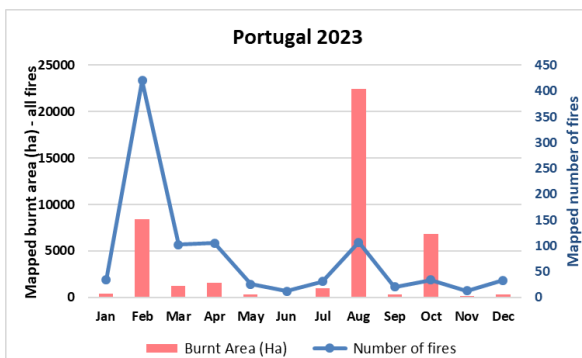


Figure 95. Monthly mapped burnt area and number of fires in Portugal in 2023.

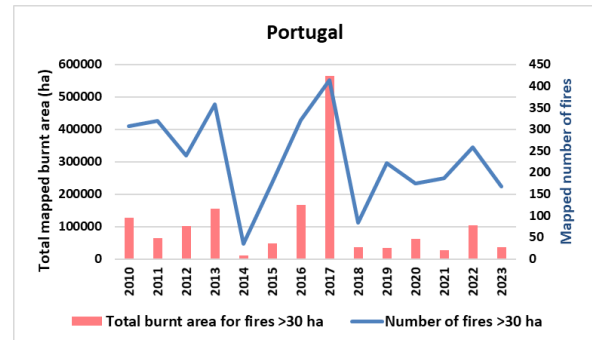


Figure 96. Annual mapped burnt area of fires \geq 30 ha in Portugal.

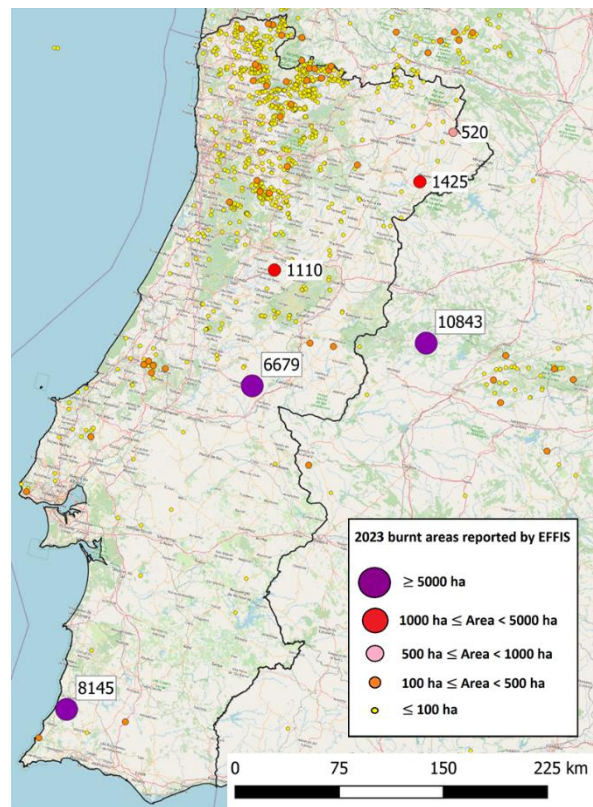


Figure 97. Locations of mapped burnt areas in Portugal in 2023.

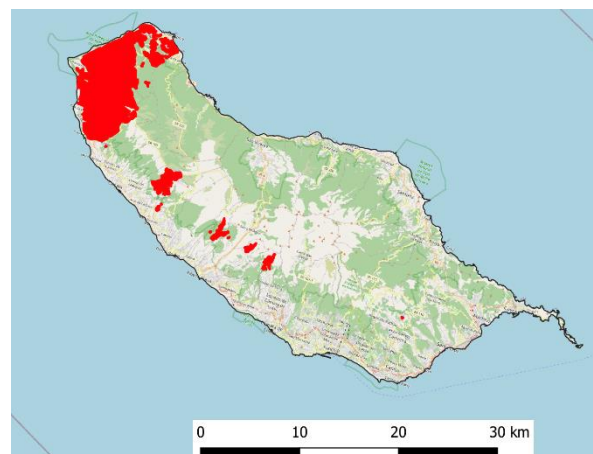


Figure 98. Mapped perimeter of the large fire in Madeira in 2023.

2.1.27 Romania

After several hard years, the 2023 fire season in Romania was light. 17 491 ha was mapped from 124 fires, around 11% of the 2022 total. Most of the damage occurred in February and March when the largest fires of the year occurred, including one over 3 500 ha, two others over 1 000 ha and a further 6 exceeding 500 ha, all in the east of the country and mostly affecting Other Natural Land. 15 708 ha (90 %) of the total mapped burnt area was on Natura2000 sites, representing 0.202 % of the total protected area of Romania.

Table 28. Distribution of burnt area (ha) in Romania by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	518	3.0
Other Natural Land	15425	88.2
Transitional	72	0.4
Agriculture	1291	7.4
Artificial Surfaces	3	0.0
Other Land Cover	184	1.1
TOTAL	17491	100

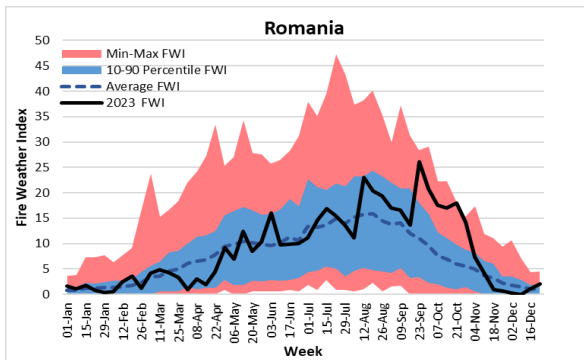


Figure 99. Fire weather Index information for Romania.

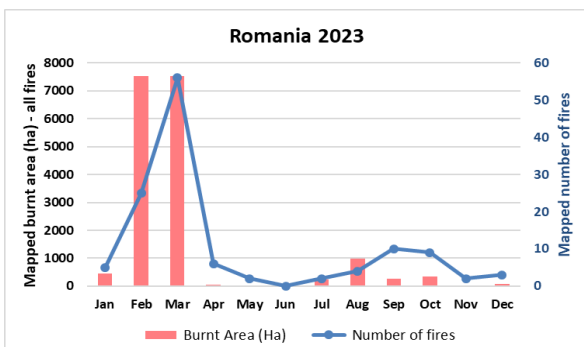


Figure 100. Monthly mapped burnt area and number of fires in Romania in 2023.

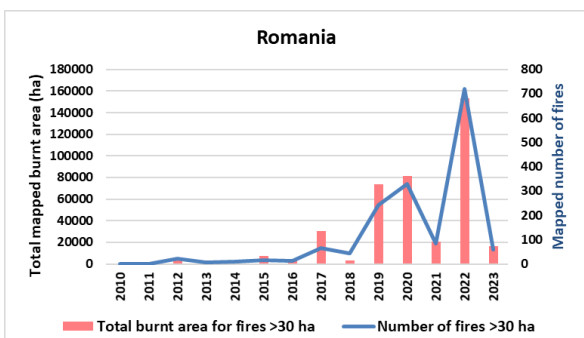


Figure 101. Annual mapped burnt area of fires ≥ 30 ha in Romania.

2.1.28 Serbia

It was the lightest fire season in Serbia for six years (Figure 104). A total of 79 fires were mapped, burning 2 909 ha. There were two main peaks in the season, one in March when the largest fire of the season occurred (over 750 ha in Braničevski region), and the other in the autumn. Locations of the fires can be seen in Figure 14 on page 10.

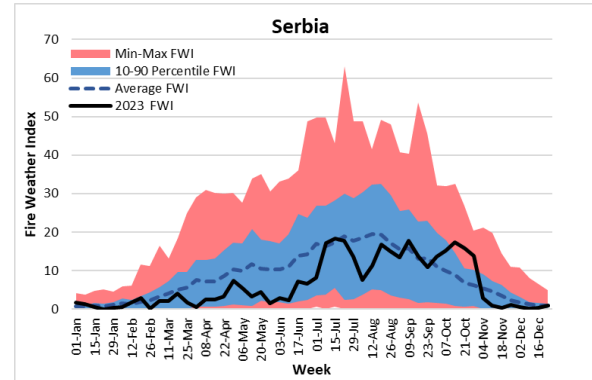


Figure 102. Fire weather Index information for Serbia.



Figure 103. Monthly mapped burnt area and number of fires in Serbia in 2023.

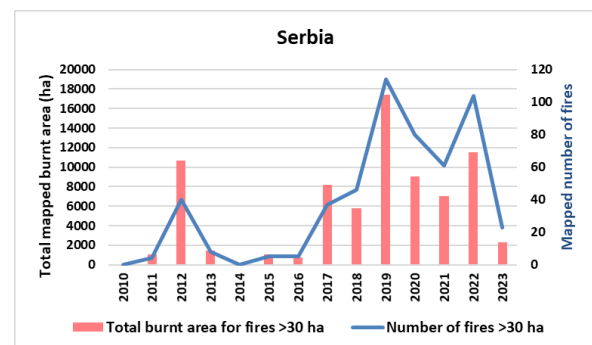


Figure 104. Annual mapped burnt area of fires ≥ 30 ha in Serbia.

Table 29. Distribution of burnt area (ha) in Serbia by land cover type in 2023.

Land cover	Area burned	% of total
Broadleaf forest	515	17.7
Coniferous forest	1	0.0
Mixed forest	3	0.1
Other Natural Land	650	22.4
Transitional	1077	37.0
Agriculture	657	22.6
Artificial Surfaces	1	0.0
Other Land Cover	2	0.1
TOTAL	2909	100

2.1.29 Slovakia

No fires were mapped in Slovakia in 2023. The Fire Weather Index was mostly at or below average levels except for a short period in the summer.

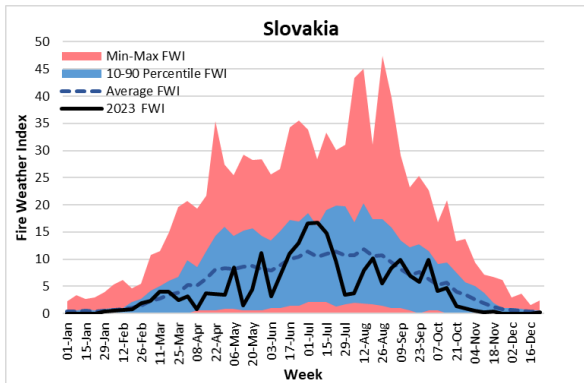


Figure 105. Fire weather Index information for Slovakia.

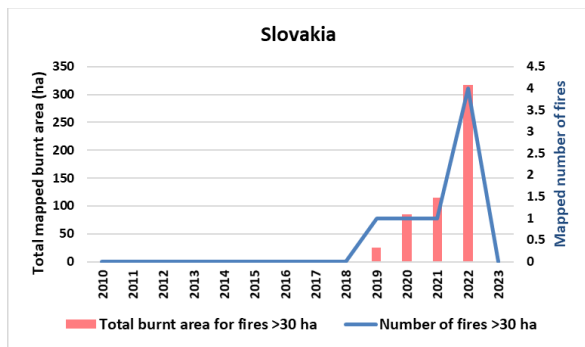


Figure 106. Annual mapped burnt area of fires ≥ 30 ha in Slovakia.

2.1.30 Slovenia

Just two fires were mapped in Slovenia in 2023, covering a total of 131 ha, all in Natura2000 sites and mostly affecting Other Natural Land.

Table 30. Distribution of burnt area (ha) in Slovenia by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	6	4.6
Other Natural Land	119	90.8
Transitional	6	4.6
TOTAL	131	100

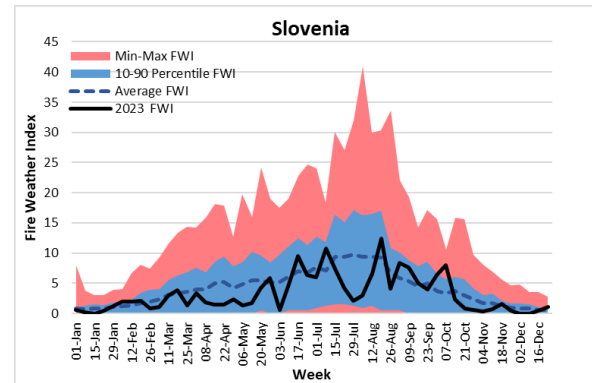


Figure 107. Fire weather Index information for Slovenia.

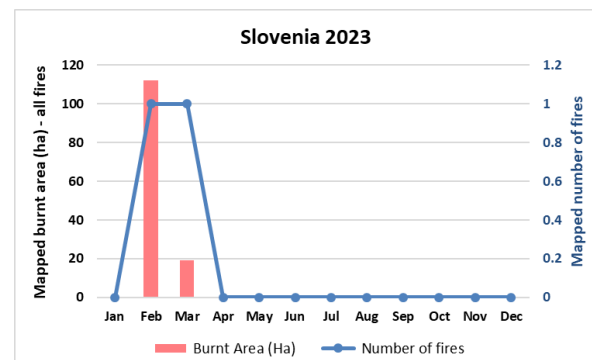


Figure 108. Monthly mapped burnt area and number of fires in Slovenia in 2023.

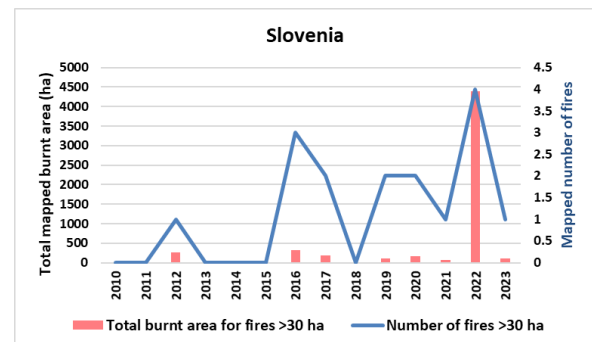


Figure 109. Annual mapped burnt area of fires ≥ 30 ha in Slovenia.

2.1.31 Spain

The 2023 fire season in Spain was relatively light after a bad year in 2022. A total of 101 184 ha was mapped from 1397 fires, one third of the amount recorded in 2022. March was the most affected month, coinciding with high values of the FWI, although the largest fire of the year (nearly 12 000 ha, in Tenerife) occurred in August. A second fire was mapped at over 10 000 ha and there were a further 10 fires over 1 000 ha and 11 exceeding 500 ha.

Table 31. Distribution of burnt area (ha) in Spain by land cover type in 2023.

Land cover	Area burned	% of total
Broadleaf forest	9440	9.3
Coniferous forest	19711	19.5
Mixed forest	3066	3.0
Other Natural Land	50511	49.9
Sclerophyllous vegetation	9147	9.0
Transitional	5828	5.8
Agriculture	3359	3.3
Artificial Surfaces	111	0.1
TOTAL	101184	100

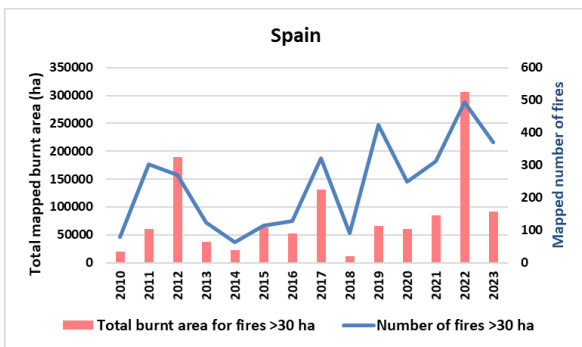


Figure 110. Annual mapped burnt area of fires > 30 ha in Spain.

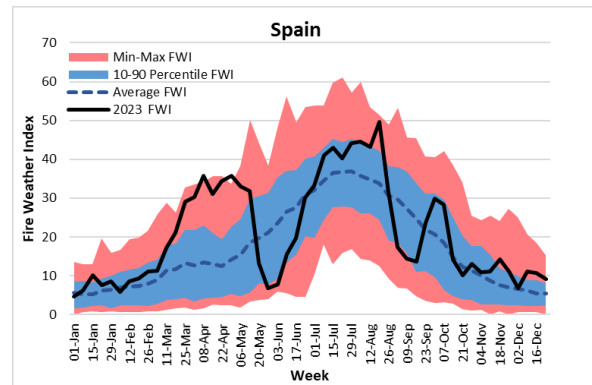


Figure 111. Fire weather index information for Spain.

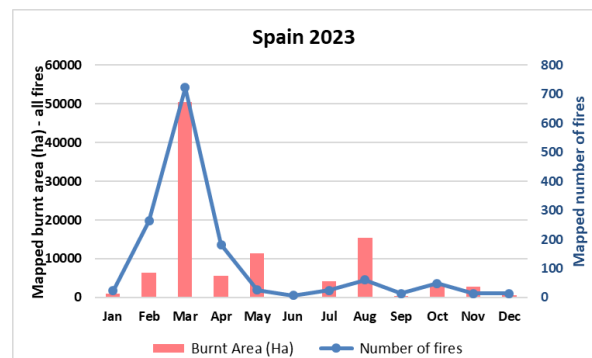


Figure 112. Monthly mapped burnt area and number of fires in Spain in 2023.

Of the total, 42 665 ha occurred on Natura2000 sites, the second highest amount recorded after Greece. This corresponds to 42 % of the total area burned and 0.253 % of the Natura2000 areas in Spain.

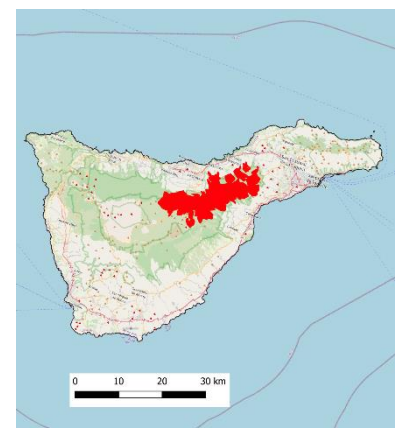
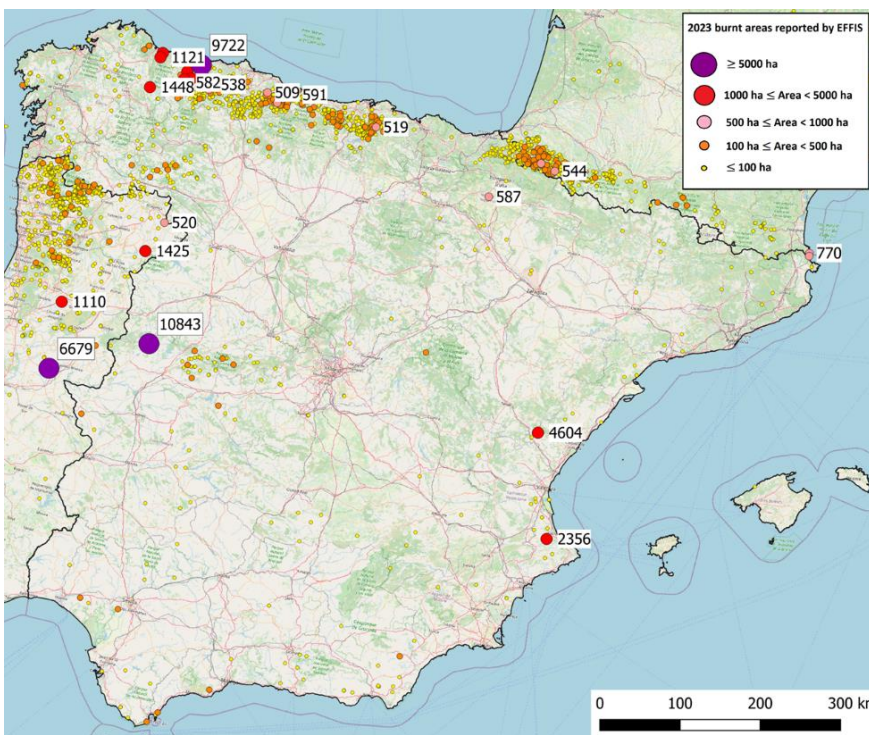


Figure 113. Locations of the mapped burnt areas in Spain in 2023 and the mapped perimeter of the large fire in Tenerife.

2.1.32 Sweden

It was a light year for fires in Sweden. 61 fires were mapped in 2023, resulting in a total mapped burnt area of 641 ha, similar to the total recorded in 2022. June was the most affected month. Only 70 ha (11 %) of the total was in Natura2000 sites.

Table 32. Distribution of burnt area (ha) in Sweden by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	2	0.3
Coniferous forest	417	65.0
Mixed forest	48	7.5
Other Natural Land	127	19.8
Transitional	23	3.5
Agriculture	19	3.0
Other Land Cover	5	0.8
TOTAL	641	100

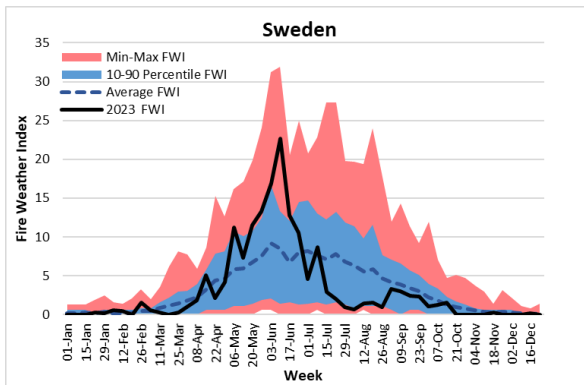


Figure 114. Fire weather Index information for Sweden.

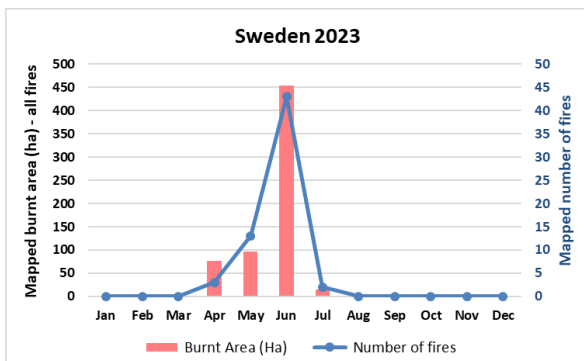


Figure 115. Monthly mapped burnt area and number of fires in Sweden in 2023.

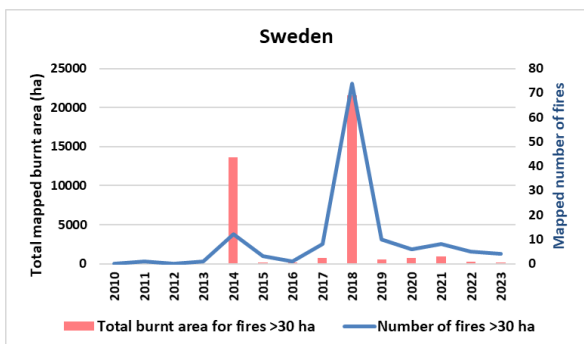


Figure 116. Annual mapped burnt area of fires \geq 30 ha in Sweden.

2.1.33 Switzerland

A fire of 68 ha was mapped in July, affecting Coniferous Forest and Transitional Vegetation.

Table 33. Distribution of burnt area (ha) in Switzerland by land cover types in 2023.

Land cover	Area burned	% of total
Coniferous forest	36	52.9
Transitional	32	47.1
TOTAL	68	100

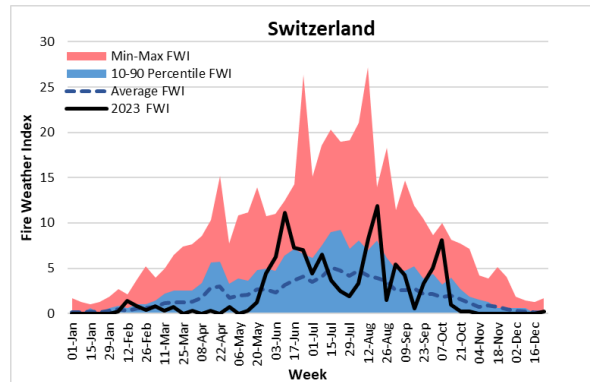


Figure 117. Fire weather Index information for Switzerland.

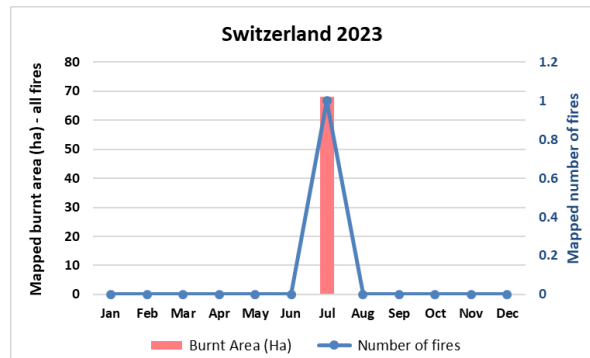


Figure 118. Monthly mapped burnt area and number of fires in Switzerland in 2023.

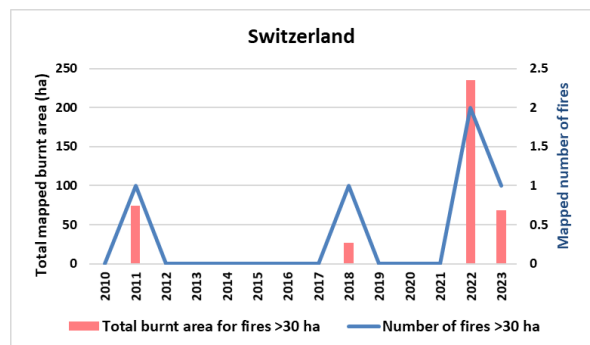


Figure 119. Annual mapped burnt area of fires \geq 30 ha in Switzerland.

2.1.34 Türkiye

The 2023 fire season in Türkiye was light. The season started in July and resulted in 35 813 ha burnt from 424 fires, twice the amount recorded in 2022 but still below the average of the last few years.

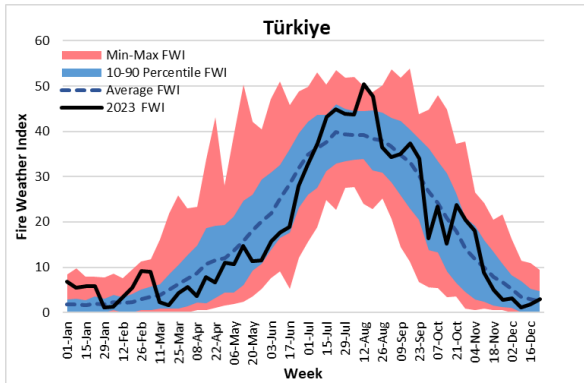


Figure 120. Fire weather Index information for Türkiye.

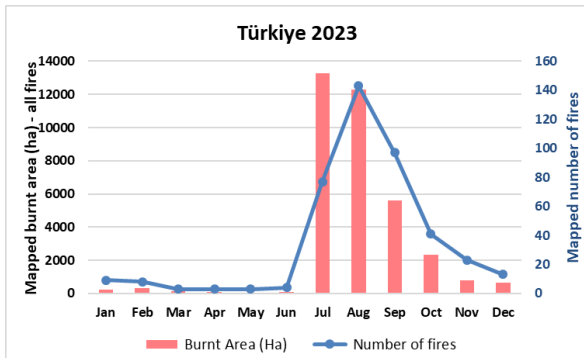


Figure 121. Monthly mapped burnt area and number of fires in Türkiye in 2023.

Table 34. Distribution of burnt area (ha) in Türkiye by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	756	2.1
Coniferous forest	4384	12.2
Mixed forest	2106	5.9
Other Natural Land	12359	34.5
Sclerophyllous vegetation	326	0.9
Transitional	7044	19.7
Agriculture	8337	23.3
Artificial Surfaces	57	0.2
Other Land Cover	448	1.3
TOTAL	35813	100

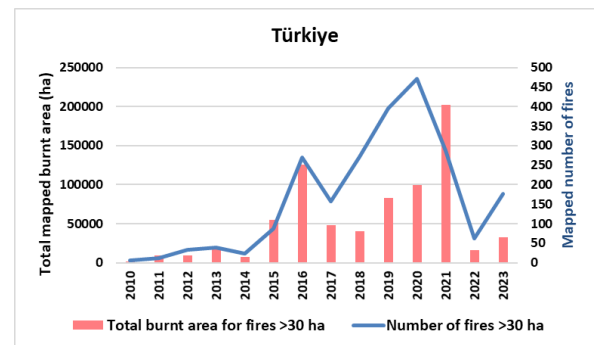


Figure 122. Annual mapped burnt area of fires ≥ 30 ha in Türkiye.

The largest two fires of the year were both around 3 000 ha in size and broke out in Çanakkale in July and August. Three others exceeded 1 000 ha and a further eight fires were over 500 ha (Figure 123).

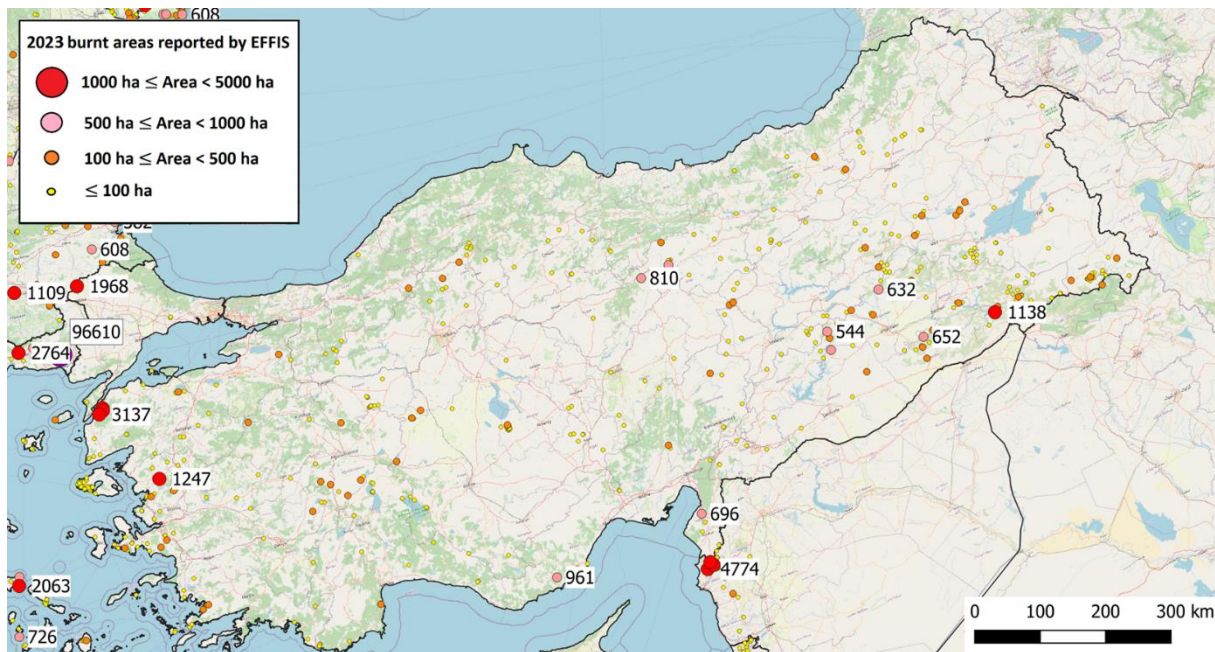


Figure 123. Locations of mapped burnt areas in Türkiye in 2023.

2.1.35 United Kingdom

The total burnt area in mapped in the United Kingdom was 9 343 ha from 112 fires, less than half that recorded in 2022. As usual, most of the damage occurred in the spring, including the largest fire of the year which covered nearly 3 500 ha in Scotland. Two other fires exceeded 500 ha.

1 039 ha of the total burnt area occurred in protected sites, amounting to 11 % of the total and 0.041 % of the total protected area of the country.

Table 35. Distribution of burnt area (ha) in the UK by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	171	1.8
Coniferous forest	196	2.1
Mixed forest	29	0.3
Other Natural Land	8486	90.8
Transitional	356	3.8
Agriculture	36	0.4
Artificial Surfaces	67	0.7
Other Land Cover	1	0.0
TOTAL	9343	100

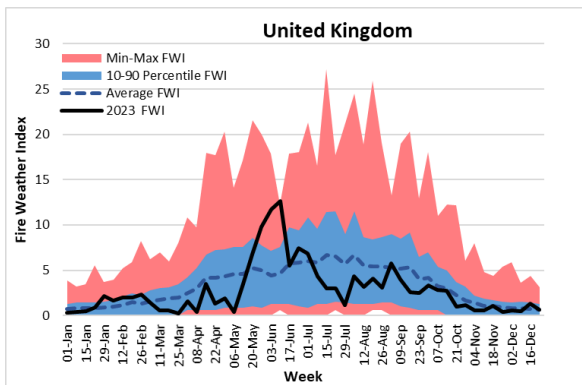


Figure 124. Fire weather Index information for the United Kingdom.

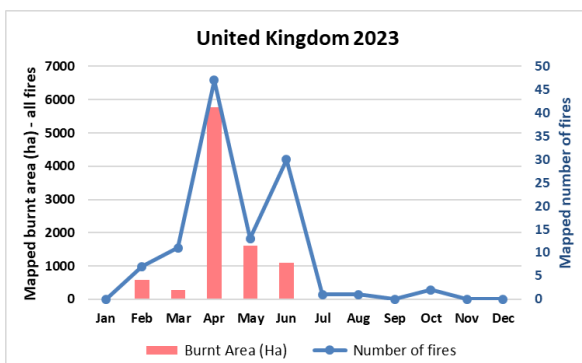


Figure 125. Monthly mapped burnt area and number of fires in the United Kingdom in 2023.

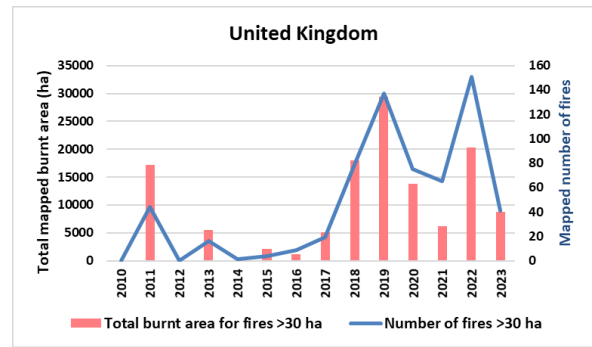


Figure 126. Annual mapped burnt area of fires \geq 30 ha in the United Kingdom.

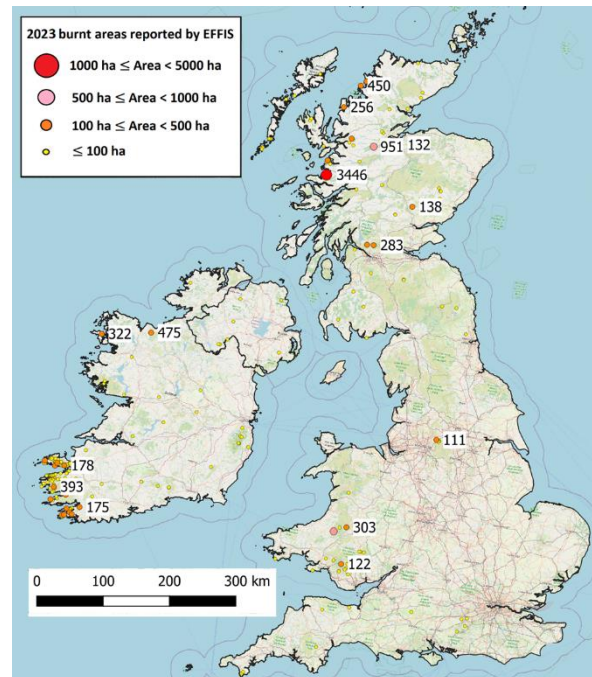


Figure 127. Locations of mapped burnt areas in the United Kingdom and Ireland in 2023.

2.1.36 Ukraine

Ukraine recorded the highest number of fires and mapped burnt area of the countries covered by EFFIS, although this total was significantly less than was mapped in 2022 (Figure 130). 2 185 fires were mapped resulting in a total of 226 421 ha burnt, mostly in late summer.

Table 36. Distribution of burnt area (ha) in Ukraine by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	158	0.1
Coniferous forest	6544	2.9
Mixed forest	24906	11.0
Other Natural Land	122109	53.9
Sclerophyllous vegetation	0	0.0
Transitional	0	0.0
Agriculture	71006	31.4
Artificial Surfaces	1132	0.5
Other Land Cover	589	0.3
TOTAL	226421	100

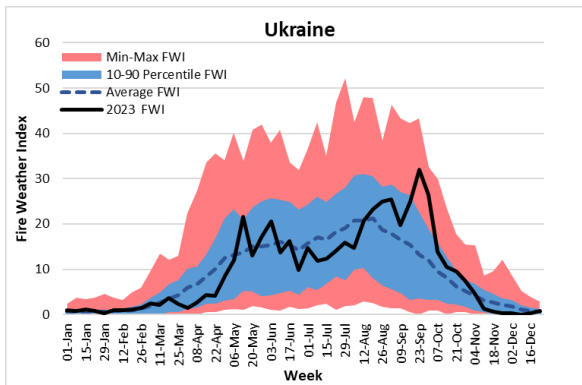


Figure 128. Fire weather Index information for Ukraine.

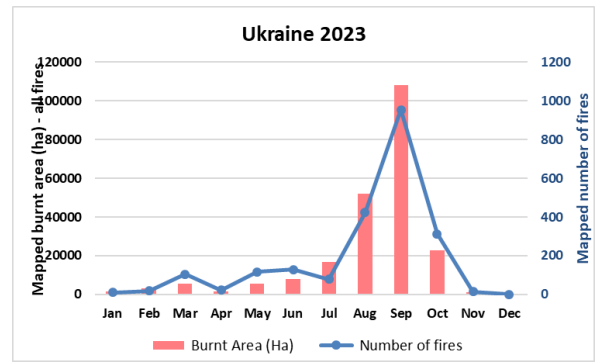


Figure 129. Monthly mapped burnt area and number of fires in Ukraine in 2023.

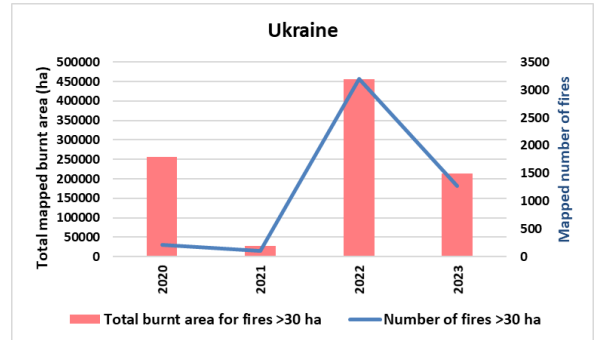


Figure 130. Annual mapped burnt area of fires ≥ 30 ha in Ukraine.

The largest fire occurred in Kherson region in September and covered over 4 000 ha, but there were many other large fires: 37 over 500 ha, 29 over 1 000 ha and seven that exceeded 2 000 ha. Most of these fires occurred in the east of the country, near the front line of hostilities.

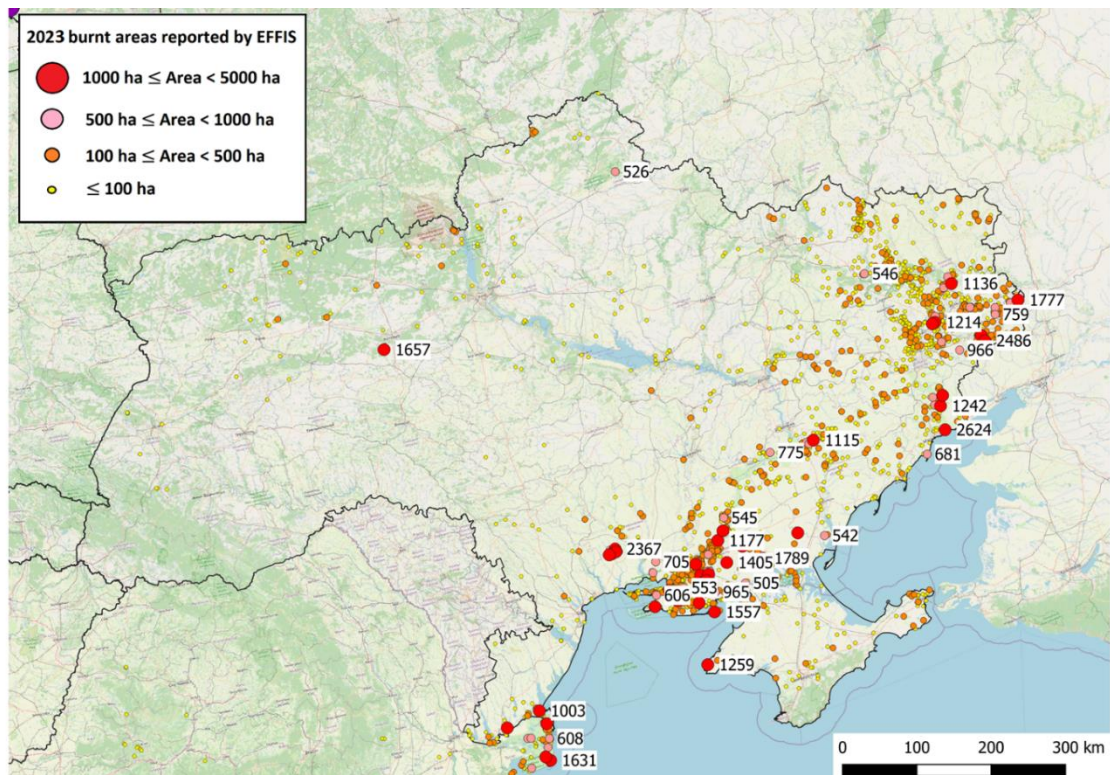


Figure 131. Locations of mapped burnt areas in Ukraine.

2.2 Middle East and North Africa

The total burnt area mapped across North Africa and the Middle East was similar to that of 2022 and slightly better than the long term average.

2.2.1 Algeria

The total burnt area mapped in Algeria in 2023 was higher than the 2022 season but around the long term average. A total of 73 725 ha was mapped from 620 fires. July was the most affected month, when several very large fires occurred, including the biggest of the year which covered over 14 000 ha in the Béjaïa region. Apart from this fire, there were 13 others greater than 1 000 ha and a further 9 over 500 ha.

A relatively small amount (1 484 ha, or 2 % of the total) affected protected areas.

The Globcover land cover map from ESA was used to split the burnt area into different land type categories, harmonised with CLC terminology, and the distribution of burnt area by these land cover types is given in Table 37.

Table 37. Distribution of burnt area (ha) in Algeria by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	369	0.5
Coniferous forest	74	0.1
Mixed forest	49587	67.3
Other Natural Land	22523	30.6
Agriculture	826	1.1
Artificial Surfaces	96	0.1
Other Land Cover	243	0.3
TOTAL	73725	100

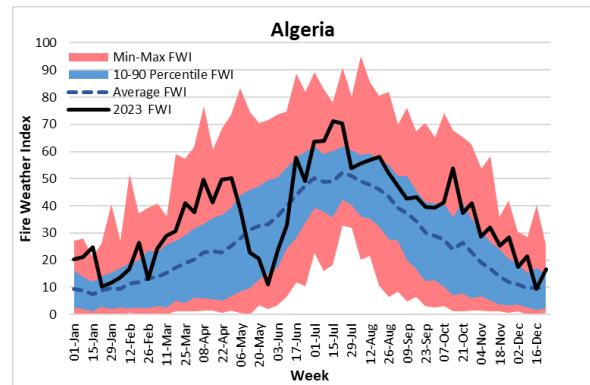


Figure 132. Fire weather index information for Algeria.

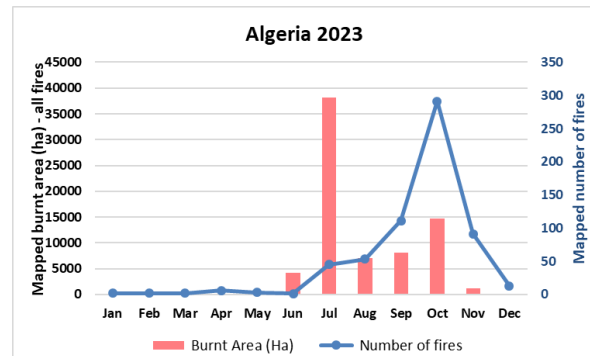


Figure 133. Monthly mapped burnt area and number of fires in Algeria in 2023.

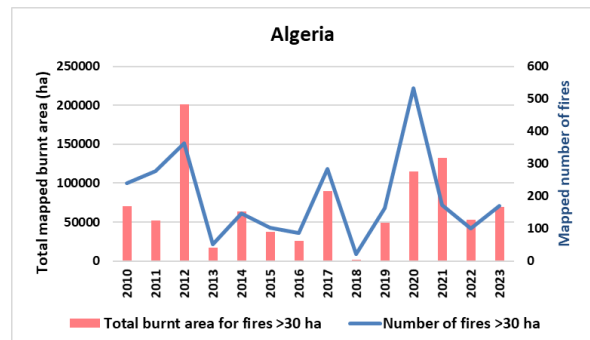


Figure 134. Annual mapped burnt area of fires ≥ 30 ha in Algeria.

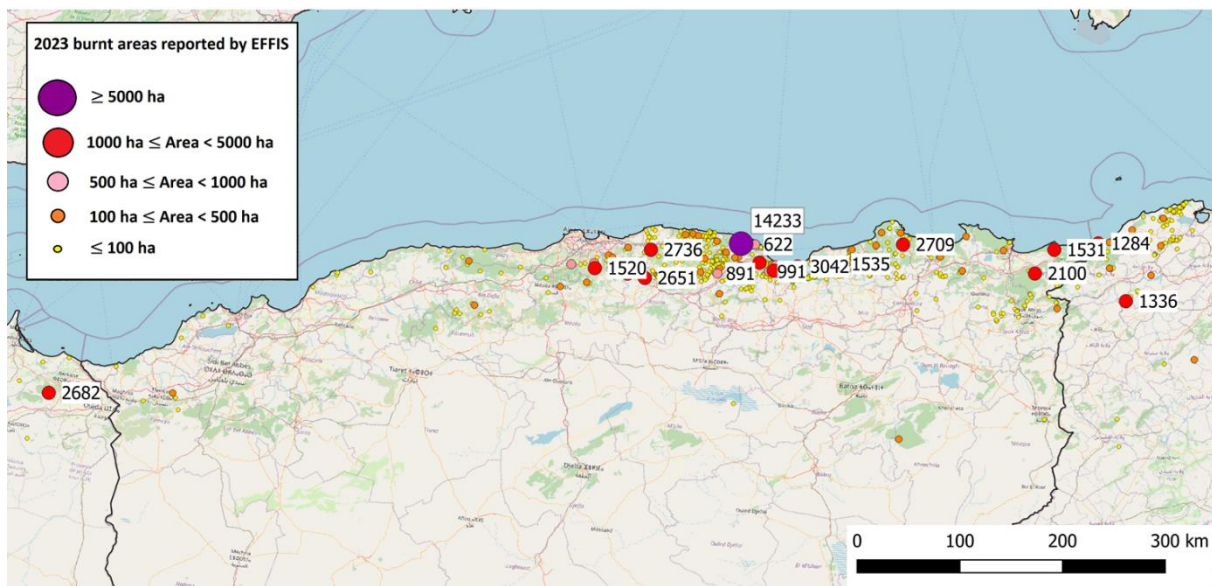


Figure 135. Locations of mapped fires in the north of Algeria in 2023.

2.2.2 Israel

Fifteen fires were mapped in Israel, burning a total of 706 ha.

Table 38 presents the affected land cover types using the Globcover land cover map, harmonised with CLC. Almost three quarters of the total burnt area was in Other Natural Land.

Table 38. Distribution of burnt area (ha) in Israel by land cover types in 2023.

Land cover	Area burned	% of total
Mixed forest	34	4.8
Other Natural Land	510	72.2
Agriculture	156	22.1
Artificial Surfaces	4	0.6
TOTAL	706	100

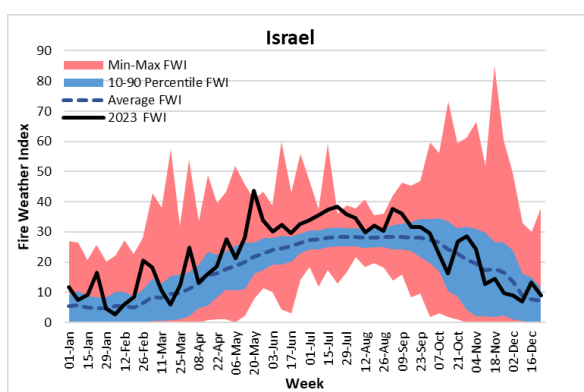


Figure 136. Fire weather Index information for Israel.

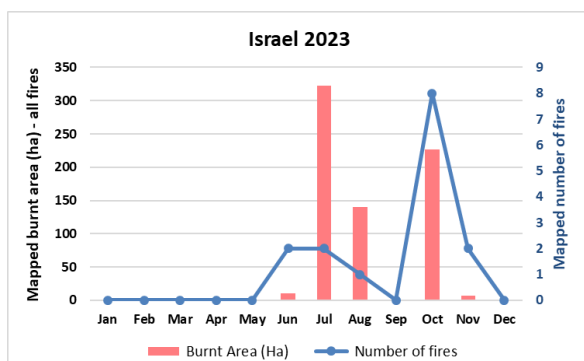


Figure 137. Monthly mapped burnt area and number of fires in Israel in 2023.

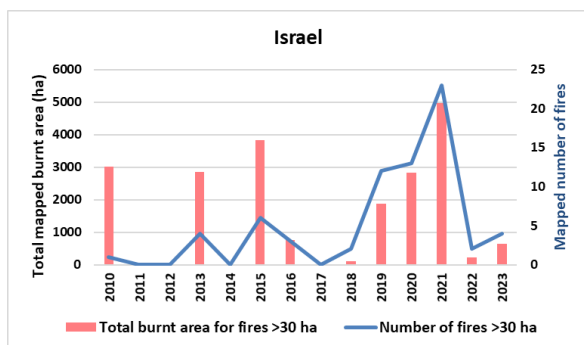


Figure 138. Annual mapped burnt area of fires ≥ 30 ha in Israel.

2.2.3 Lebanon

The 2023 fire season was worse than 2022, although still only covering around half of the area mapped in 2019-2021. 90 fires were mapped, resulting in a total burnt area of 1 889 ha. Of this total, only just over 1 % (24 ha) affected protected areas.

Table 39 presents the affected land cover types using the Globcover land cover map, harmonised with CLC.

Table 39. Distribution of burnt area (ha) in Lebanon by land cover types in 2023.

Land cover	Area burned	% of total
Coniferous forest	229	12.1
Mixed forest	308	16.3
Other Natural Land	1200	63.5
Agriculture	140	7.4
Artificial Surfaces	13	0.7
TOTAL	1889	100

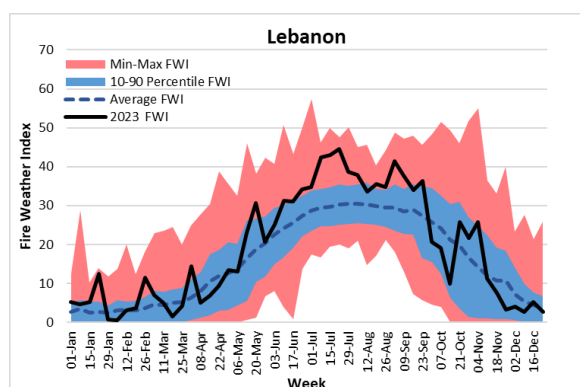


Figure 139. Fire weather Index information for Lebanon.

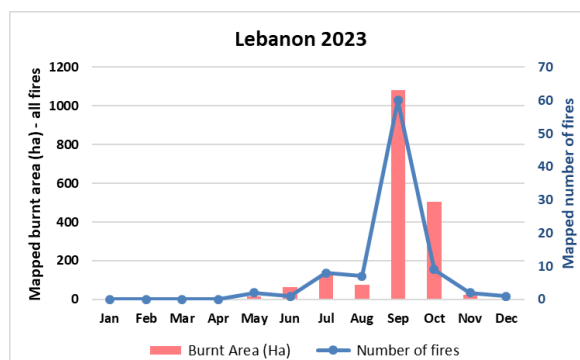


Figure 140. Monthly mapped burnt area and number of fires in Lebanon in 2023.

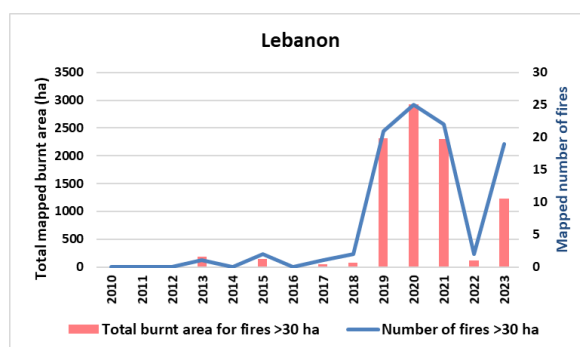


Figure 141. Annual mapped burnt area of fires ≥ 30 ha in Lebanon.

2.2.4 Libya

The 2023 fire season in Libya was quiet. 11 fires were mapped, resulting in a total burnt area of 417 ha between April and August. Table 40 presents the distribution of the mapped burnt area by land cover type using the Globcover land cover map, harmonised with CLC.

Table 40. Distribution of burnt area (ha) in Libya by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	22	5.3
Mixed forest	222	53.1
Other Natural Land	147	35.2
Agriculture	27	6.4
TOTAL	417	100

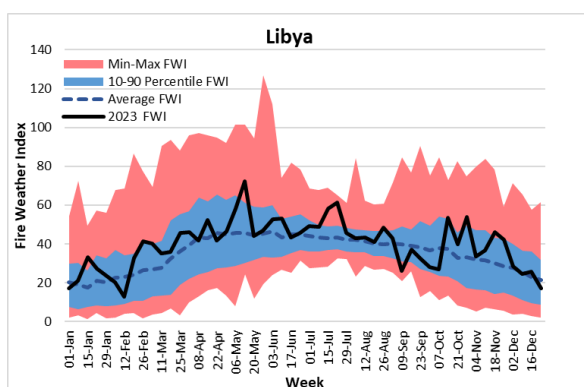


Figure 142. Fire weather Index information for Libya.

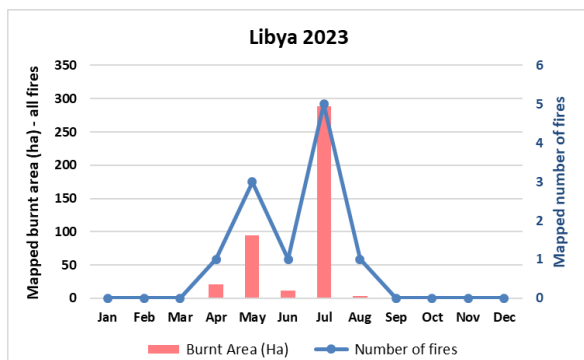


Figure 143. Monthly mapped burnt area and number of fires in Libya in 2023.

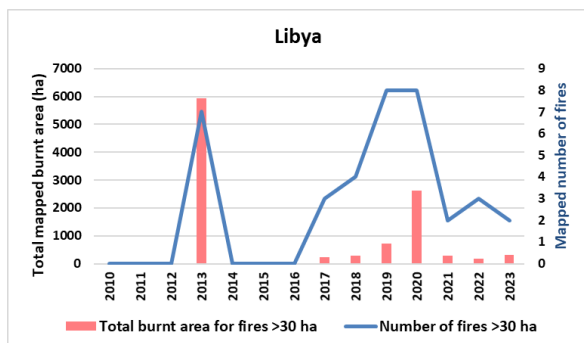


Figure 144. Annual mapped burnt area of fires ≥ 30 ha in Libya.

2.2.5 Morocco

After a hard season in 2022, the 2023 fire season was closer to average. 92 fires were mapped, resulting in a total of 8 127 ha burnt. Most of the fires occurred in July and August, including the largest of the year, over 2 500 ha in Aklim region. Three other fires exceeded 500 ha.

Table 41. Distribution of burnt area (ha) in Morocco by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	3858	47.5
Coniferous forest	1508	18.6
Mixed forest	453	5.6
Other Natural Land	265	3.3
Transitional	1299	16.0
Agriculture	733	9.0
Other Land Cover	10	0.1
TOTAL	8127	100

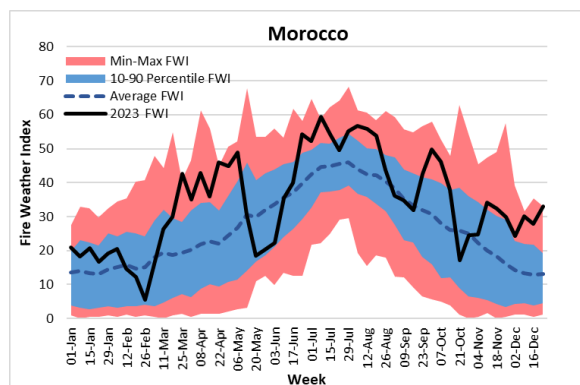


Figure 145. Fire weather Index information for Morocco.

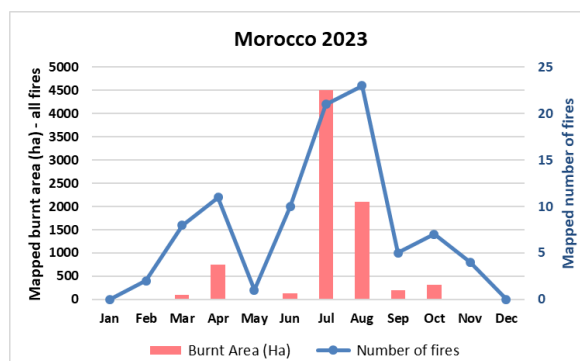


Figure 146. Monthly mapped burnt area and number of fires in Morocco in 2023.

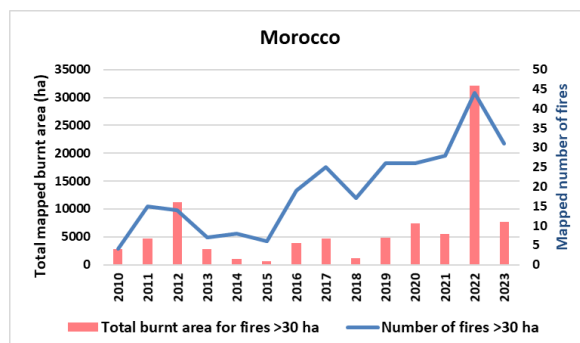


Figure 147. Annual mapped burnt area of fires ≥ 30 ha in Morocco.

2.2.6 Palestinian Territory

There were two fires mapped in Palestinian Territory in 2023, burning 480 ha in total. Table 42 presents the distribution of the mapped burnt area by land cover type using the Globcover land cover map, harmonised with CLC.

Table 42. Distribution of burnt area (ha) in Palestinian Territory by land cover types in 2023.

Land cover	Area burned	% of total
Mixed forest	13	2.7
Other Natural Land	280	58.3
Agriculture	187	38.9
TOTAL	480	100

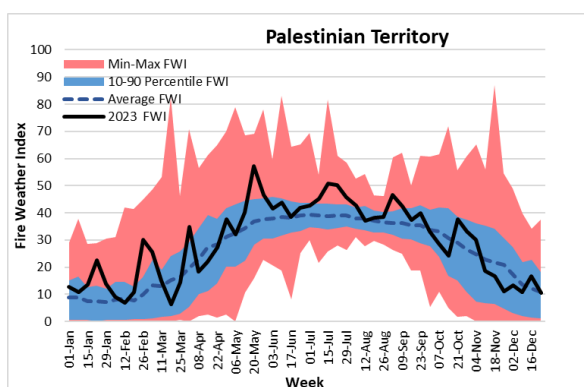


Figure 148. Fire weather index information for Palestinian Territory.

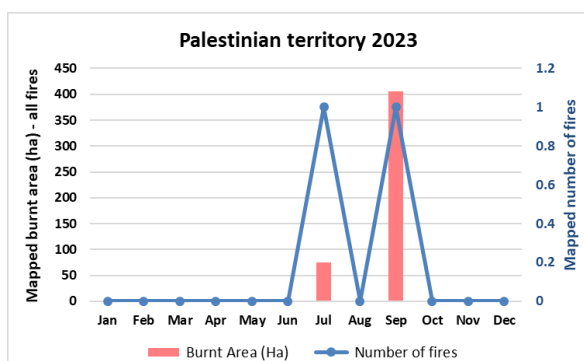


Figure 149. Monthly mapped burnt area and number of fires in Palestinian Territory in 2023.

2.2.7 Syria

It was a relatively light year for fires in Syria. There were 37 fires mapped, all but two in July, giving a total burnt area of 11 449 ha. Three of these were large; one was over 4 500 ha, a second over 3 000 ha and the third was nearly 2 000 ha, all in Lattakia region.

Table 43. Distribution of burnt area (ha) in Syria by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	5	0.0
Coniferous forest	5632	49.2
Mixed forest	3263	28.5
Other Natural Land	1917	16.7
Agriculture	616	5.4
Artificial Surfaces	17	0.2
TOTAL	11449	100

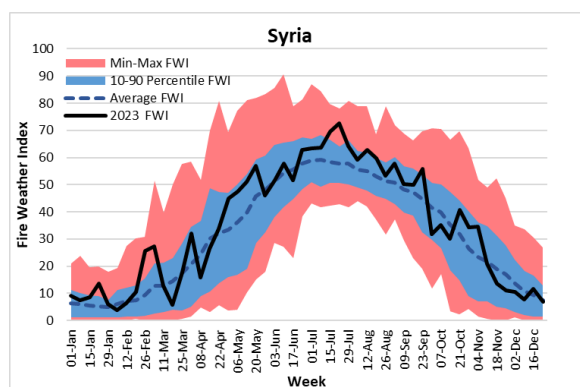


Figure 150. Fire weather index information for Syria.

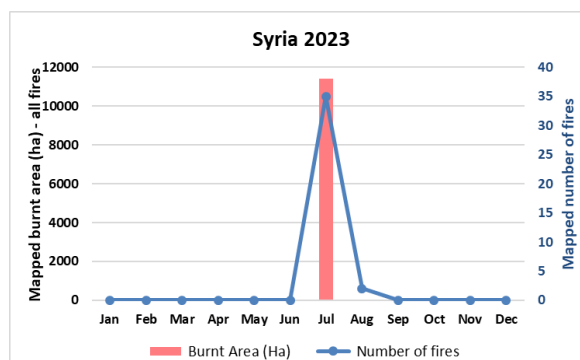


Figure 151. Monthly mapped burnt area and number of fires in Syria in 2023.

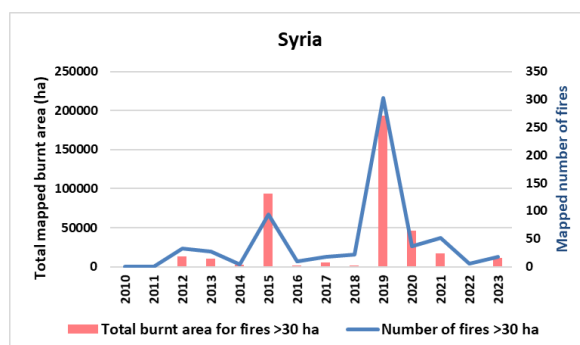


Figure 152. Annual mapped burnt area of fires \geq 30 ha in Syria.

2.2.8 Tunisia

The 2023 fire season was fairly light in Tunisia. A total of 6 805 ha of burnt area was mapped from 130 fires between July and November (Figure 154), less than two-thirds the amount recorded in 2022. There were two fires over 1 000 ha, both occurring in July.

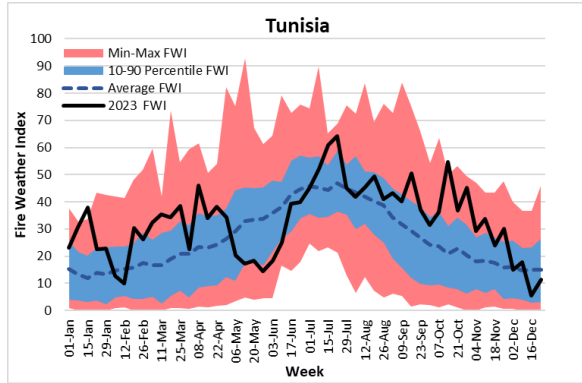


Figure 153. Fire weather Index information for Tunisia.

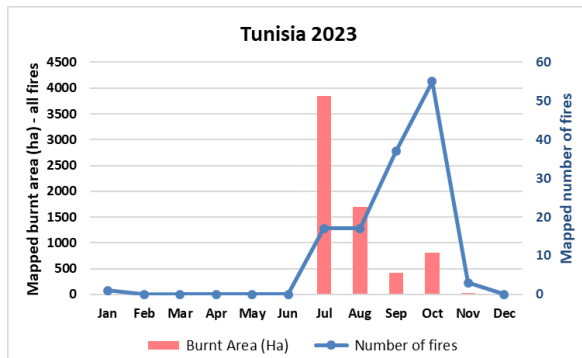


Figure 154. Monthly mapped burnt area and number of fires in Tunisia in 2023.

Table 44. Distribution of burnt area (ha) in Tunisia by land cover types in 2023.

Land cover	Area burned	% of total
Broadleaf forest	941	13.8
Coniferous forest	1715	25.2
Mixed forest	289	4.3
Other Natural Land	669	9.8
Sclerophyllous vegetation	1524	22.4
Transitional	810	11.9
Agriculture	788	11.6
Artificial Surfaces	16	0.2
Other Land Cover	53	0.8
TOTAL	6805	100

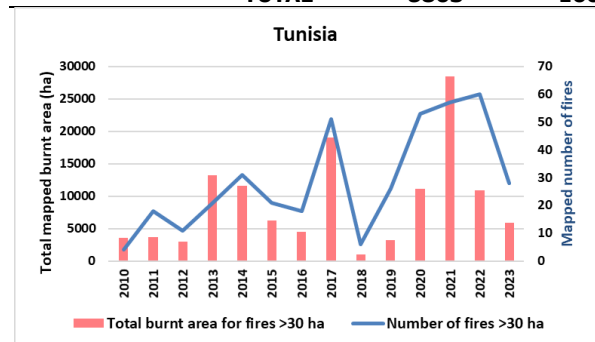


Figure 155. Annual mapped burnt area of fires ≥ 30 ha in Tunisia.

Figure 156 shows the burnt scars left by these fires.

Table 44 presents the distribution of burnt area by land cover types using Tunisia's own land cover map but with terminology harmonised with CLC.

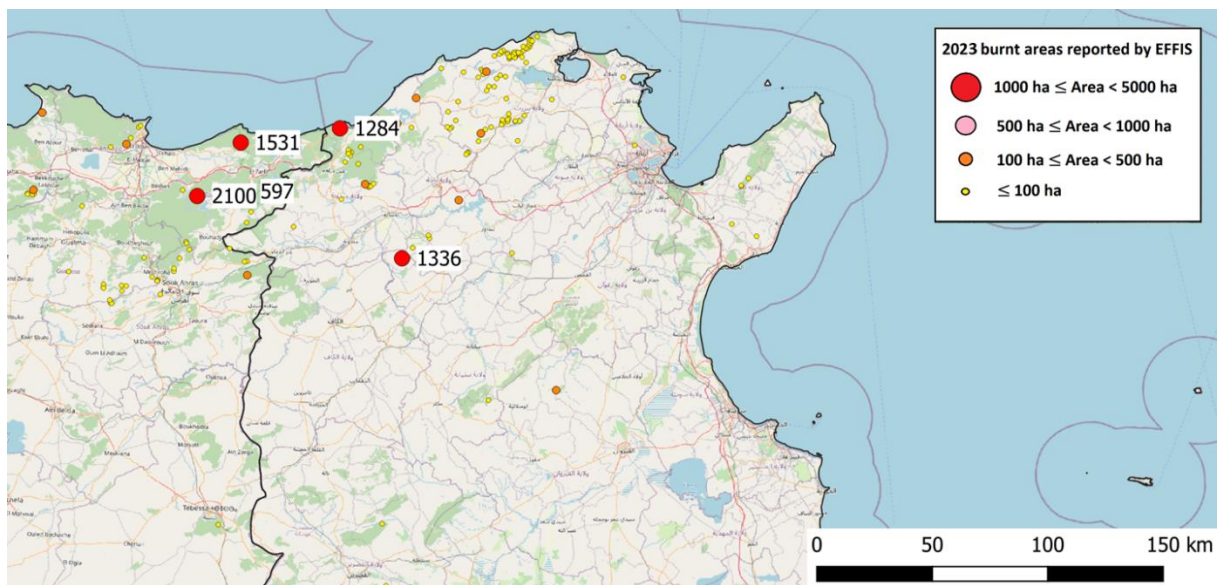


Figure 156. Locations of mapped burnt areas in northern Tunisia in 2023.

2.3 Conclusions

The damage caused by wildfires in 2023 ranked fourth in terms of total burnt area in the European Union. While previous wildfire seasons spread across Europe, Middle East and Mediterranean countries, the 2023 season concentrated in the Mediterranean countries. As in previous recent years, the wildfire activity picked up early in the year, with peaks in the number of fires and burnt areas as early as March, with over 100 000 ha burnt by the end of the month. The season transitioned regularly to the summer months, in which critical fires occurred in Spain, Portugal, Italy and especially Greece. The largest wildfire event ever recorded in the EU occurred in August, in the city of Alexandroupolis, with over 95 000 ha burnt. The 2023 wildfire season resulted in over half a million ha burnt in the EU, with a large portion of these areas, 40 %, occurring in Natura2000 protected areas. Overall, the 2023 showed the increased effect of high temperatures and critical fire danger conditions in the EU, which led to unprecedented fires in some of the EU Mediterranean countries.

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List of acronyms

CLC	CORINE Land Cover
DWD	Deutscher Wetterdienst (Germany's National Meteorological Service)
ECHO	European Civil Protection and Humanitarian Aid Operations
ECMWF	European Centre for Medium Range Forecast
EFFIS	European Forest Fire Information System
EGFF	Expert Group on Forest Fires
ERCC	Emergency Response Coordinating Centre
FWI	Fire Weather Index
GWIS	Global Wildfire Information System
MENA	Middle East and North Africa
MIC	Monitoring and Information Centre
MODIS	Moderate Resolution Imaging Spectroradiometer
RDA	Rapid Damage Assessment

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