LSA SAF Products for Fire Forecast and Monitoring in Portugal

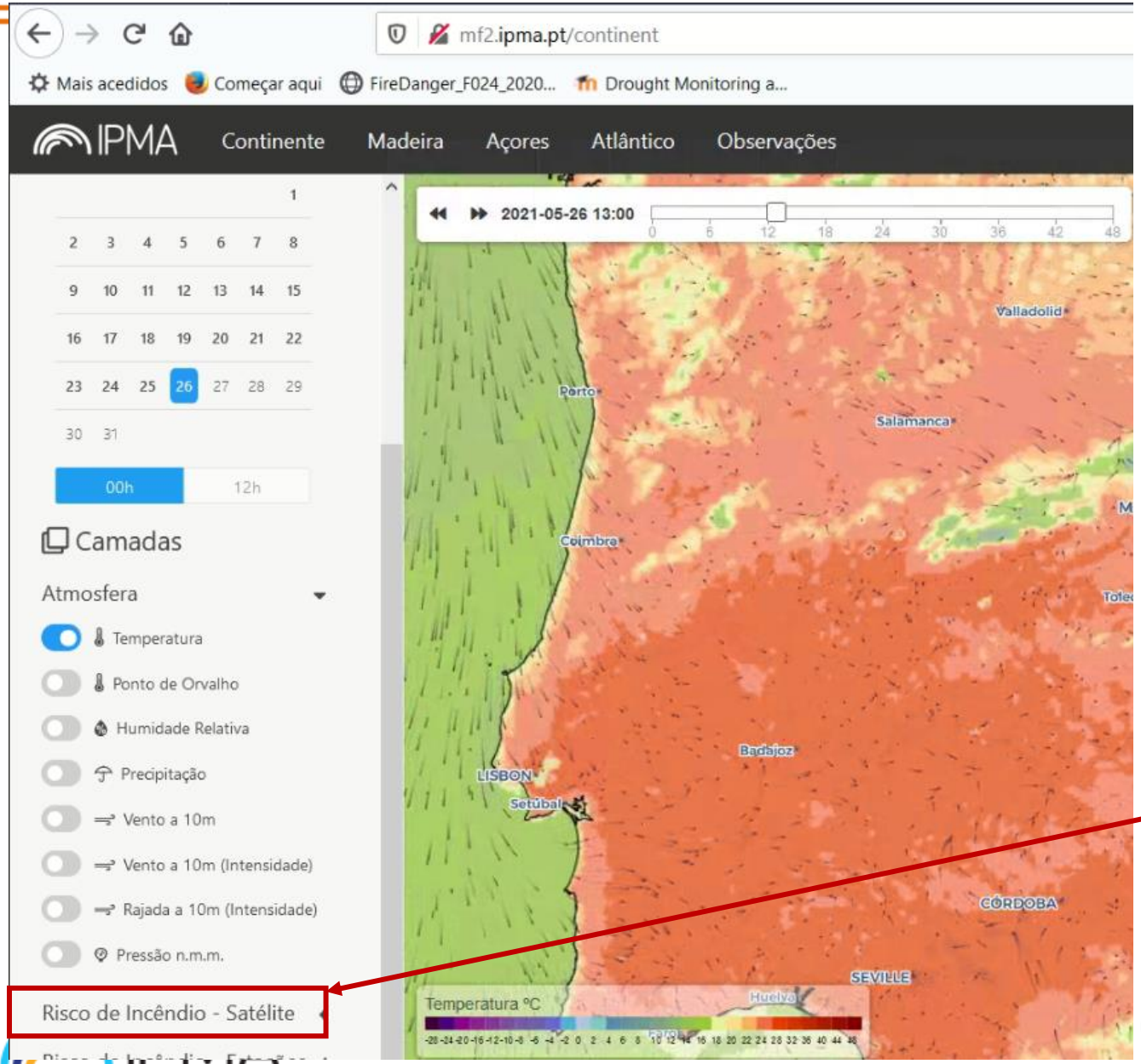
Célia Gouveia
(IPMA LSA-SAF)

27th May 2021

Existing and next-generation earth observation products for wildfire monitoring and forecast

25 -27 May 2021

Plataform mf2.ipma.pt

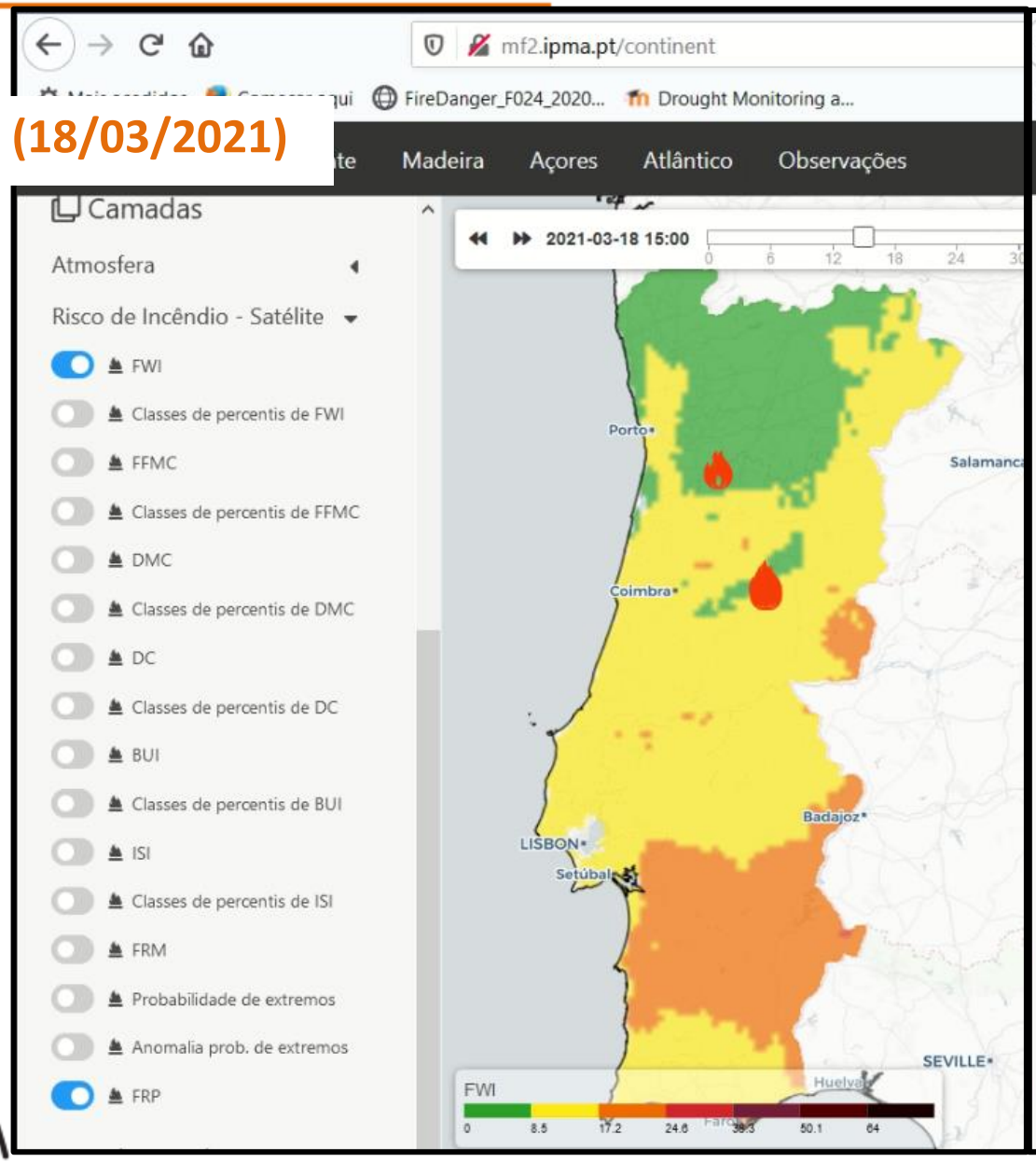


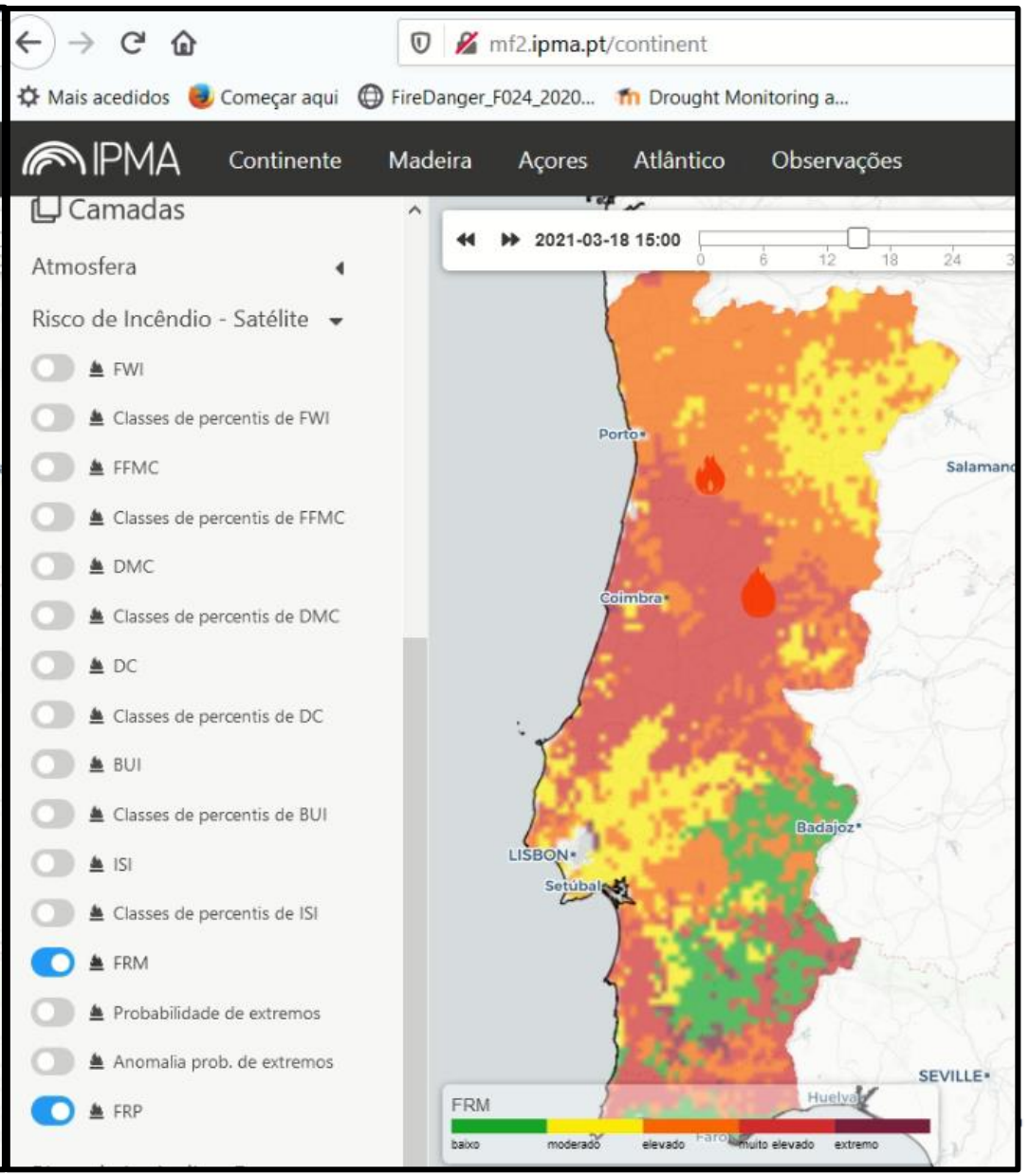
LSA-SAF Fire Products

- CFFWIS - FWI, FFMC, DMC, DC, BUI, ISI
- CFFWIS percentiles
- Fire Risk Map (FRM)
- Probaility of Extremes
- Probaility of Extremes Anomaly
- Fire Radiative Power (FRP)

Platform mf2.ipma.pt

Spring Fires (18/03/2021)



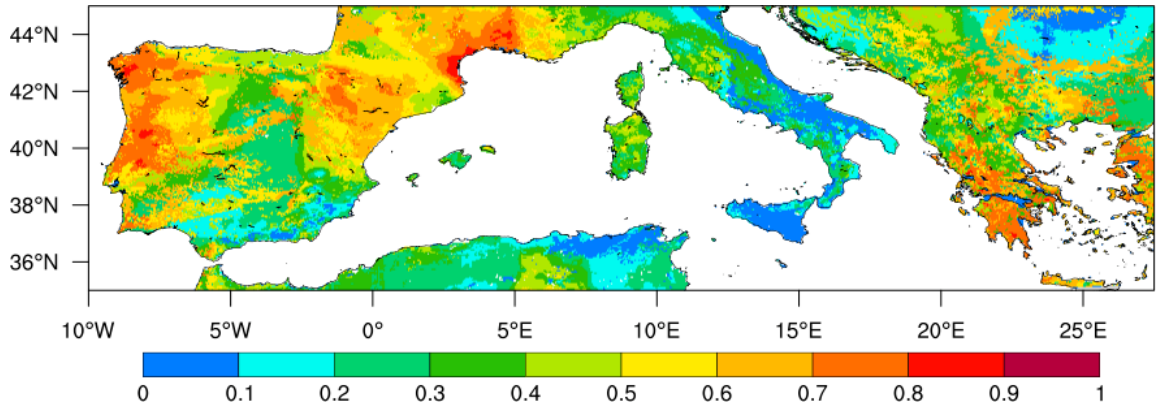


Fire Risk Map (FRM)

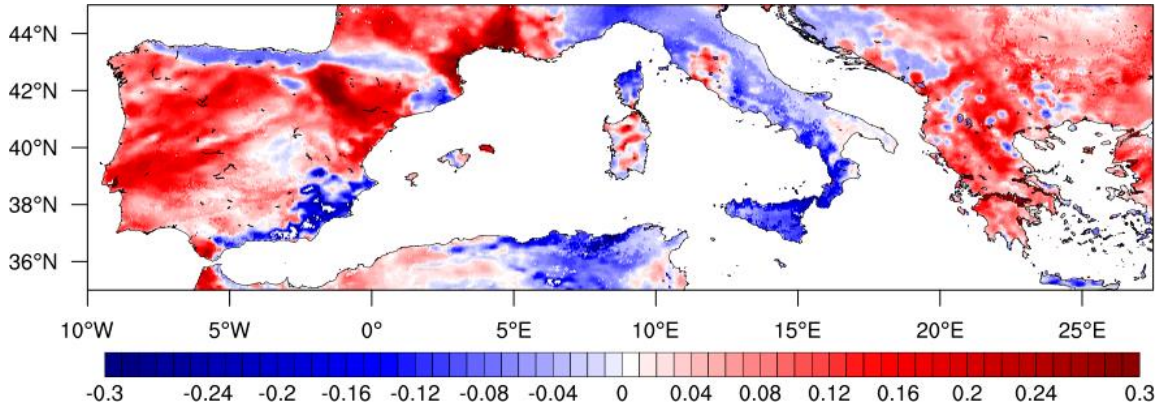
FRM v2
(5 classes; better fitting)

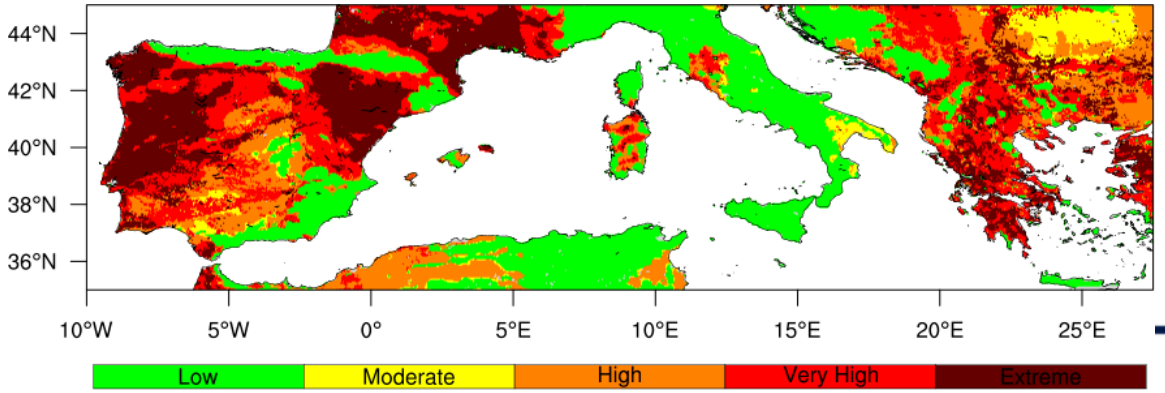
FRP statistics for different land cover types
FWI computed using ECMWF data downscaling to MSG grid

Probability of exceedance 2000 GJ/day



Anomalies of Probability





Fire Risk Map (FRM)

Validation FRM v1

Table 1. Distributions during the calibration period (2004–2016) of fire events among classes of fire danger for three ranges of daily energy released by fires when classes are obtained from the daily model, the LSA SAF product and the EFFIS module. Each cell contains the number of observed events and [in brackets] the corresponding fraction (%) of the total number of events belonging to the same energy layer.

	Energy [GJ]	Low	Moderate	High	Very high	Extreme	Total
Daily model	< 2000	984 [12]	732 [9]	2146 [26]	2723 [33]	1652 [20]	8237 [100]
	2000–10 000	272 [4]	58 [1]	685 [11]	2367 [38]	2893 [46]	6275 [100]
	> 10 000	13 [1]	1 [0]	10 [1]	318 [26]	898 [72]	1240 [100]
LSA-SAF	< 2000	180 [2]	589 [7]	3319 [40]	2950 [36]	1199 [15]	8237 [100]
	2000–10 000	37 [1]	225 [4]	1790 [28]	2837 [45]	1386 [22]	6275 [100]
	> 10 000	0 [0]	14 [1]	172 [14]	573 [46]	481 [39]	1240 [100]
EFFIS	< 2000	135 [2]	418 [5]	2855 [35]	2816 [34]	2013 [24]	8237 [100]
	2000–10000	66 [1]	210 [3]	2048 [33]	2091 [33]	1860 [30]	6275 [100]
	> 10 000	6 [1]	23 [2]	335 [27]	365 [29]	511 [41]	1240 [100]

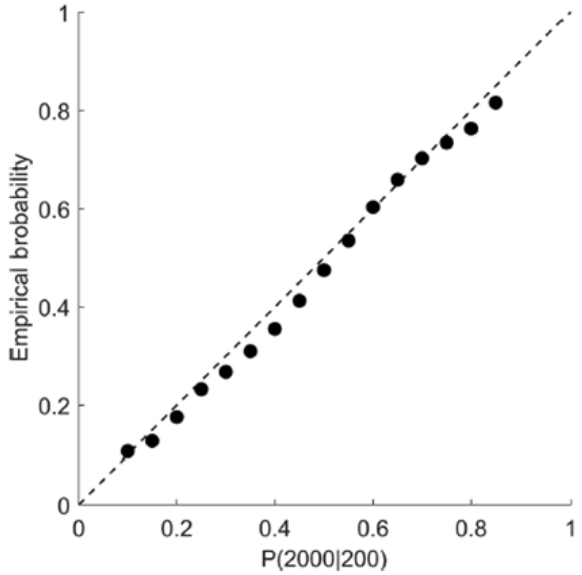


Figure 12. Empirical values of probability computed from observations of fire events as a function of $P(2000|200)$ derived from the daily model during the calibration period (2004–2016).

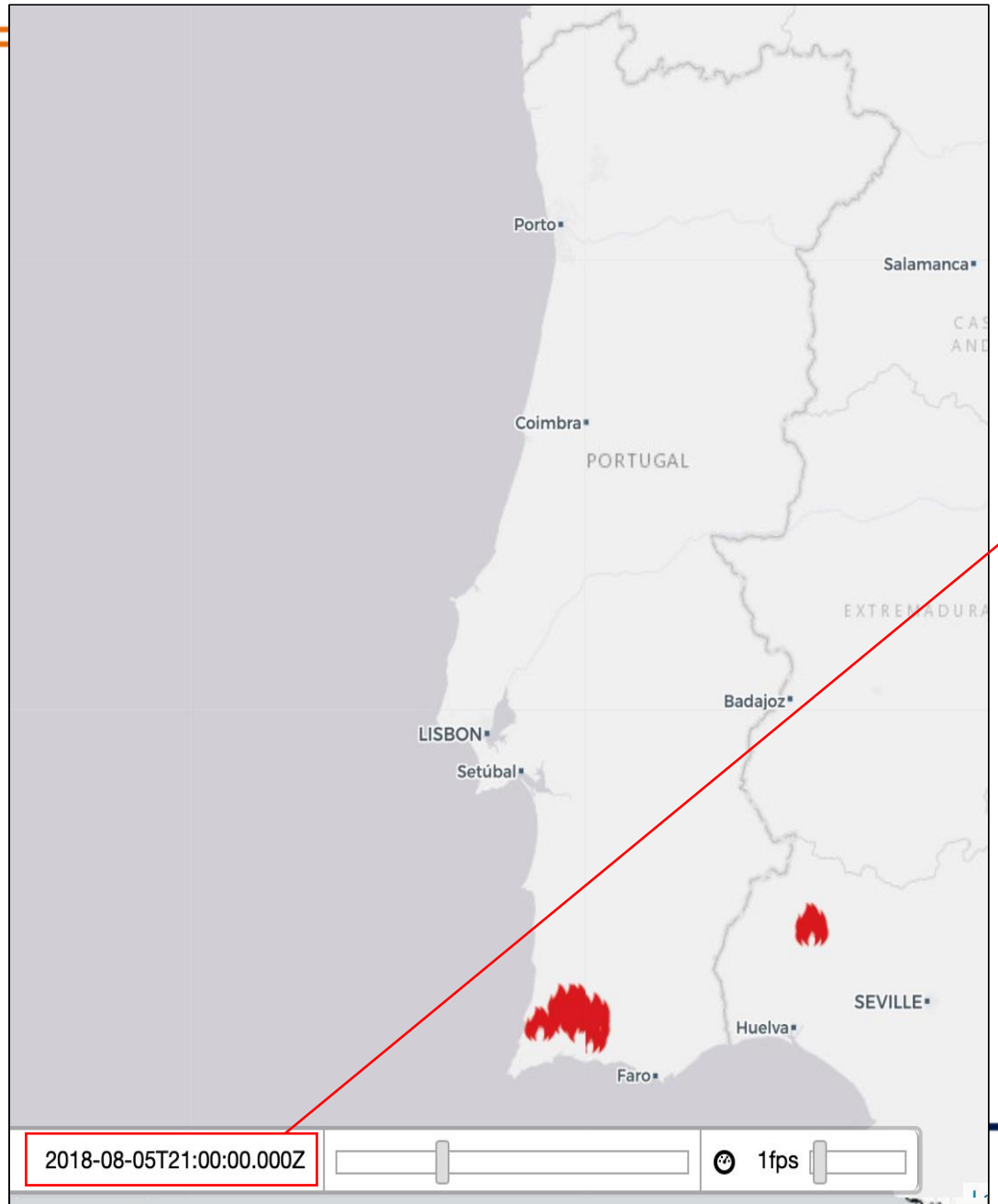
Validation FRM v2 (very soon available)

Pinto et al, 2018

Monchique, August 2018

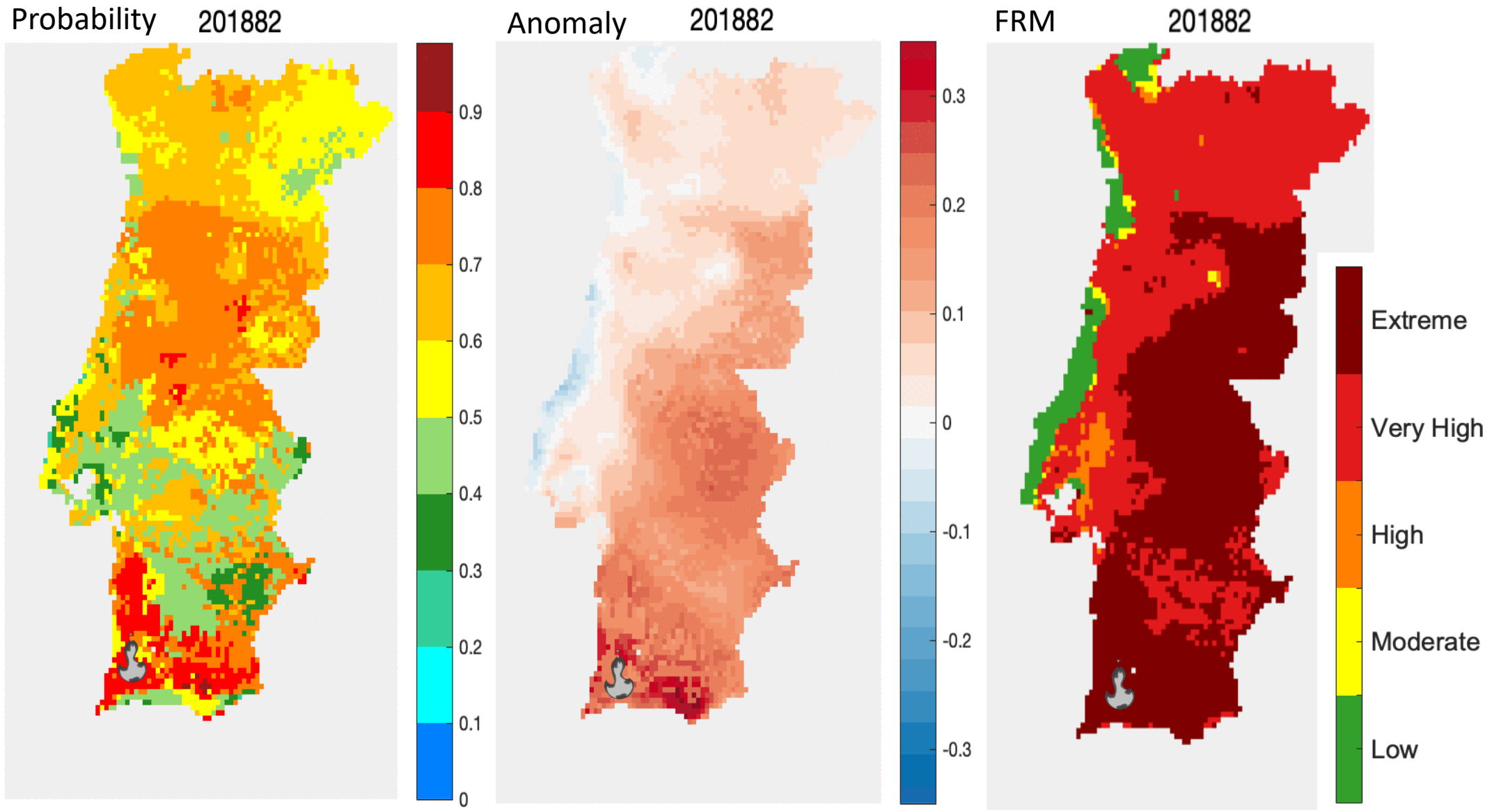
Duration: 3rd to 10th of August, 2018
Burnt area: ~ 27000 ha (*ICNF*)
No casualities

Extreme Fire Event: August 2018

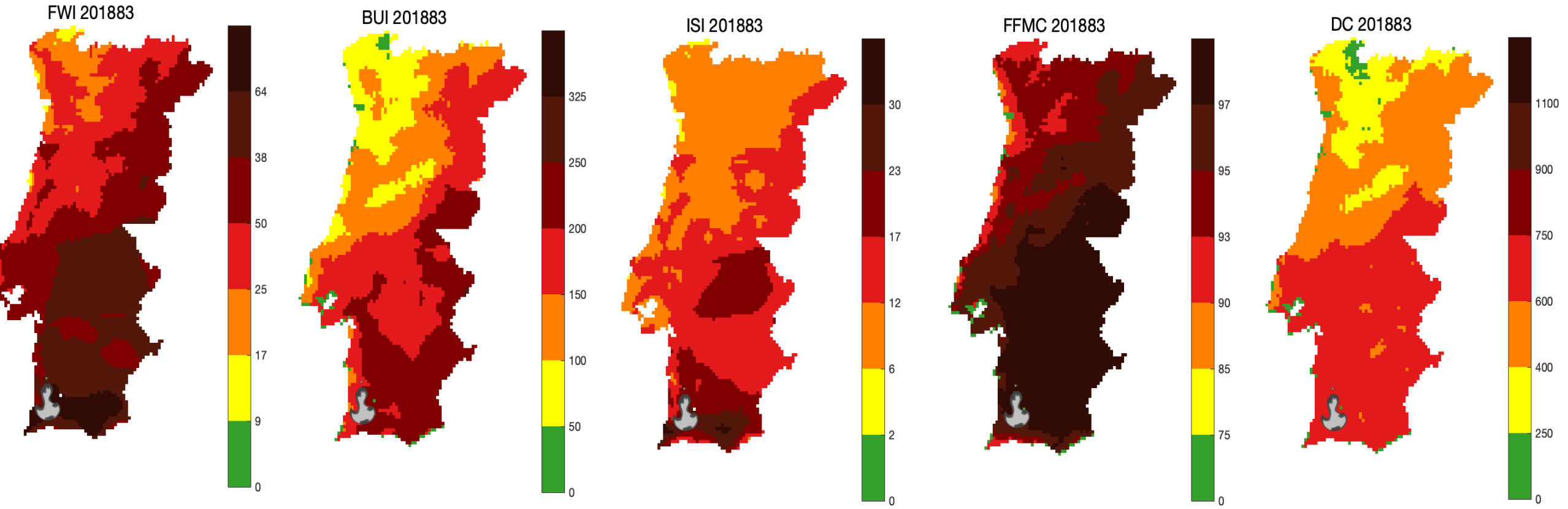


5 de Agosto de 2018, 17:00H

FRM - Mapa de Risco de Fogo



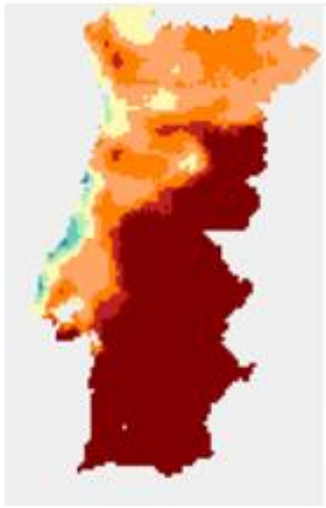
Extreme Fire Event: August 2018



Extreme Fire Event: August 2018

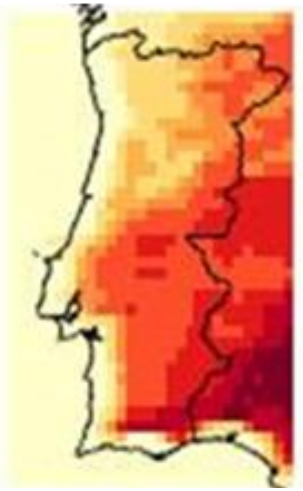
02/08/2018

FWI_P95

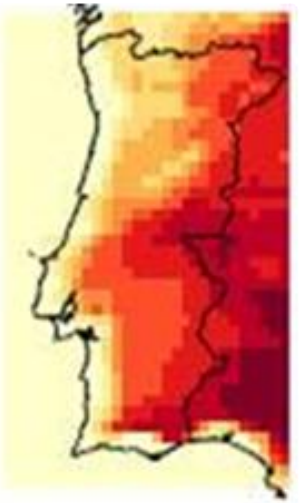


FFMC_P95

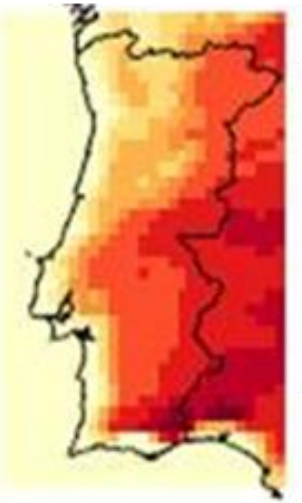
31/07/2018

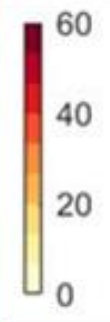


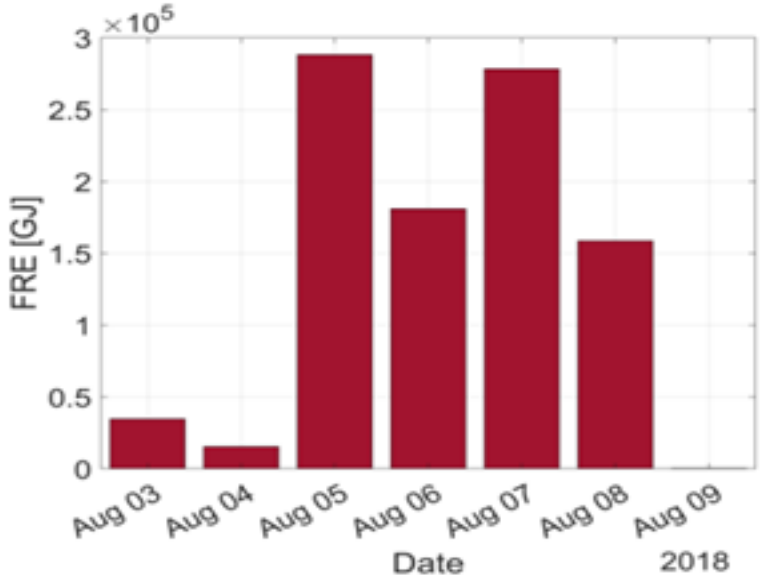
01/08/2018



02/08/2018



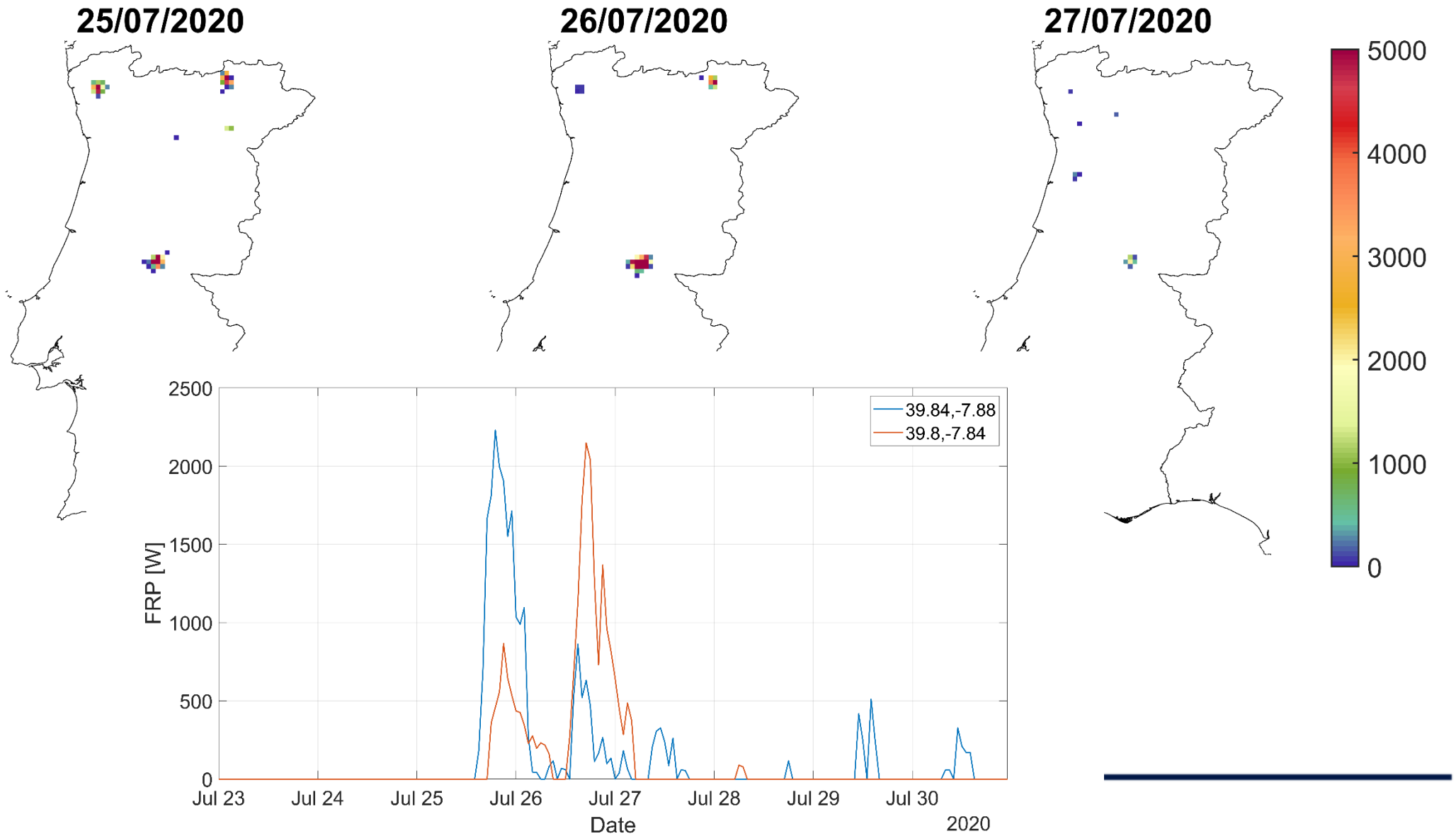




Oleiros, July 2020

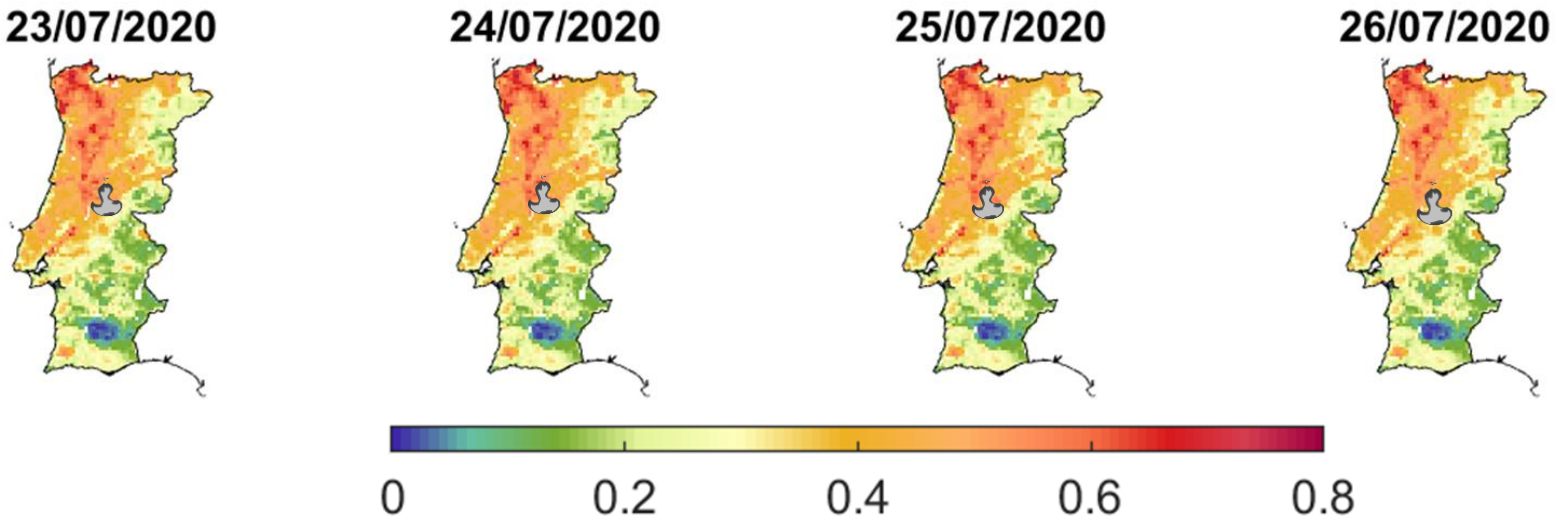
Duration: 25th to 29th of July, 2020
Burnt area: > 6000 ha (ICNF)
Casualities : 1
Activation of Copernicus Emergency Management Service

Fire Event: July 2020

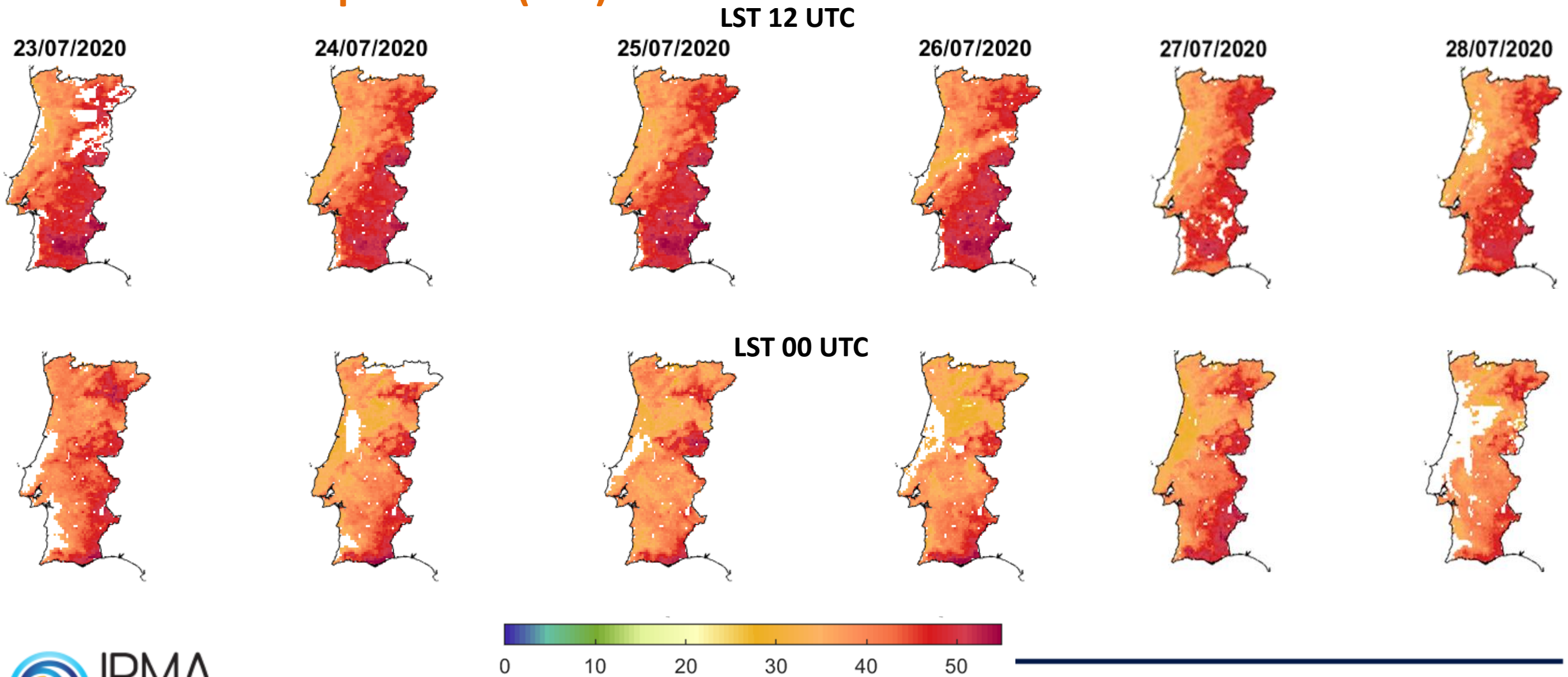


Fire Event: July 2020

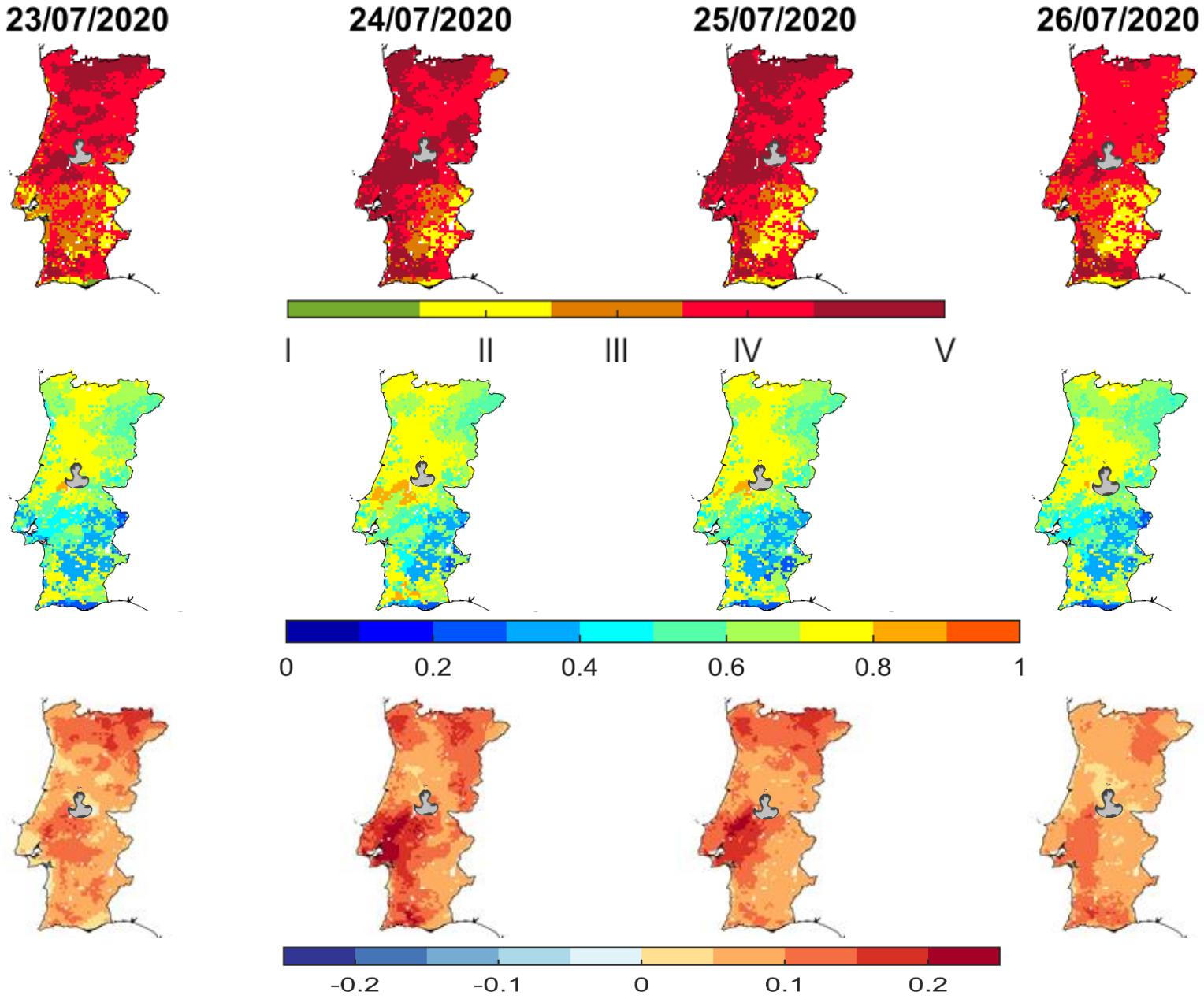
Fraction Vegetation Cover (FVC)



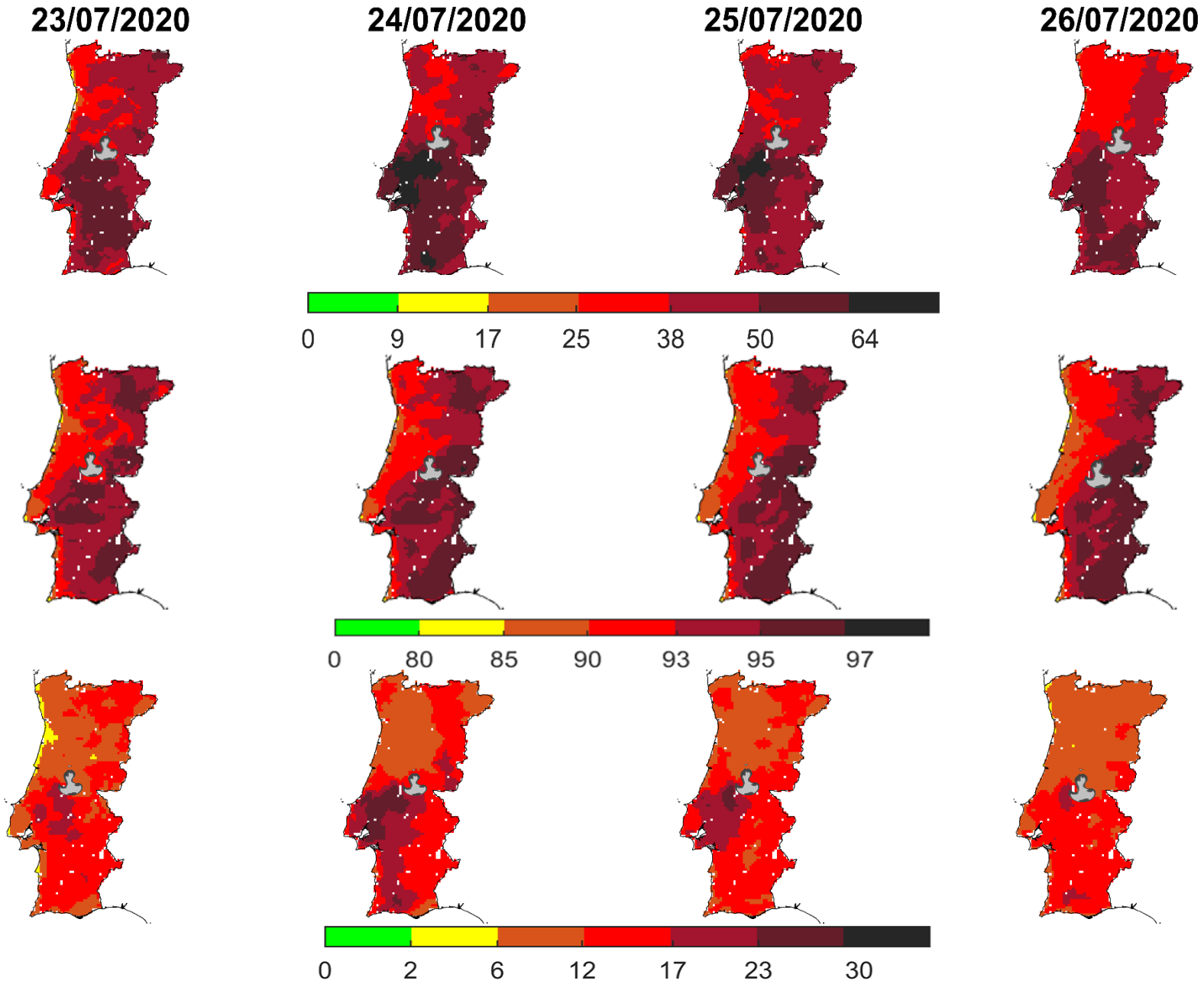
Land Surface Temperature (LST)



Fire Event: July 2020



Fire Event: July 2020



EUMETSAT LSA SAF

Thank you for your attention!

Special thanks to:

Isabel Trigo

Carlos DaCamara

Rita Durão

Catarina Alonso

QUESTIONS?

celia.gouveia@ipma.pt

IPMA