

Climate change and forest fires – the Portuguese case

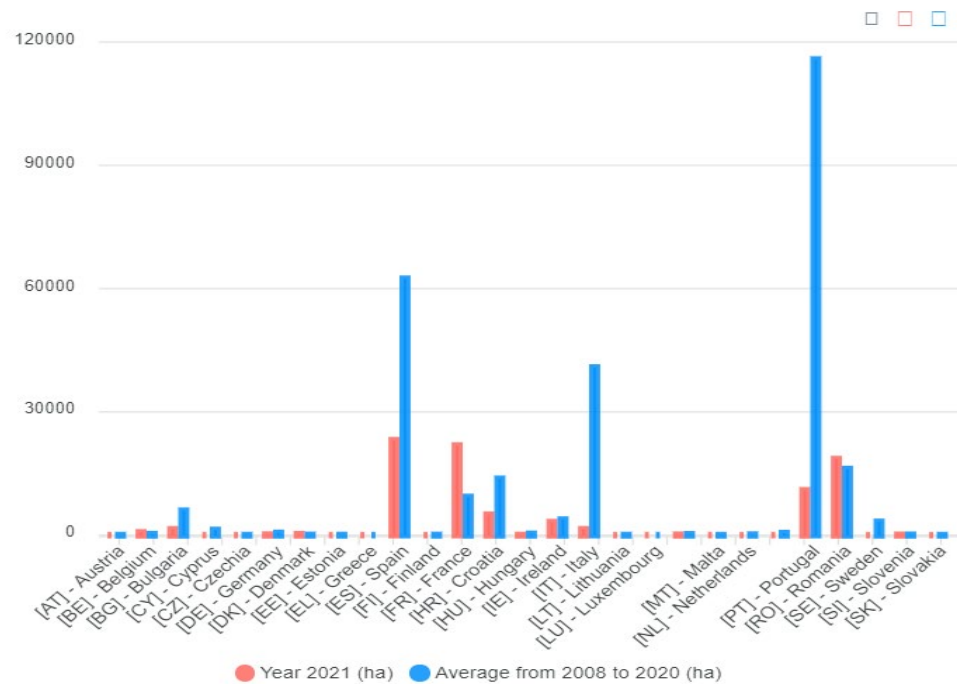
2017

Nuno Lopes
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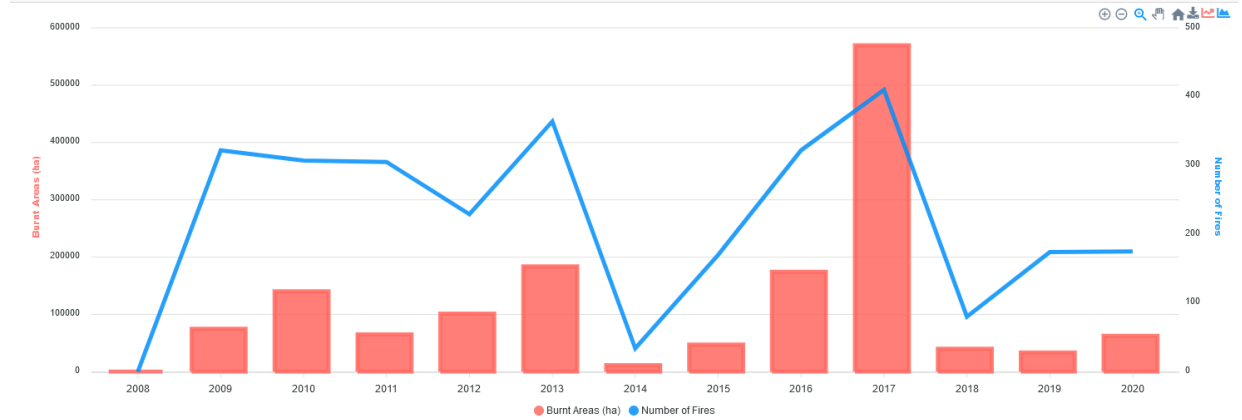
Forest fires can be seen as endemic in Portugal



Burnt Areas | Number of Fires | **EFFIS - Estimates per Country**



EFFIS - Annual Country Statistics for Portugal [PT]

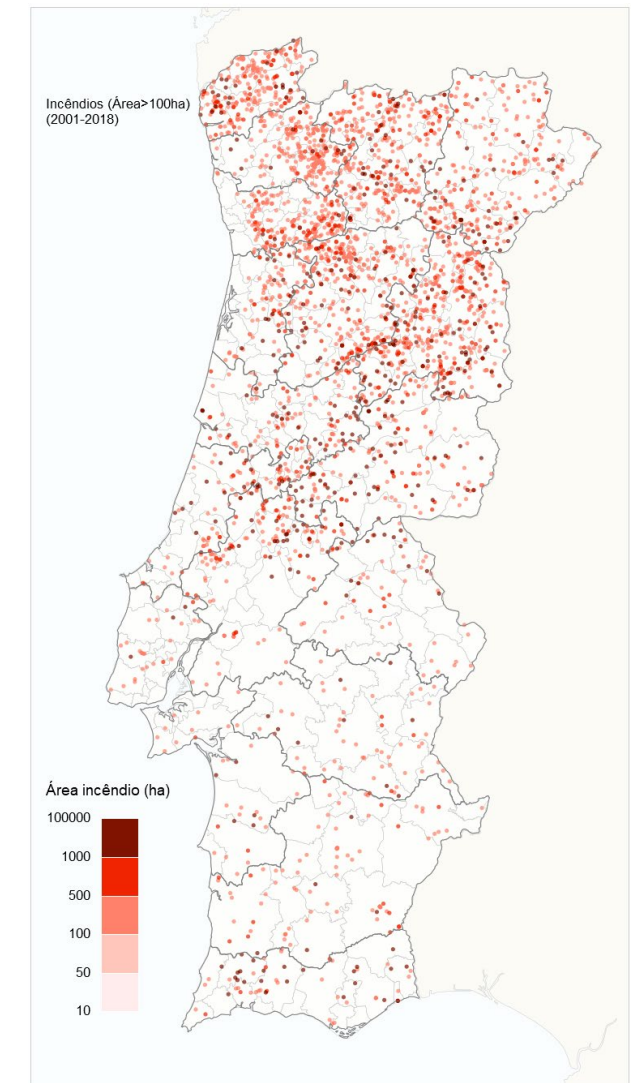
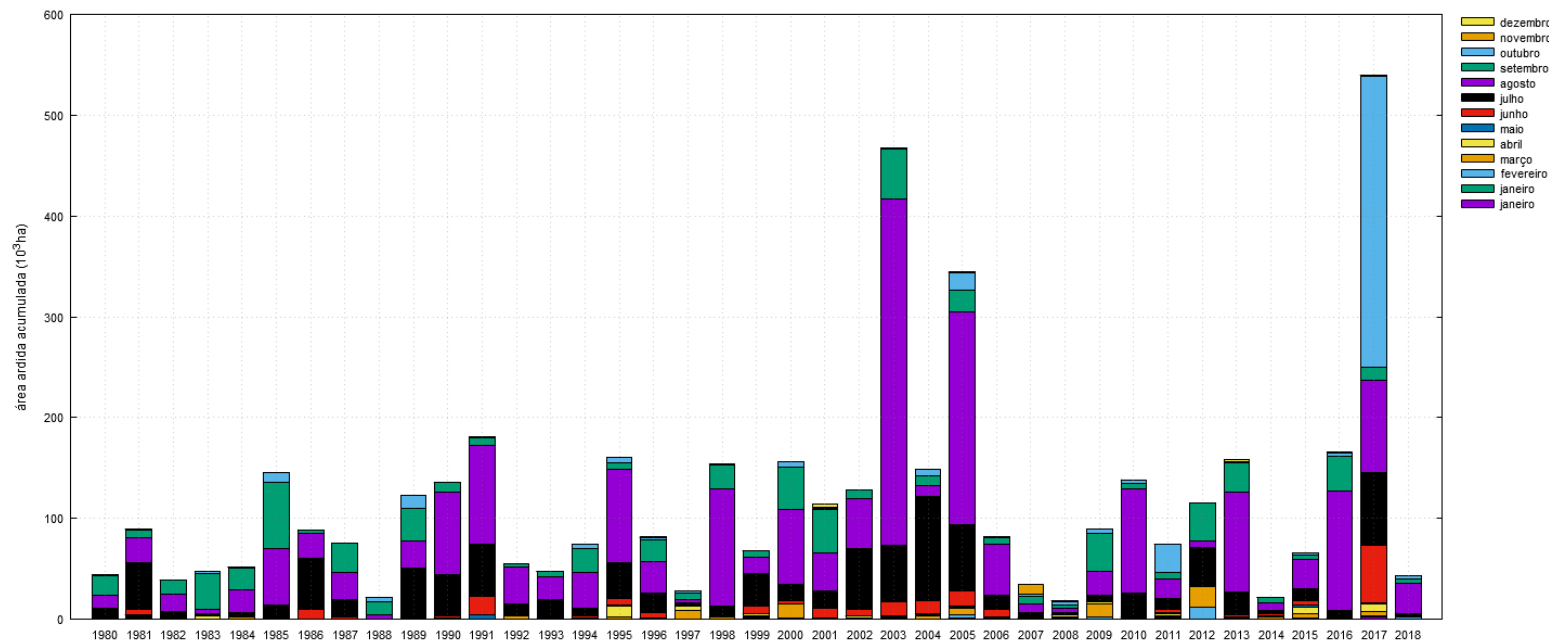


Year	Burnt Areas (ha)	Number of Fires
2020	62557	175
2019	33533	174
2018	39969	80
2017	569406	410

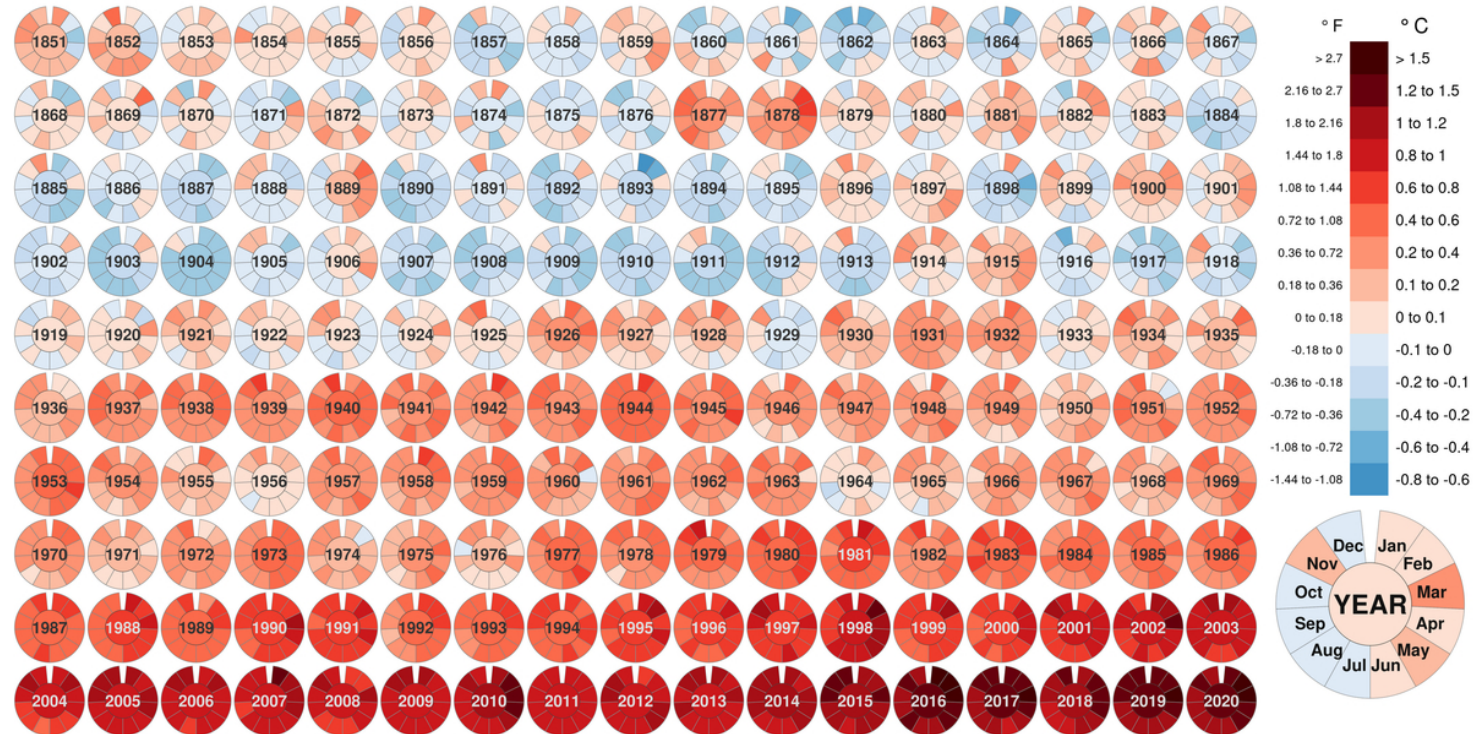
Source: European Forest Fire Information System

Forest fires are geographically distributed and have high correlation with drier years and warm summers

Áreas ardidas mensais por ano em Portugal Continental, 1980-2018



Monthly global mean temperature 1851 to 2020 (compared to 1850-1900 averages)

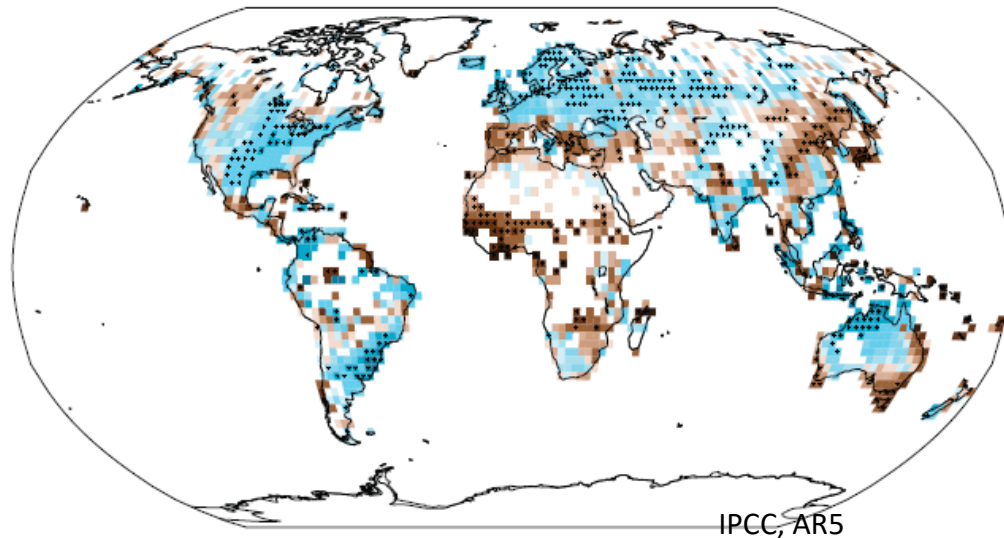


Data: HadCRUT5 - Created by: @neirkaye



Precipitation trend

1951–2010



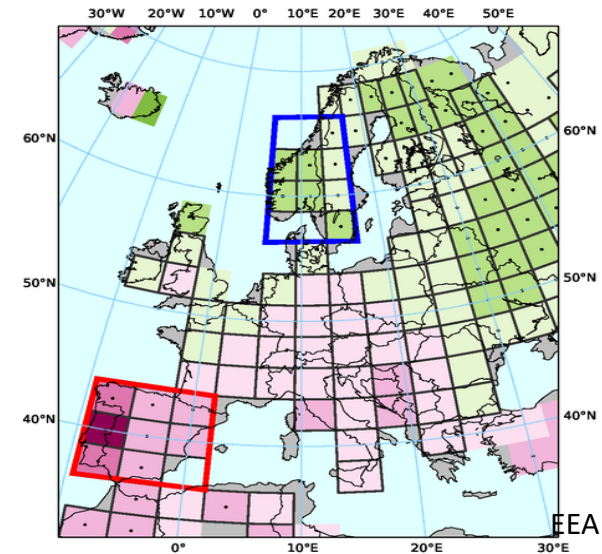
IPCC, AR5

-100 -50 -25 -10 -5 -2.5 0 2.5 5 10 25 50 100

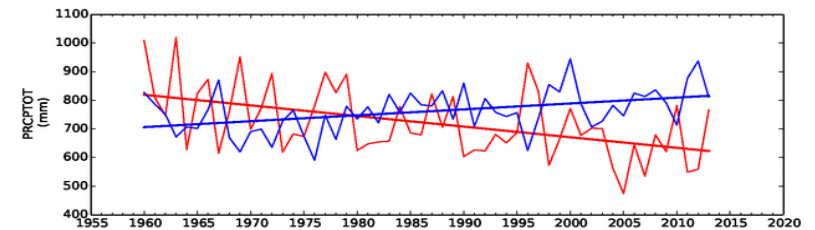
mm/decade

Reduction of precipitation in the Iberian Peninsula and Mediterranean basin

Precipitation trend in Europe (mm/decade)

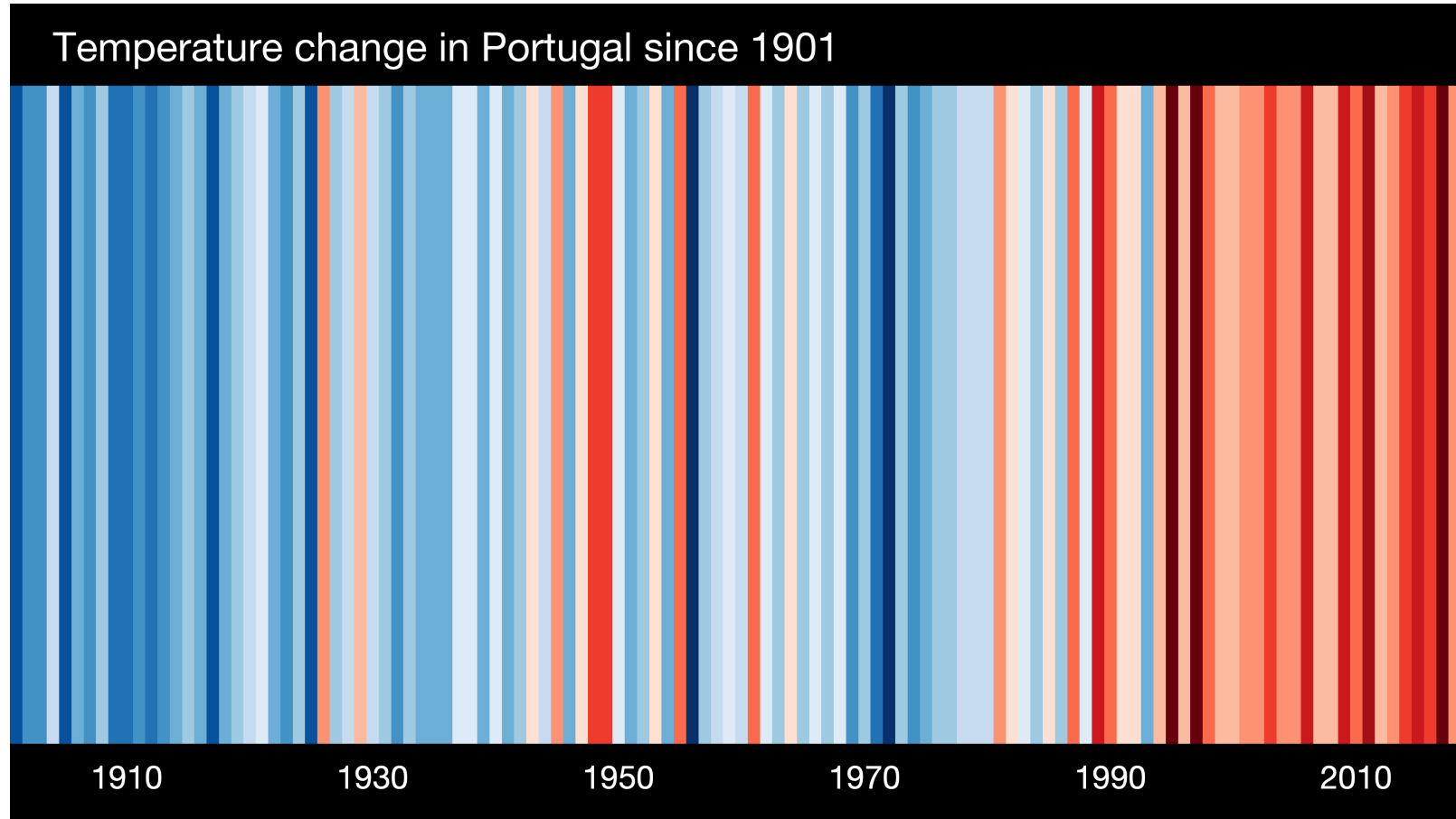


-87.5 -70.0 -52.5 -35.0 -17.5 0 17.5 35.0 52.5 70.0 87.5
Drier PRCPTOT (mm/decade) Wetter



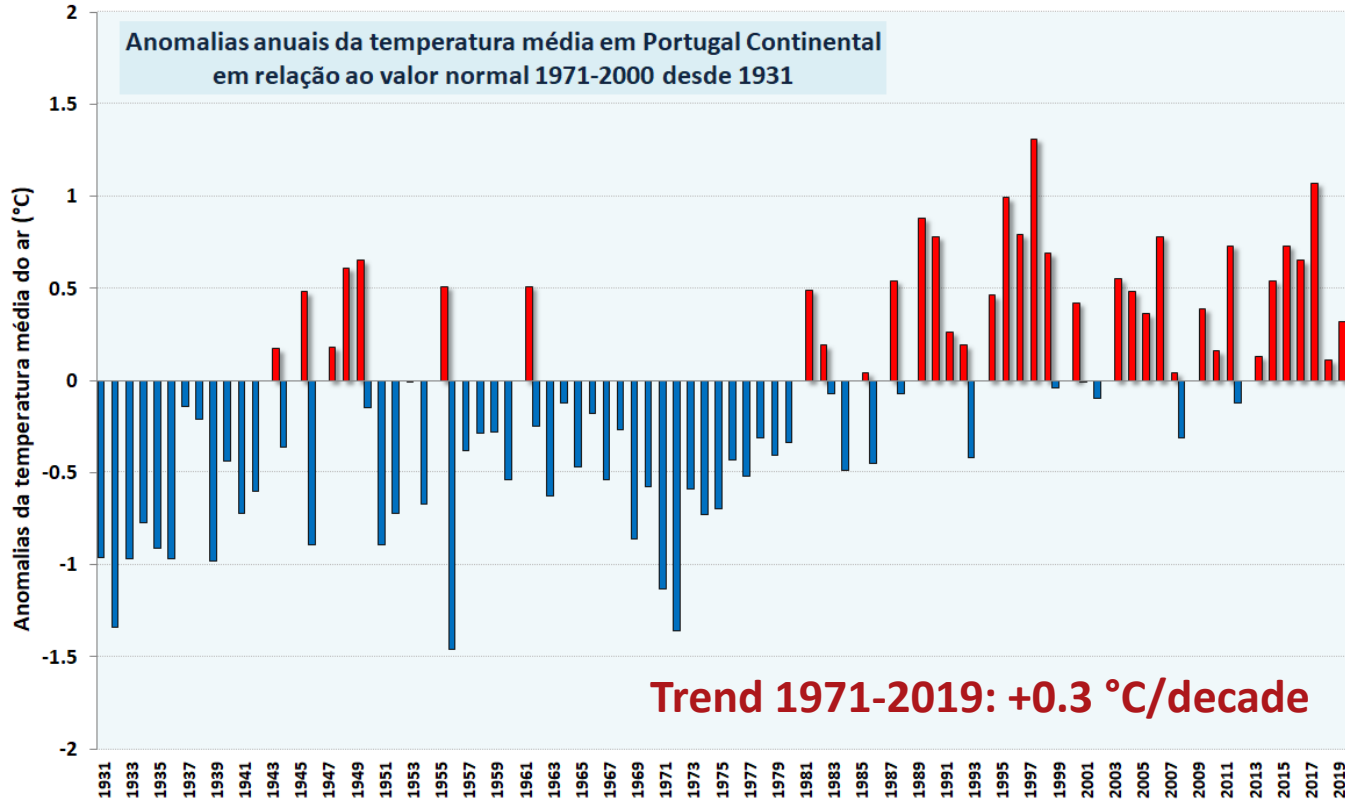
Annual Change of 20.64mm per decade (8.32 to 33.37)
Total Change of 109.37mm from 1960 to 2014 (44.11mm to 176.86mm)
Annual Change of -37.07mm per decade (-55.43 to -15.53)
Total Change of -196.45mm from 1960 to 2014 (-293.79mm to -82.31mm)

HadGHCNv2/mon/10lat_ave_average.pr 23-Feb-2014 17:47

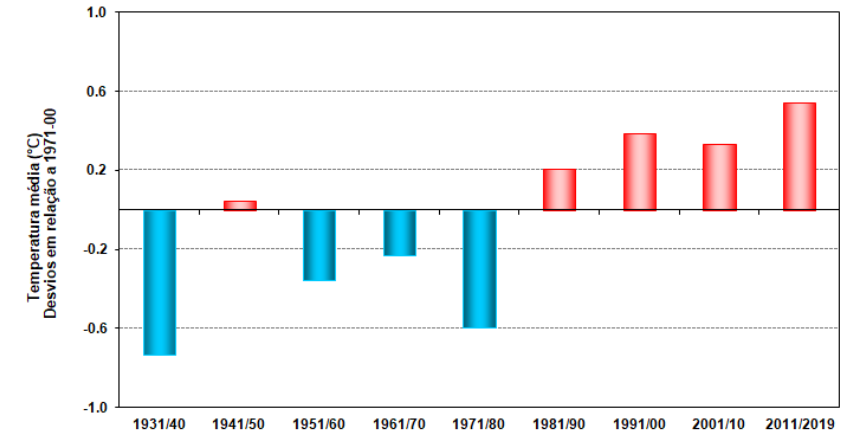


Source: <https://showyourstripes.info> Credits: Professor Ed Hawkins (University of Reading)

Average temperature anomalies



Average temperature anomaly per decade

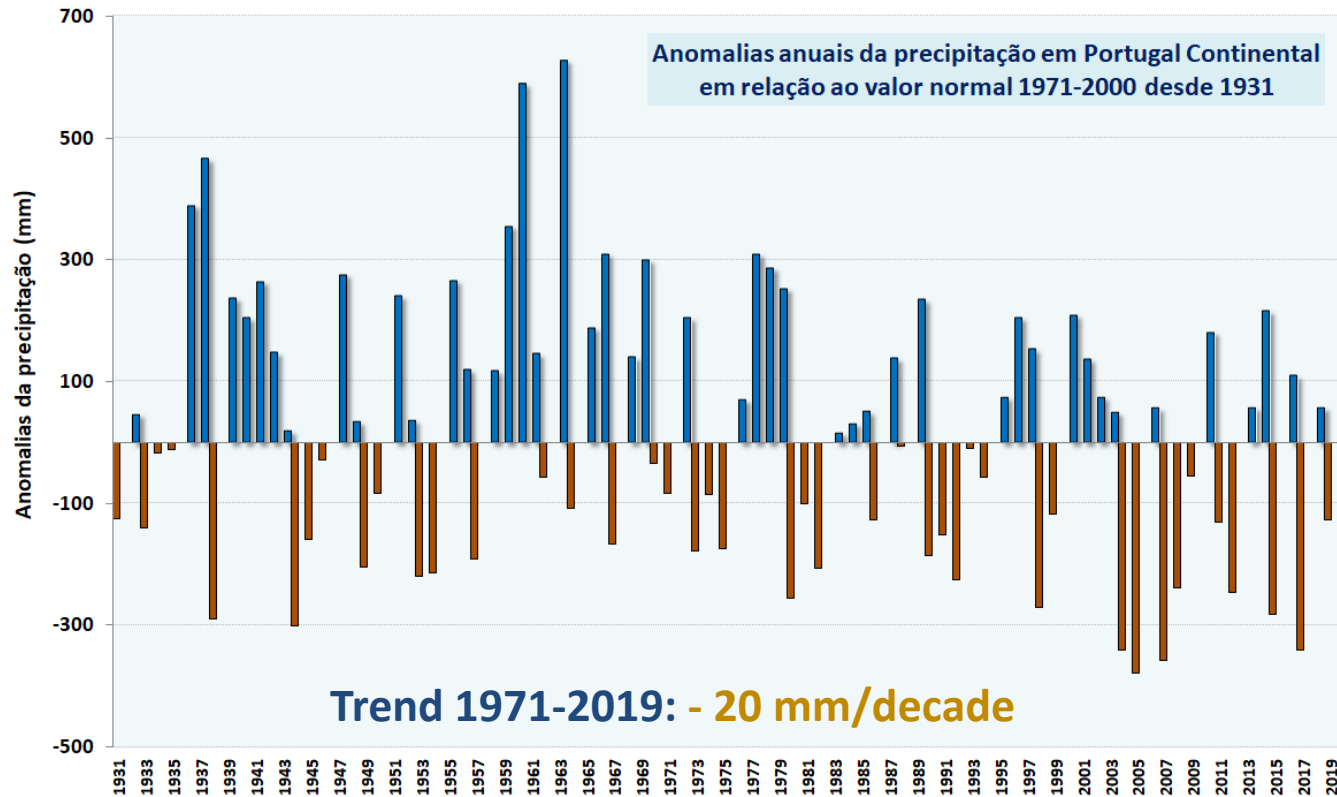


Of the 10 warmest years, 8 occurred after 1990:

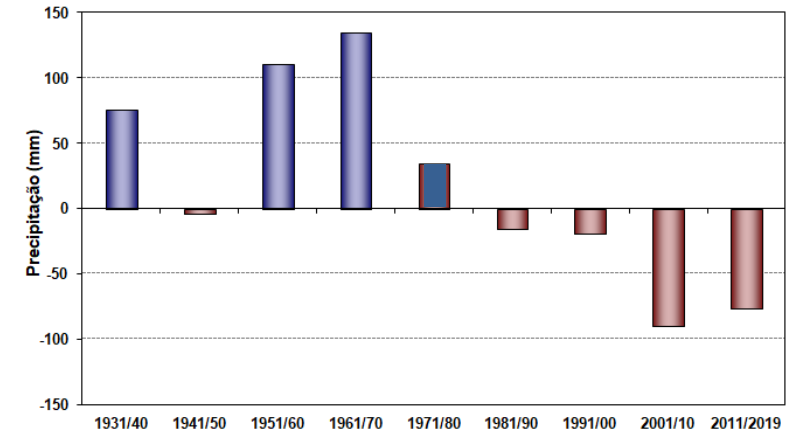
1997 warmest year (but low area burnt)

2017 second warmest year (worst year of forest fires)

Precipitation anomalies

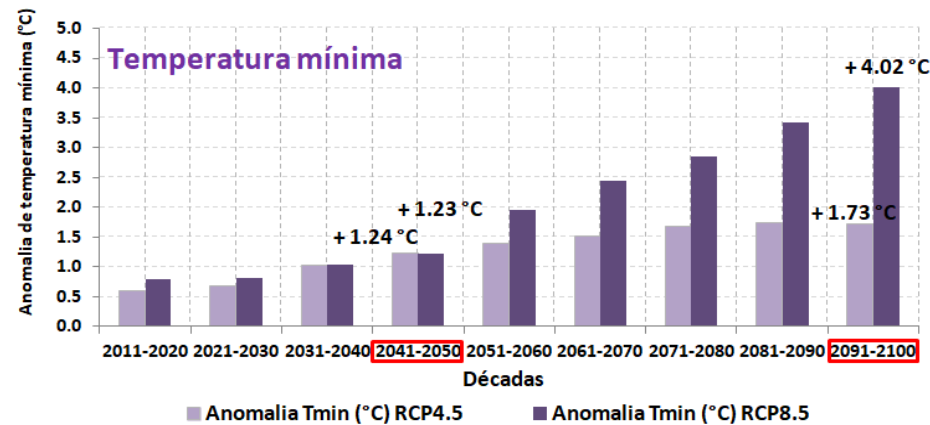
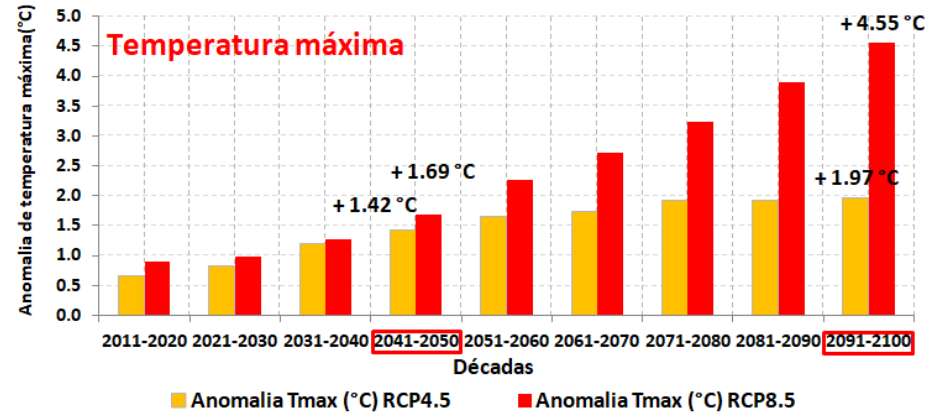


Precipitation anomalies per decade

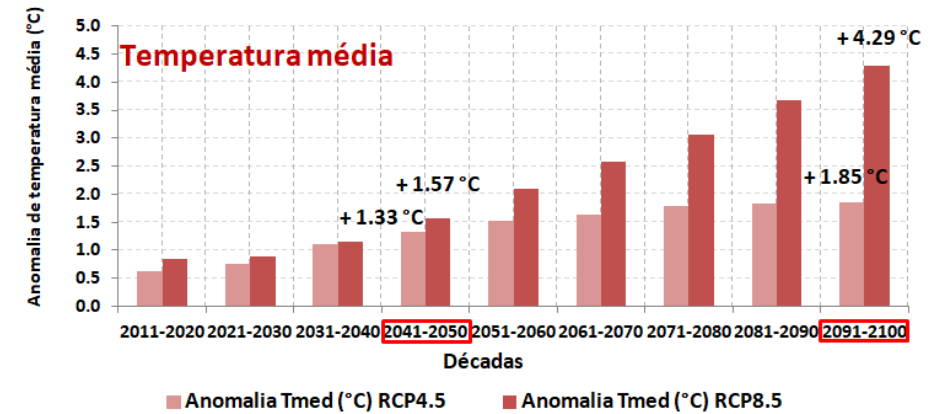


Decrease of precipitation in the last four decades, with more impact in the last 20 years

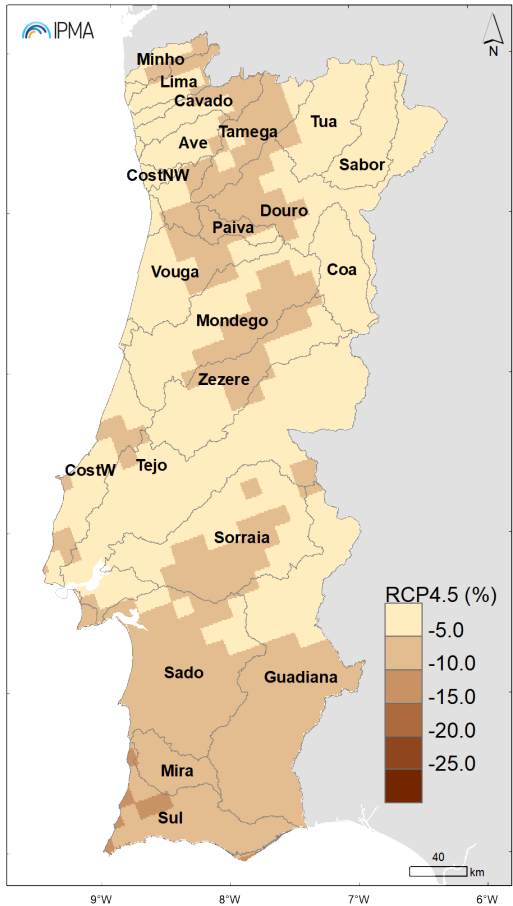
Drier years: 2005, 2007, 2017



All scenarios with an increase in temperatures

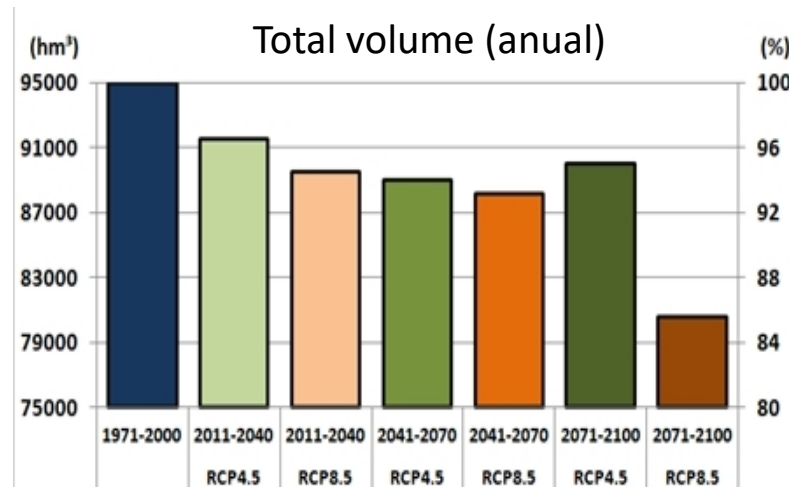


Cenário RCP4.5 (Ensemble - Portal do Clima)
de Precipitação anual no período 2071-2100:
Diferença em relação aos valores médios no período 1971-2000

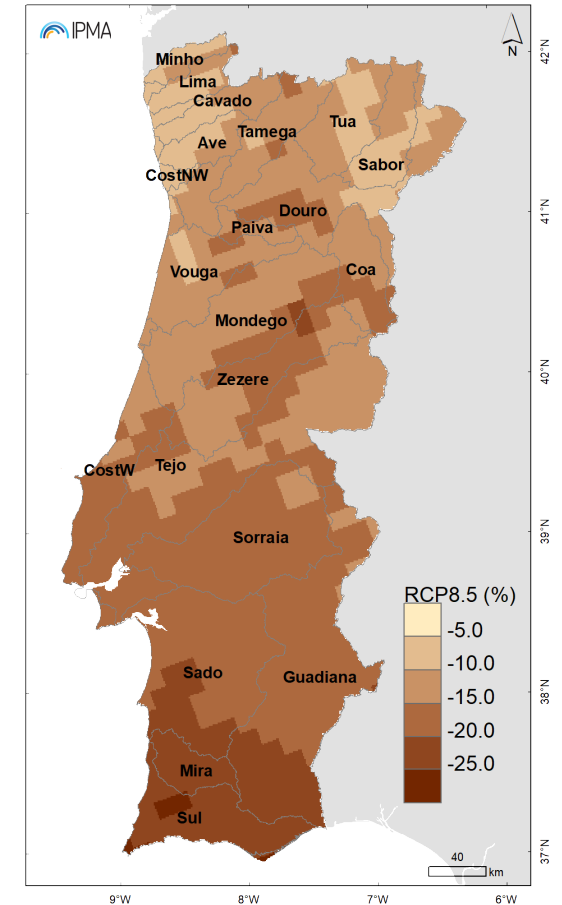


Less precipitation in all scenarios, more noticeable in the south

Until 2071-2100, in the RCP 4.5 scenario, a reduction of at least 5% but could reach 15% in the south

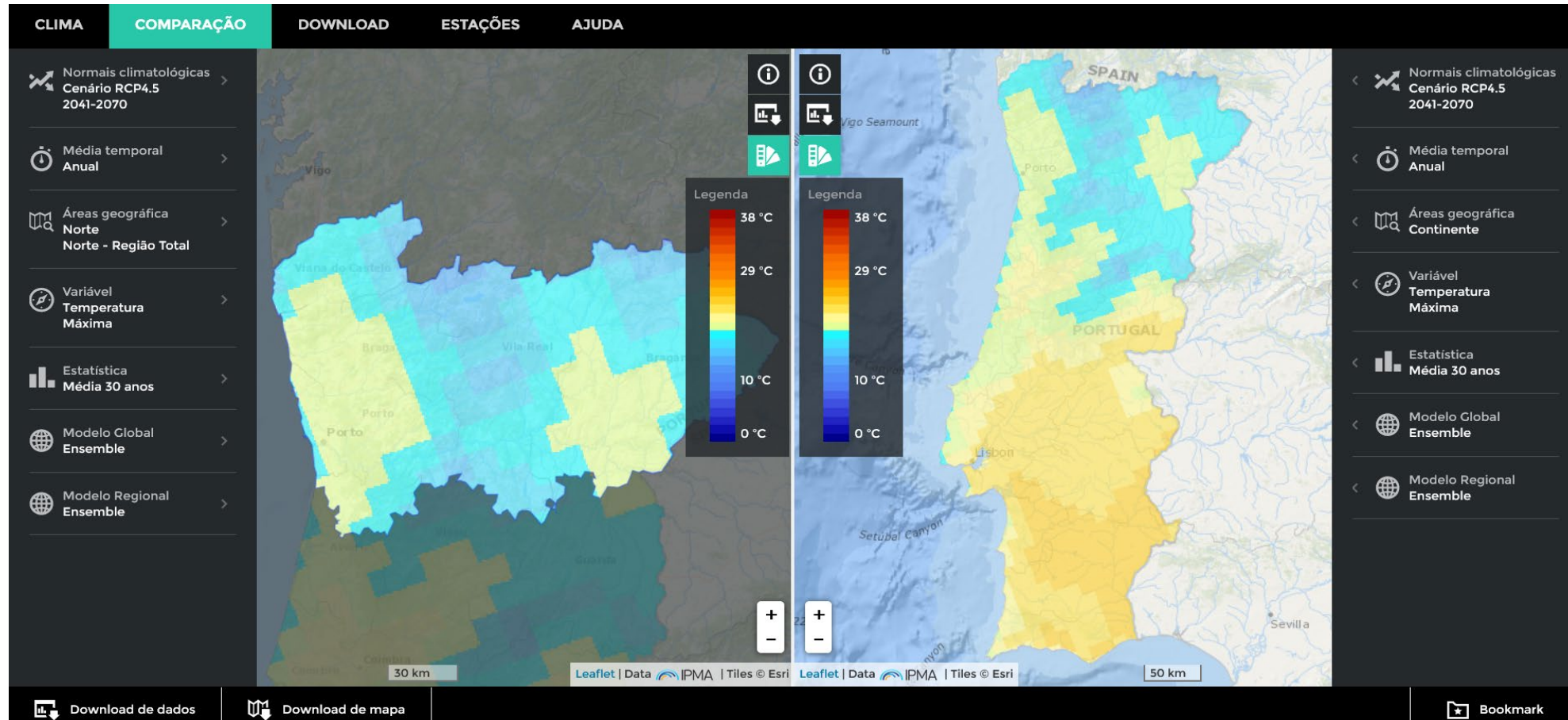


Cenário RCP8.5 (Ensemble - Portal do Clima)
de Precipitação anual no período 2071-2100:
Diferença em relação aos valores médios no período 1971-2000

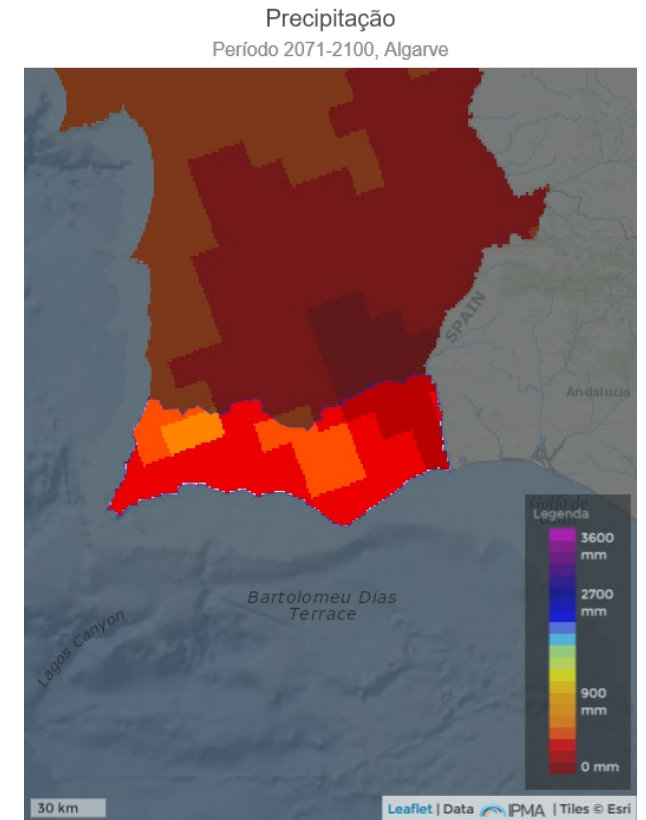
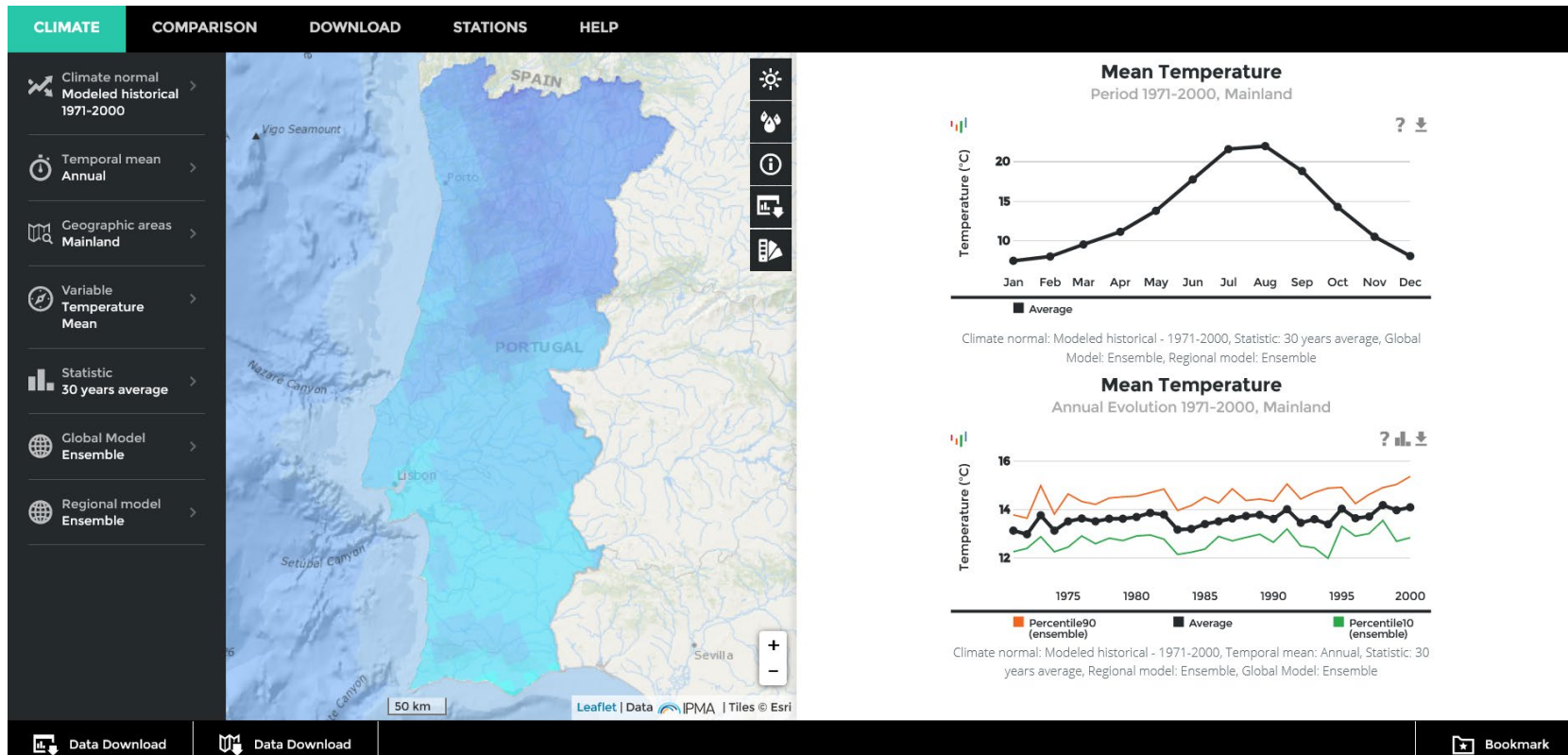




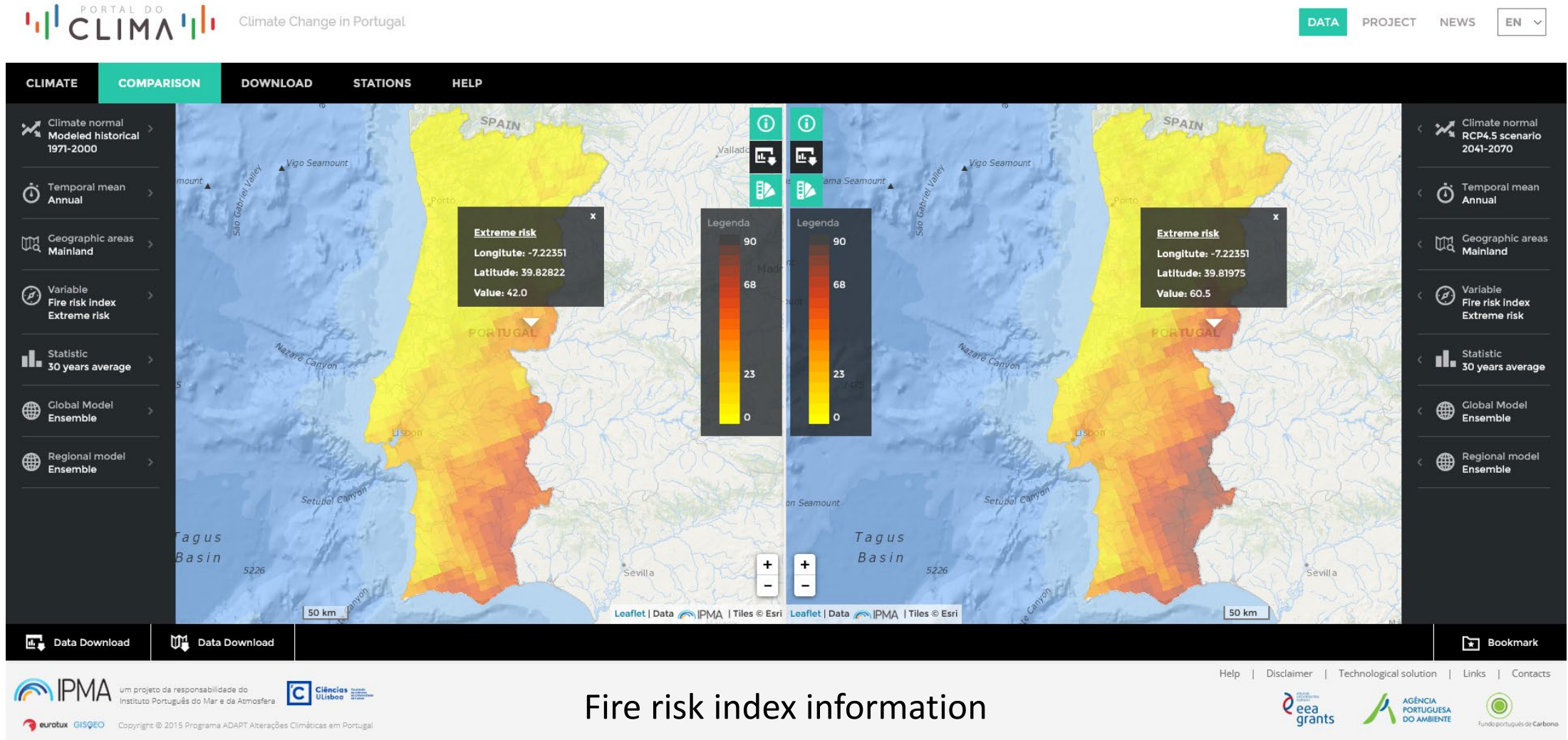
Climate Portal - Provide the information to all users



Data manipulation, data download

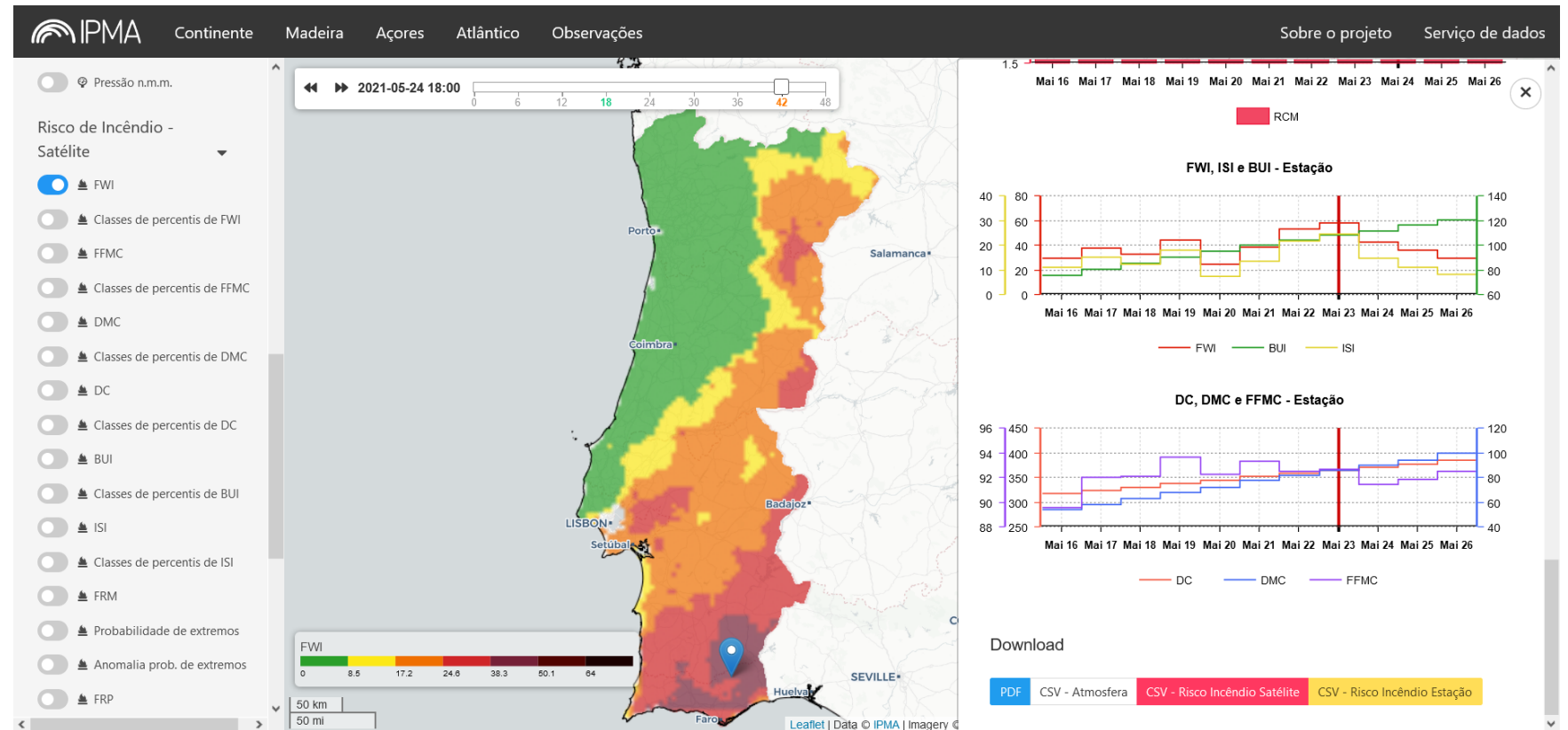


Normais climatológicas: Cenário RCP8.5 - 2071-2100, Média temporal : Anual, Estatística: Média 30 anos, Modelo Regional: Ensemble, Modelo Global: Ensemble



Fire risk index information

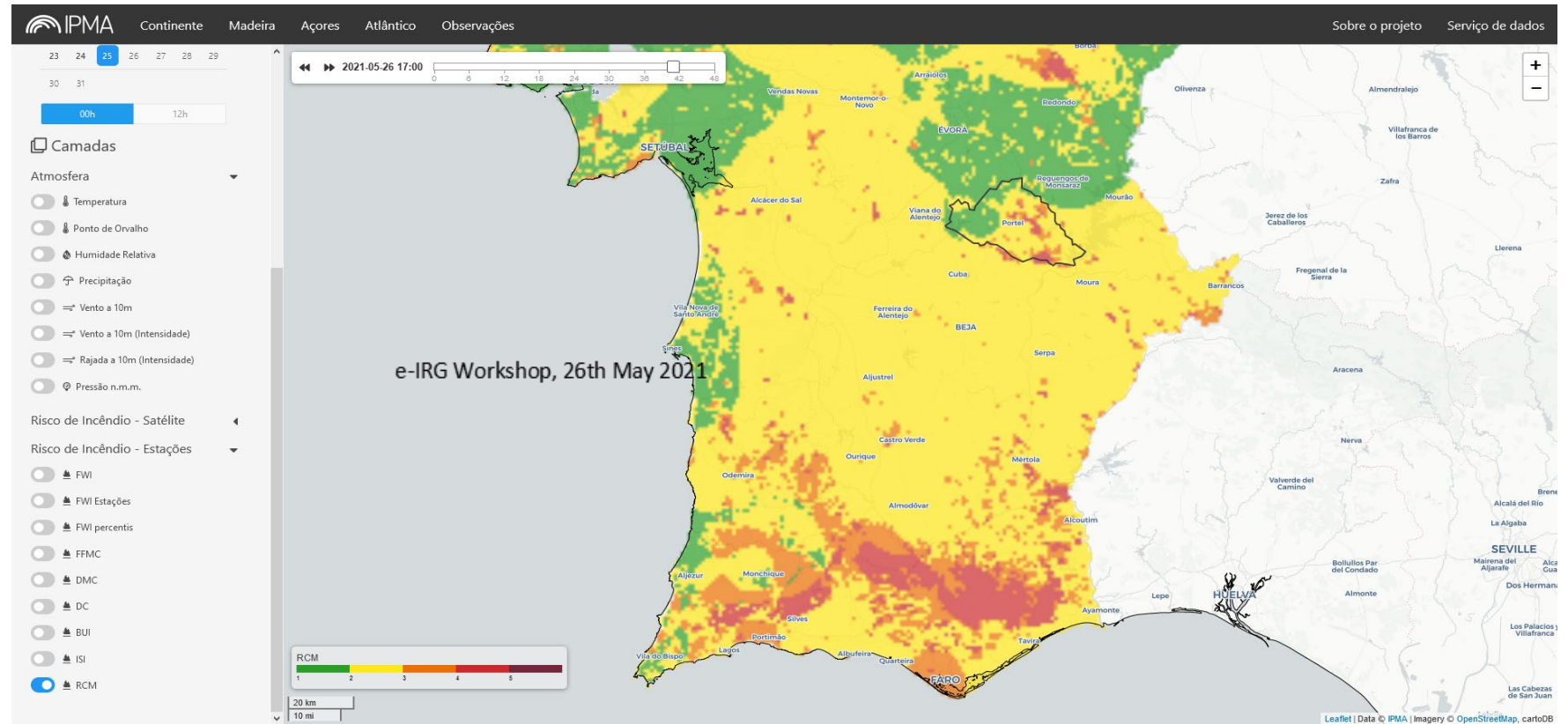
Database with real-time observations and real-time forecasts with tailored products for fire risk in Portugal



Source: mf2.ipma.pt

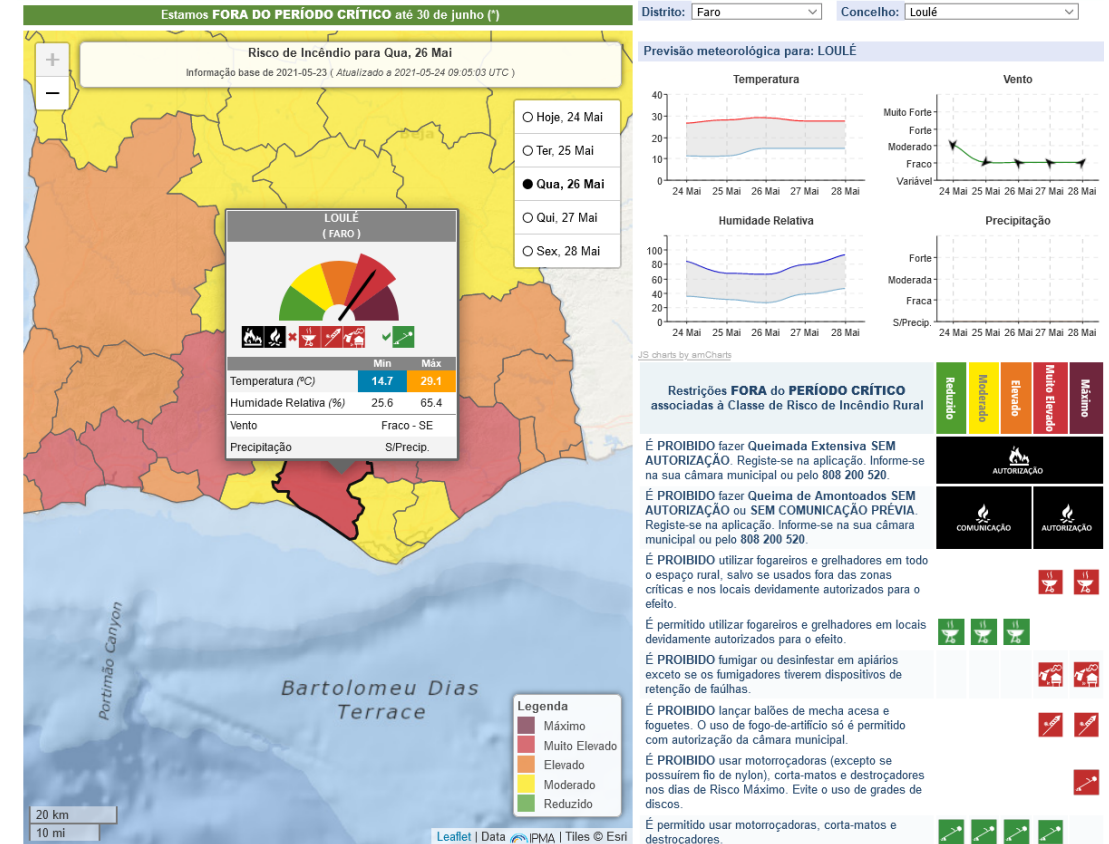
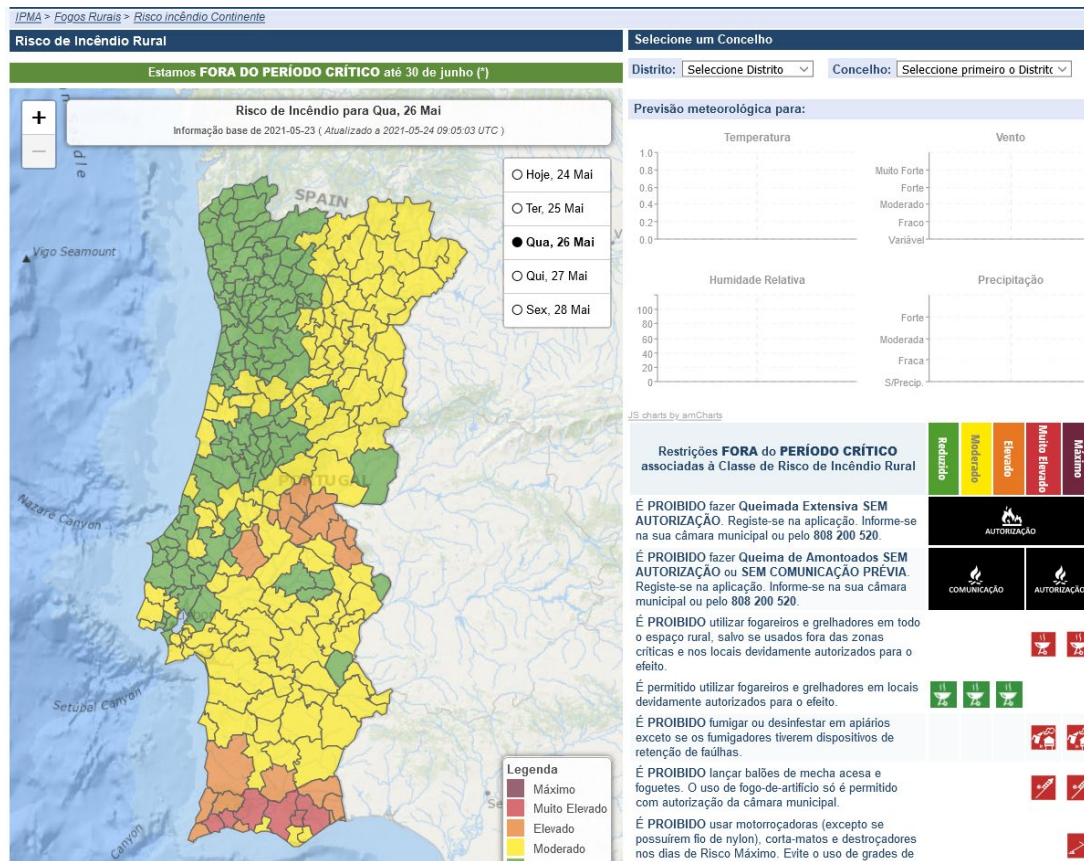
High resolution data (model and satellite)

All data available for download



Source: mf2.ipma.pt

Official fire risk index with user friendly interface



Source: www.ipma.pt

Thank you for your attention!