

An overview of the Fires in Portugal in 2017

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21-11-2017



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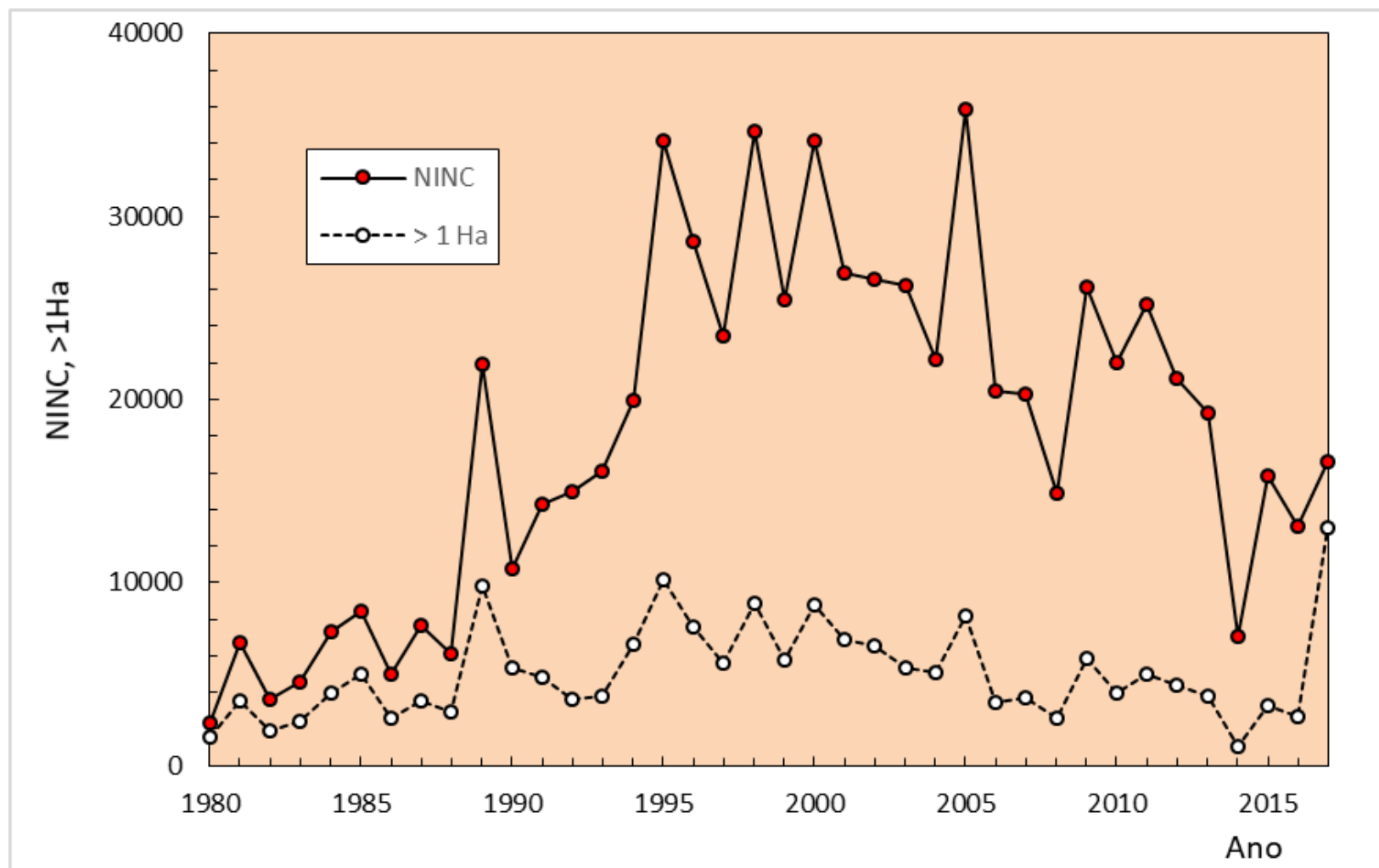


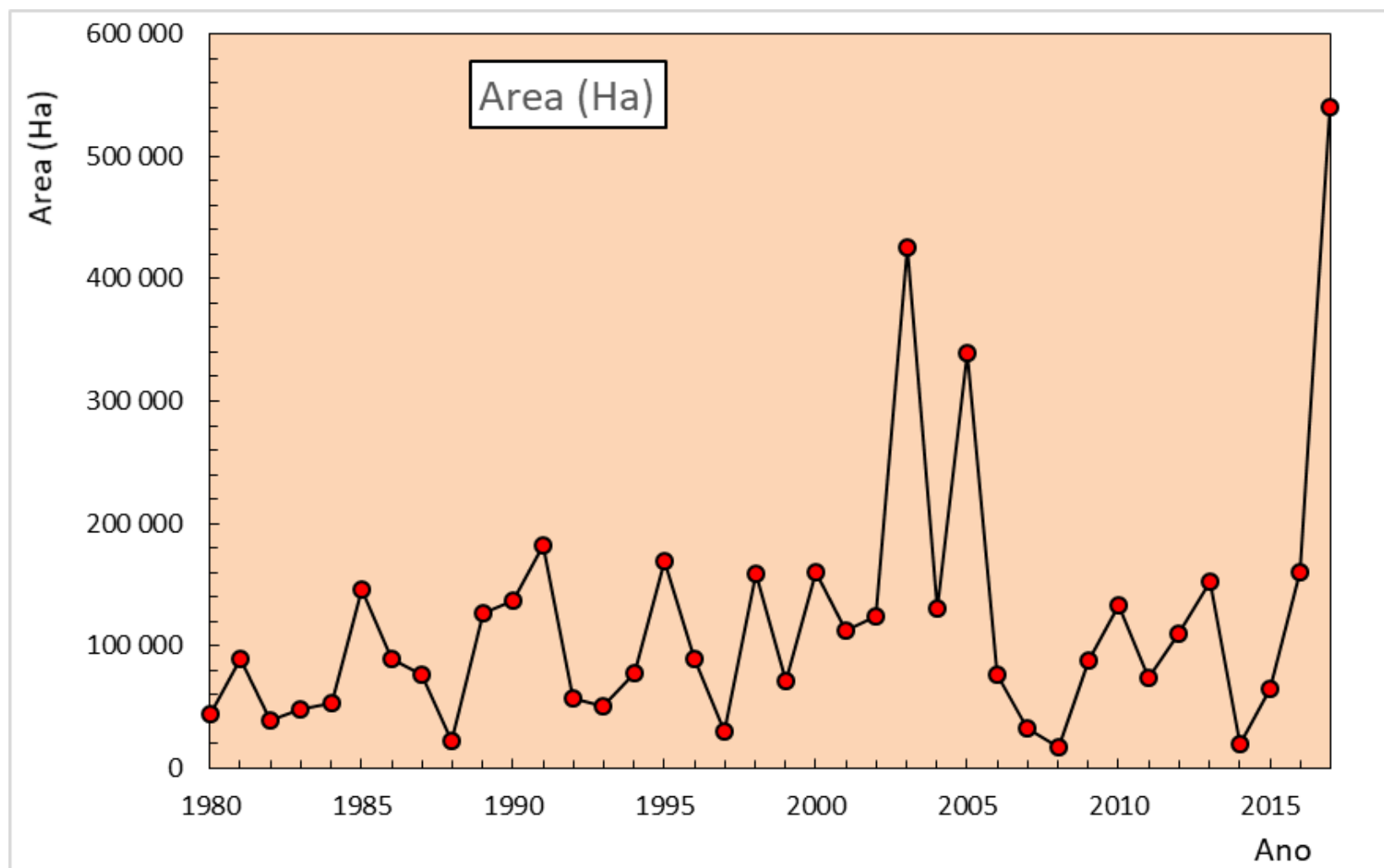
Structure

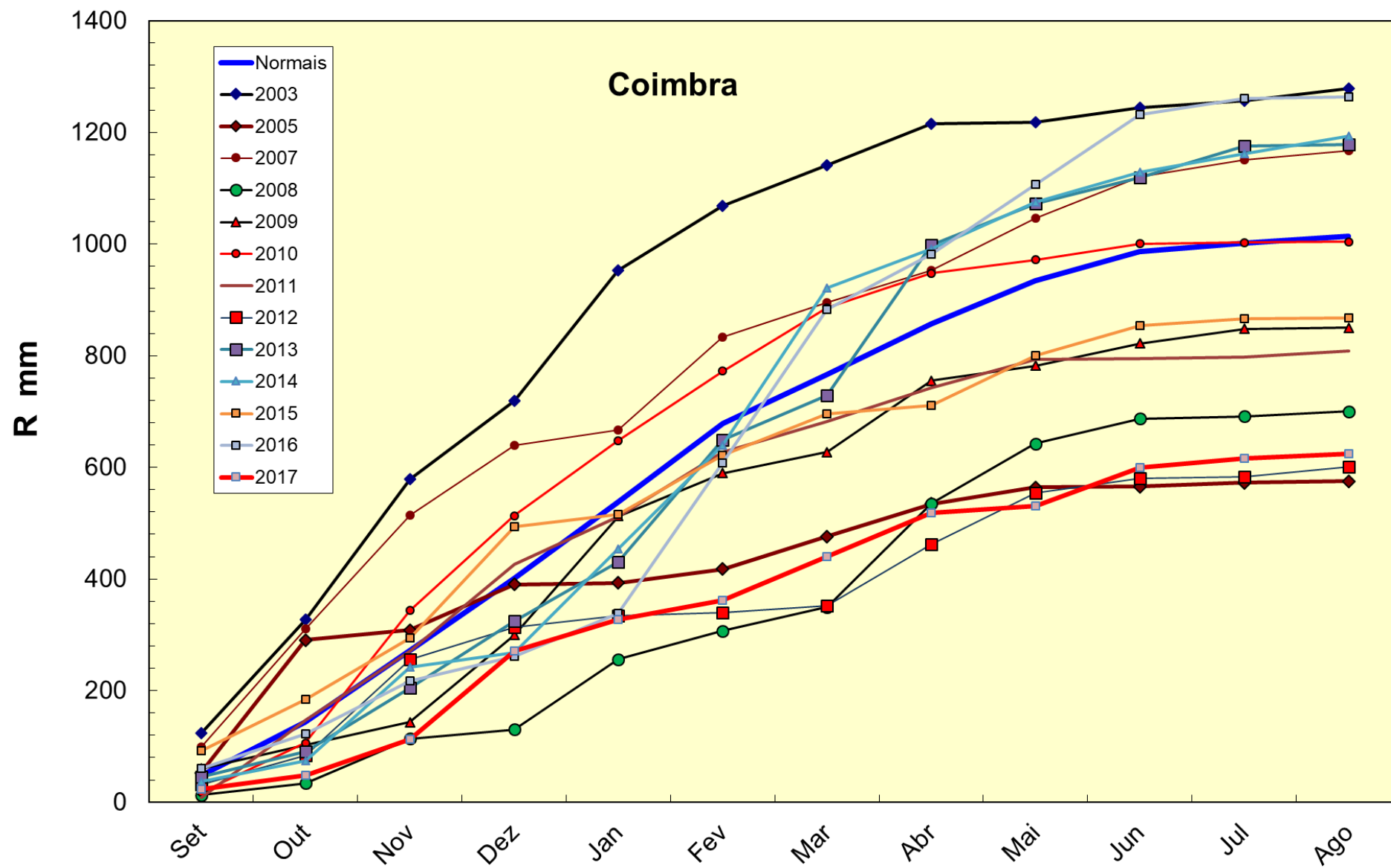
- Introduction
- The Fire of Pedrogão Grande (17 to 23 June)
- The fires of 15/16 October
- Conclusion

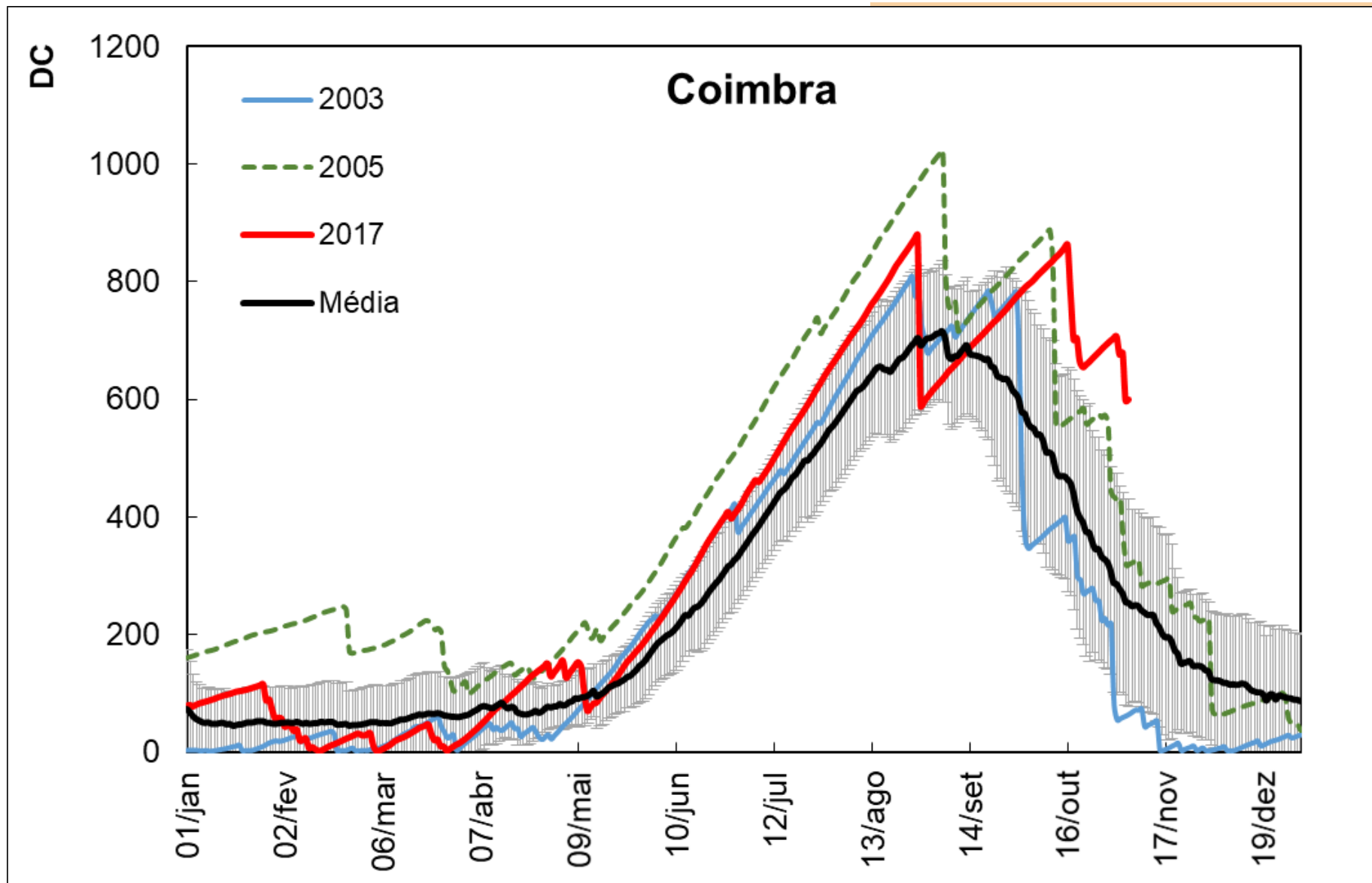
Introduction

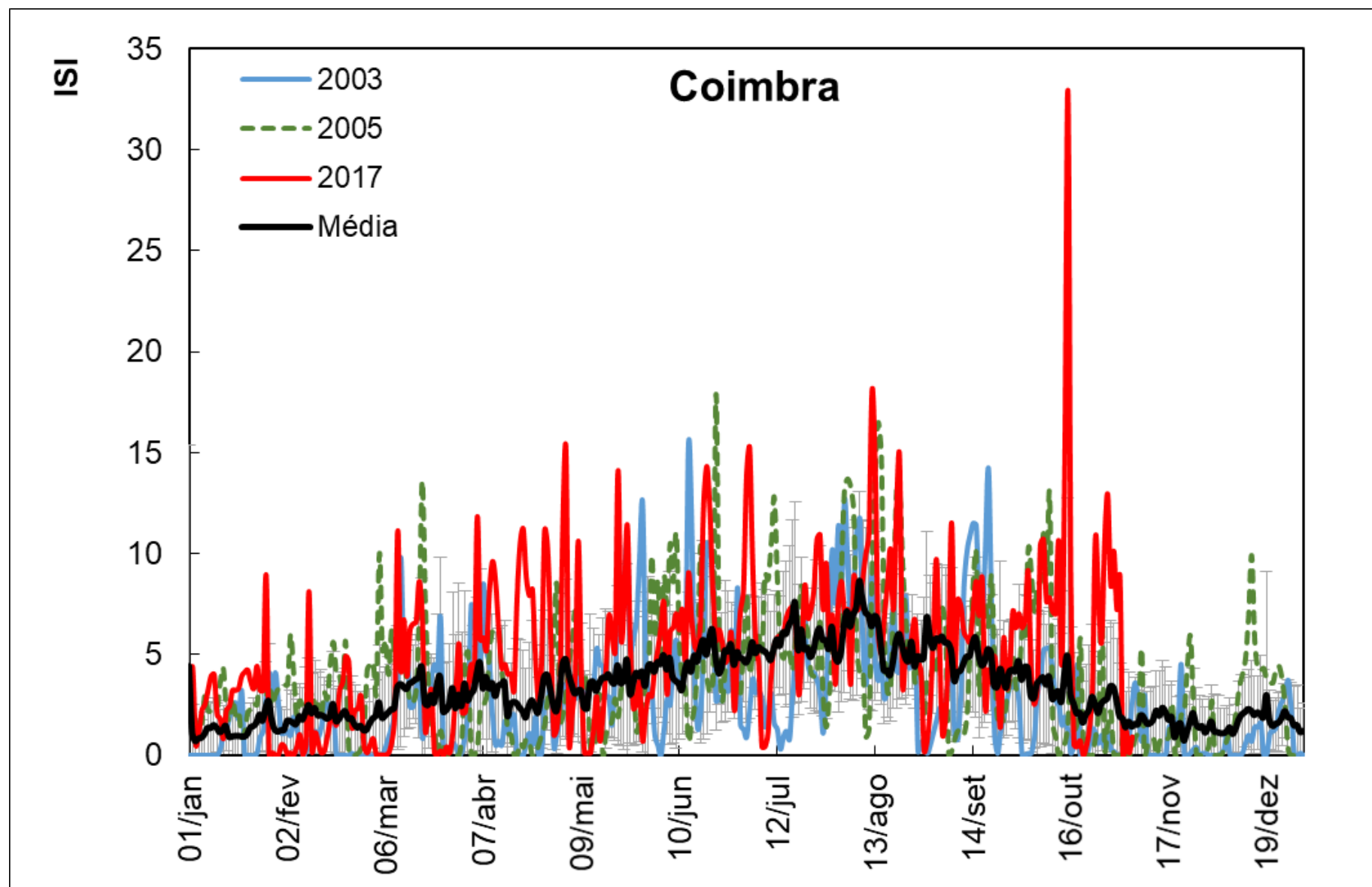
- The year of 2017 will be always remembered in Portugal as the worst ever since we have records, both in terms of human lives lost and of burned area.
- It was characterized by a long and critical drought throughout the year and marked by two very bad episodes:
 - 17 June (65 fatalities and 46 kha)
 - 15 october (47 fatalities and 210 kha).

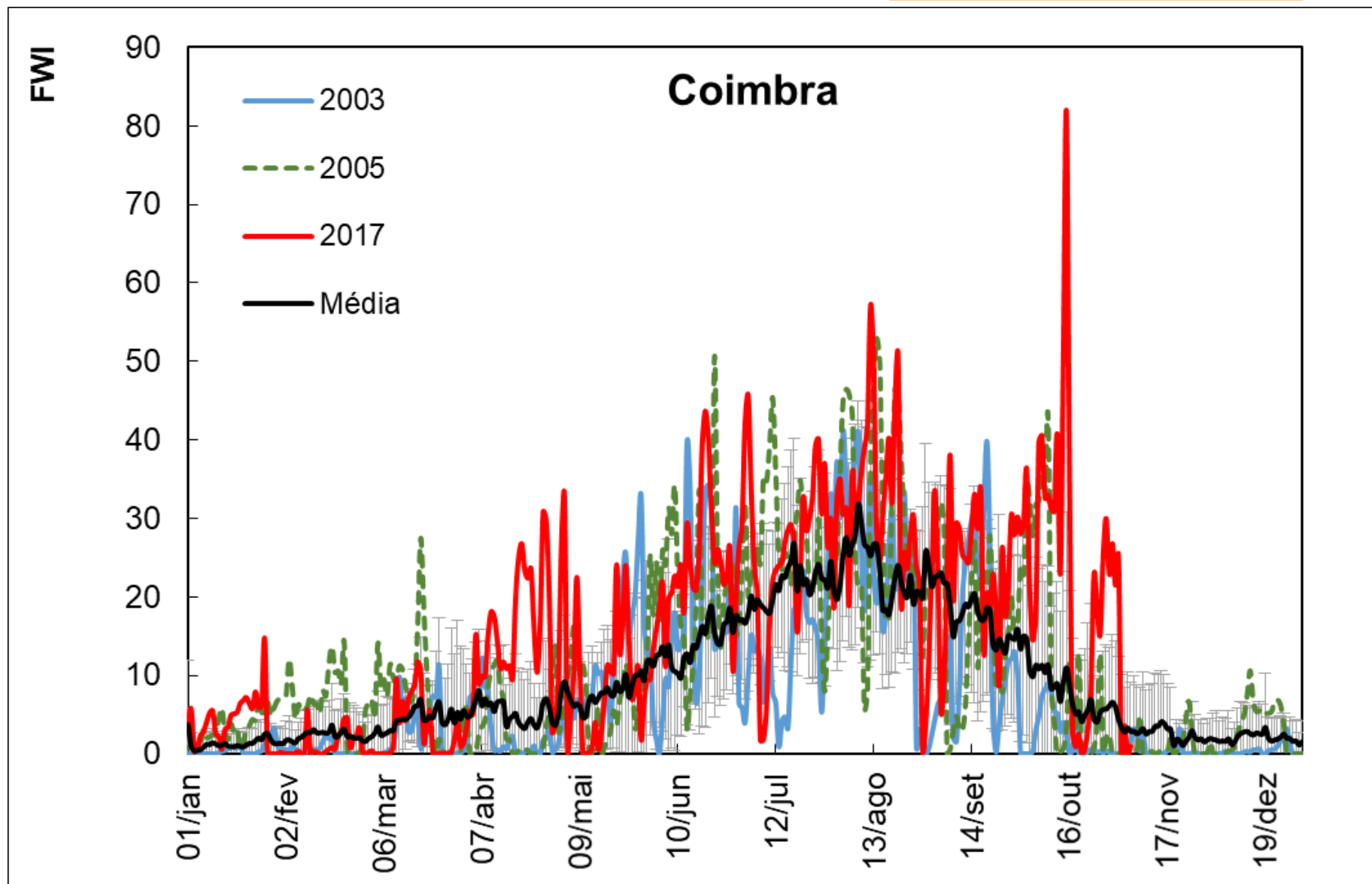




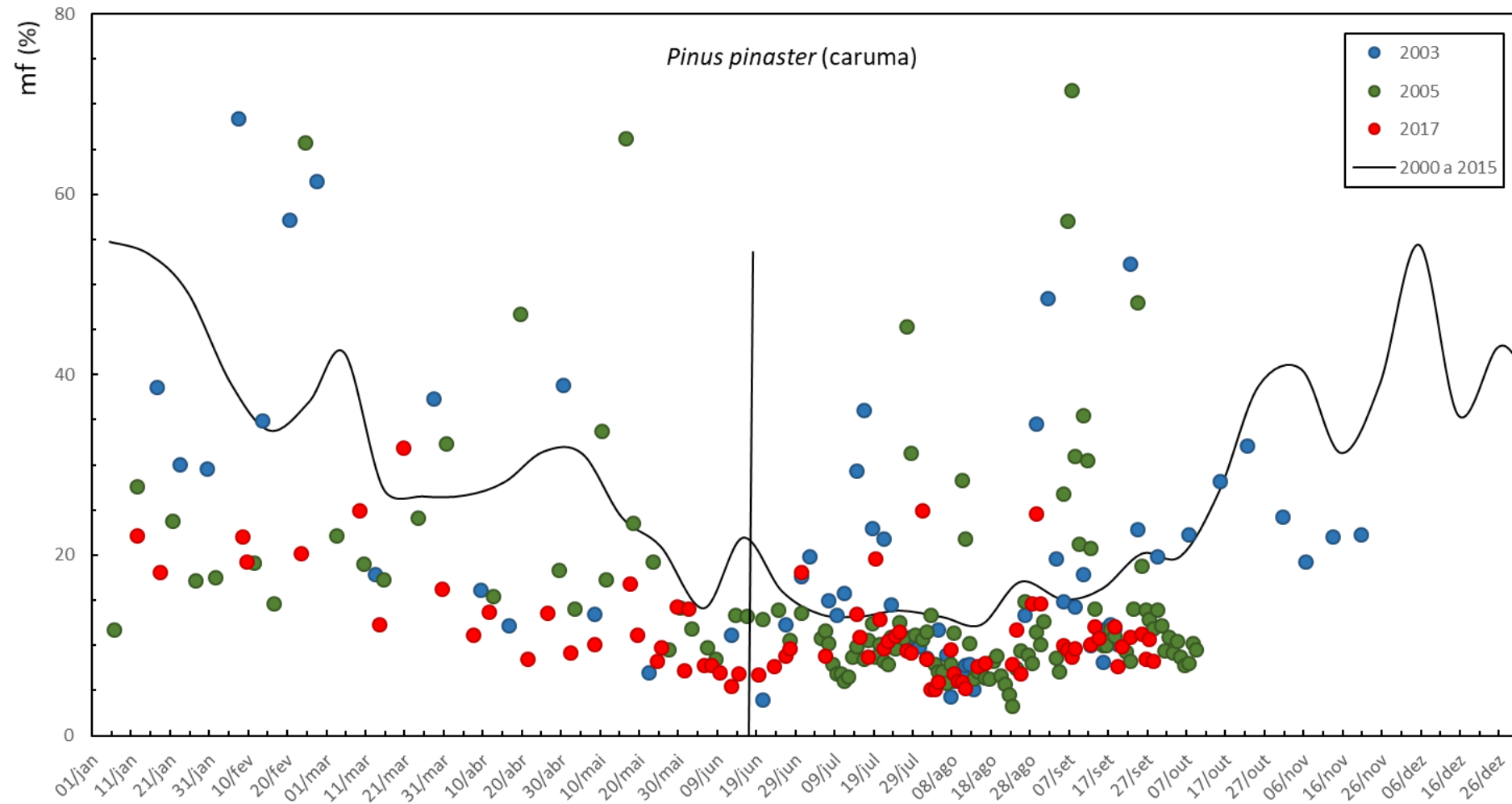




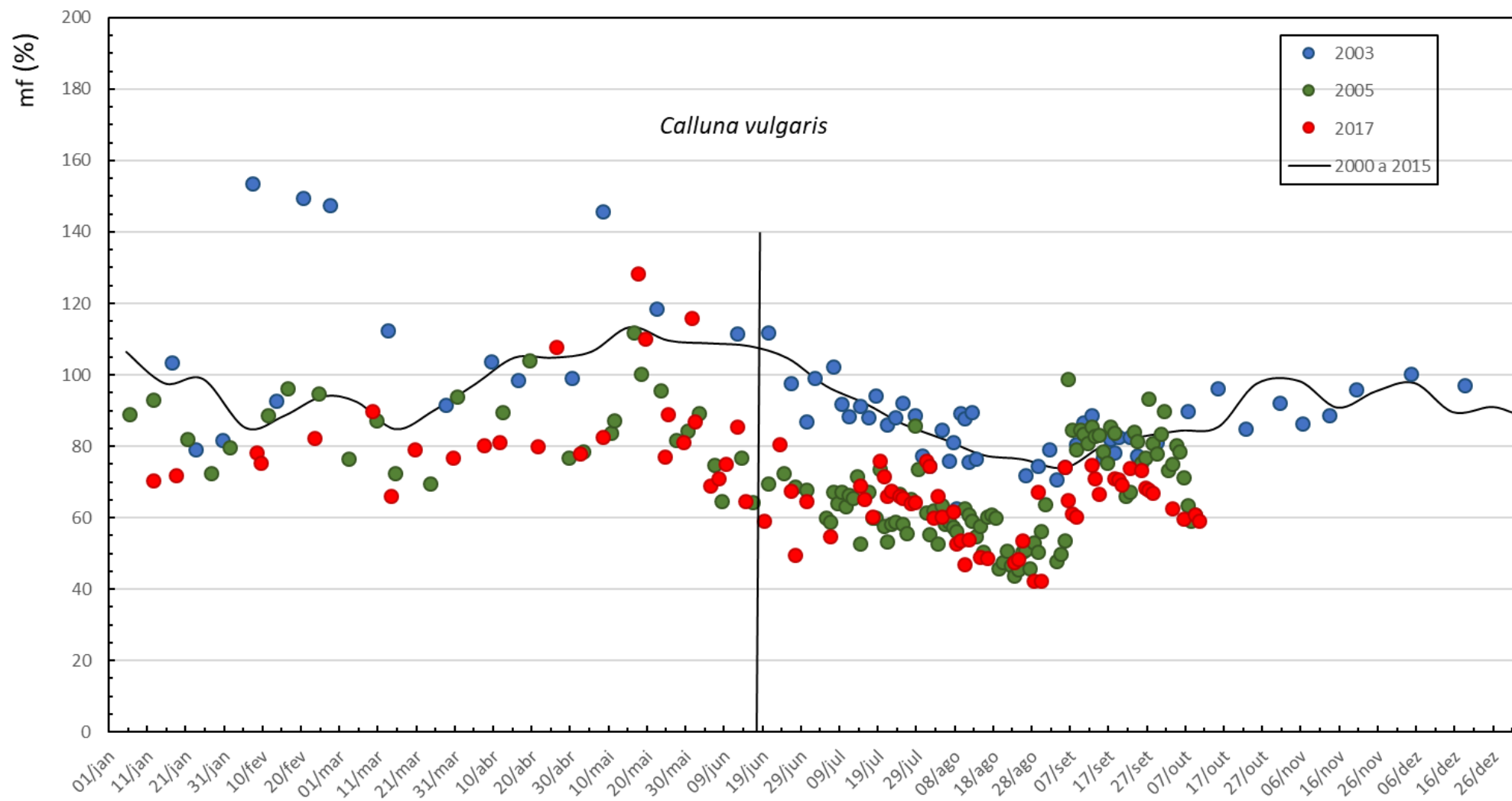


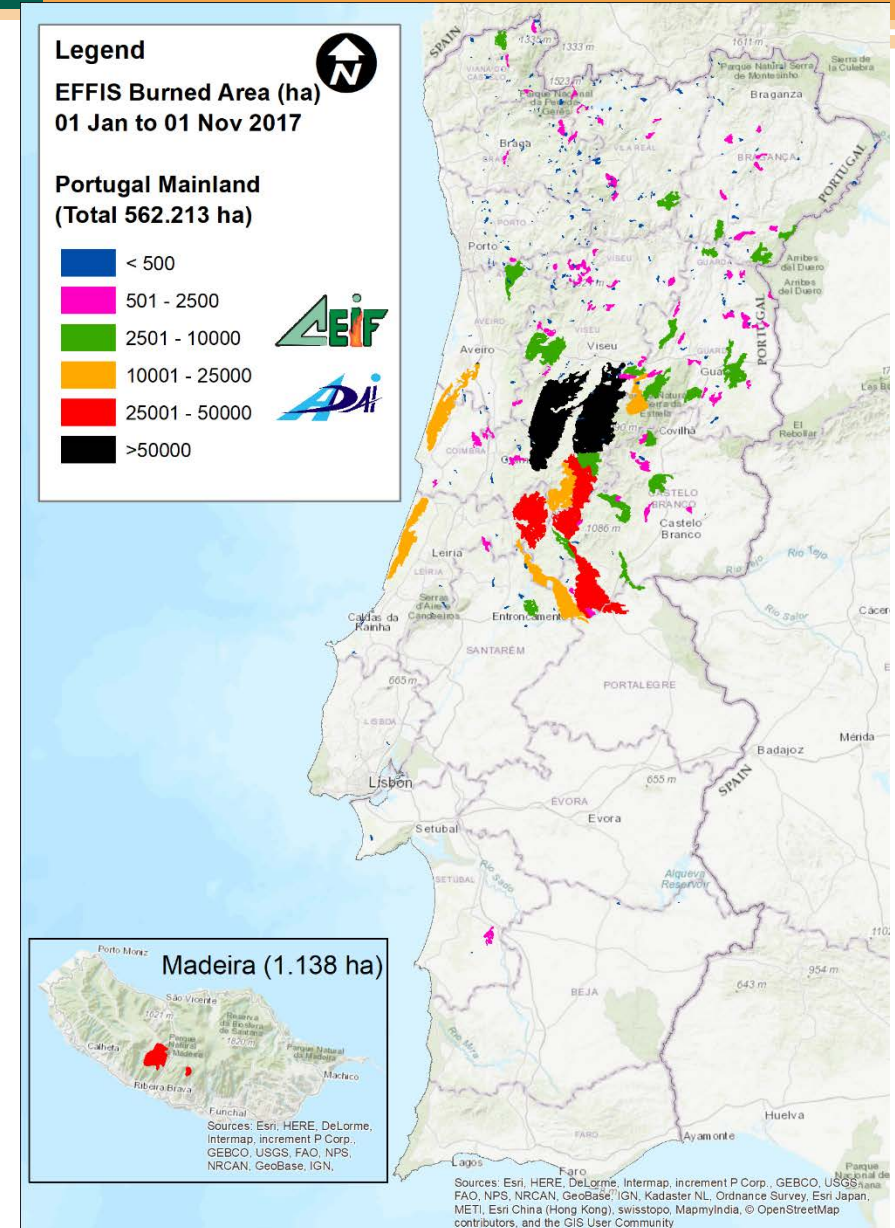
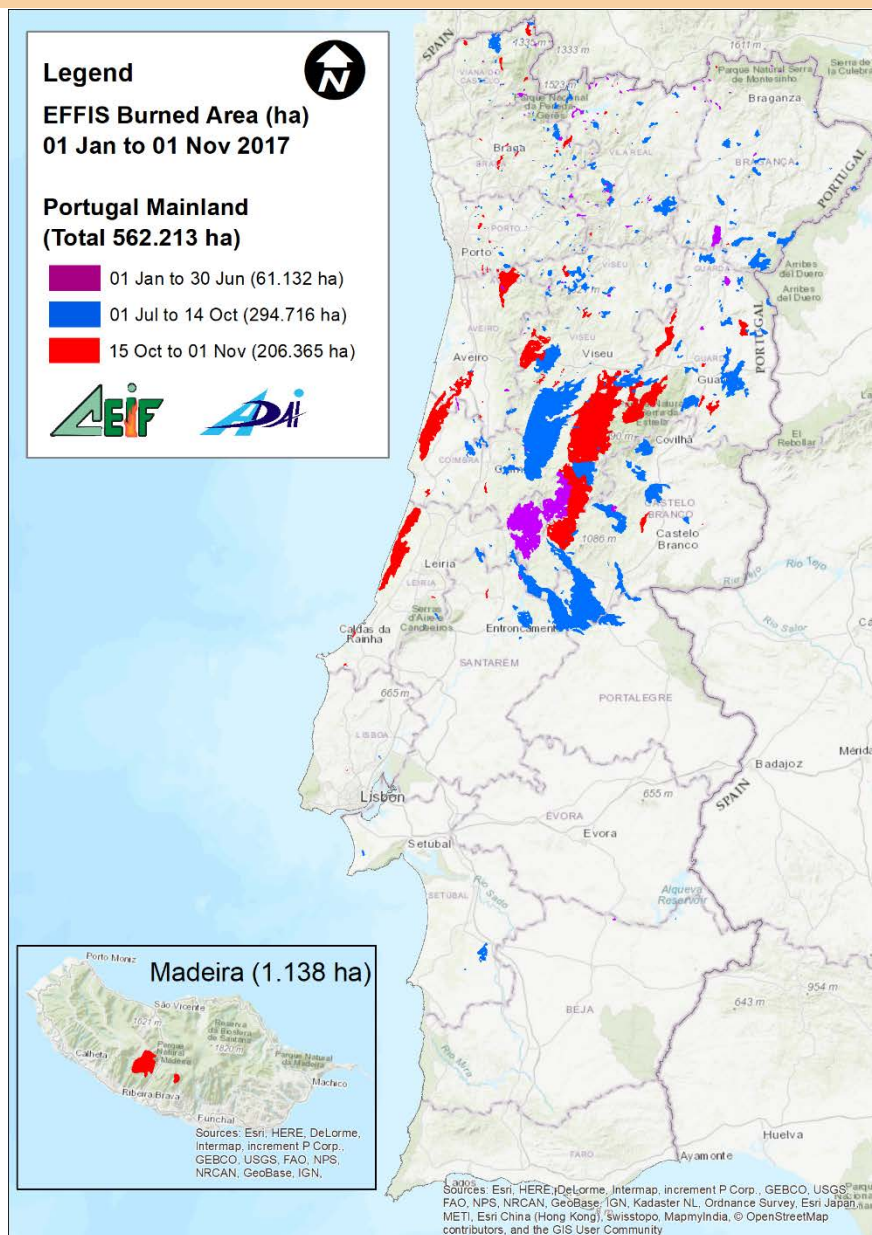


- Moisture content of pine litter



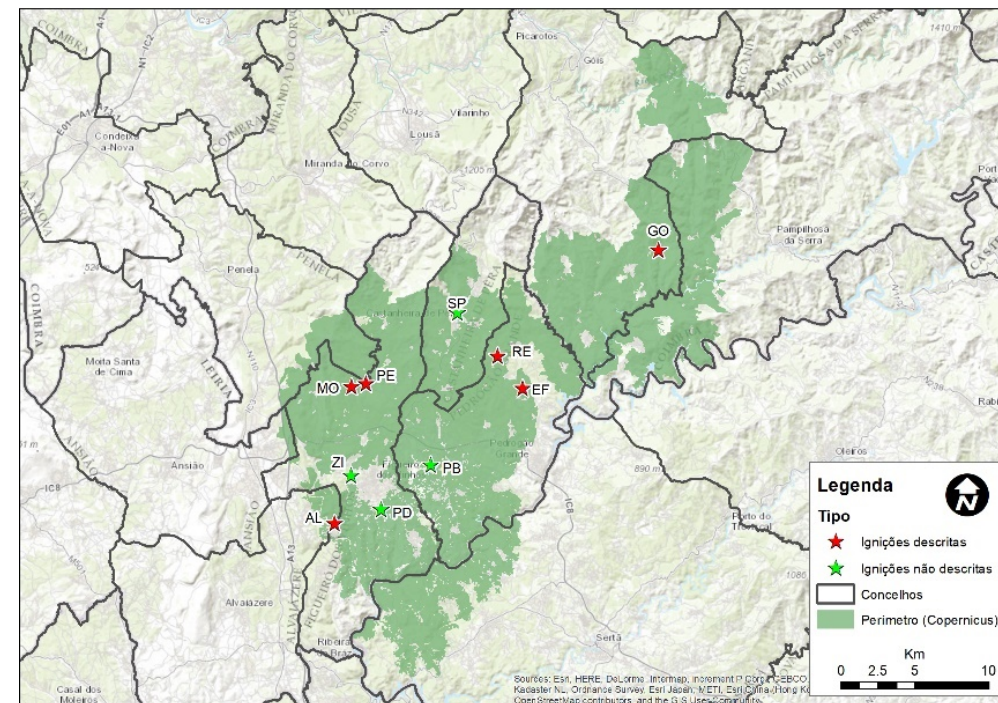
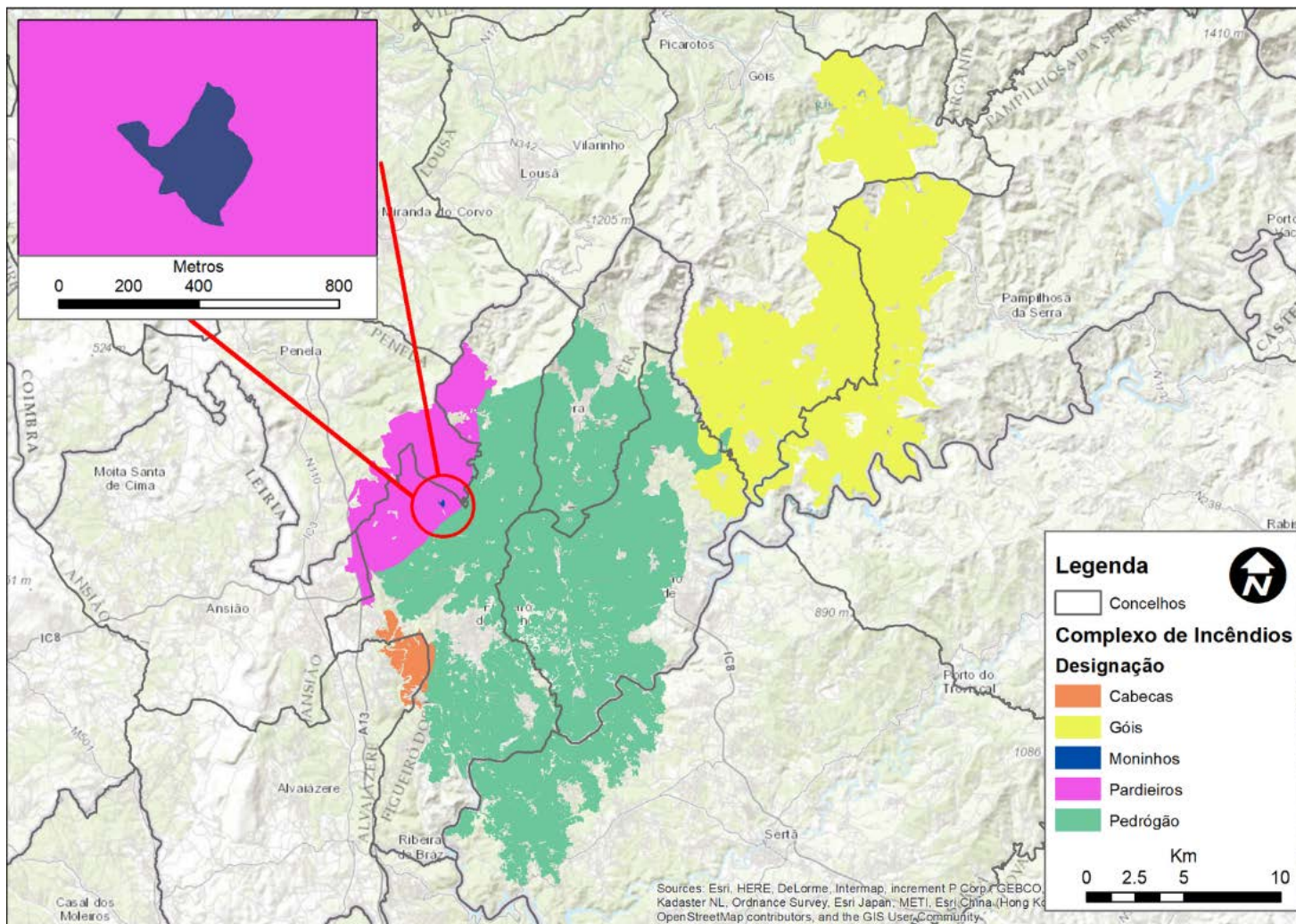
- Moisture content of shrubs

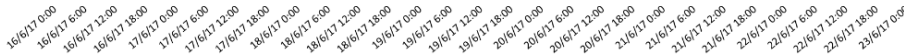




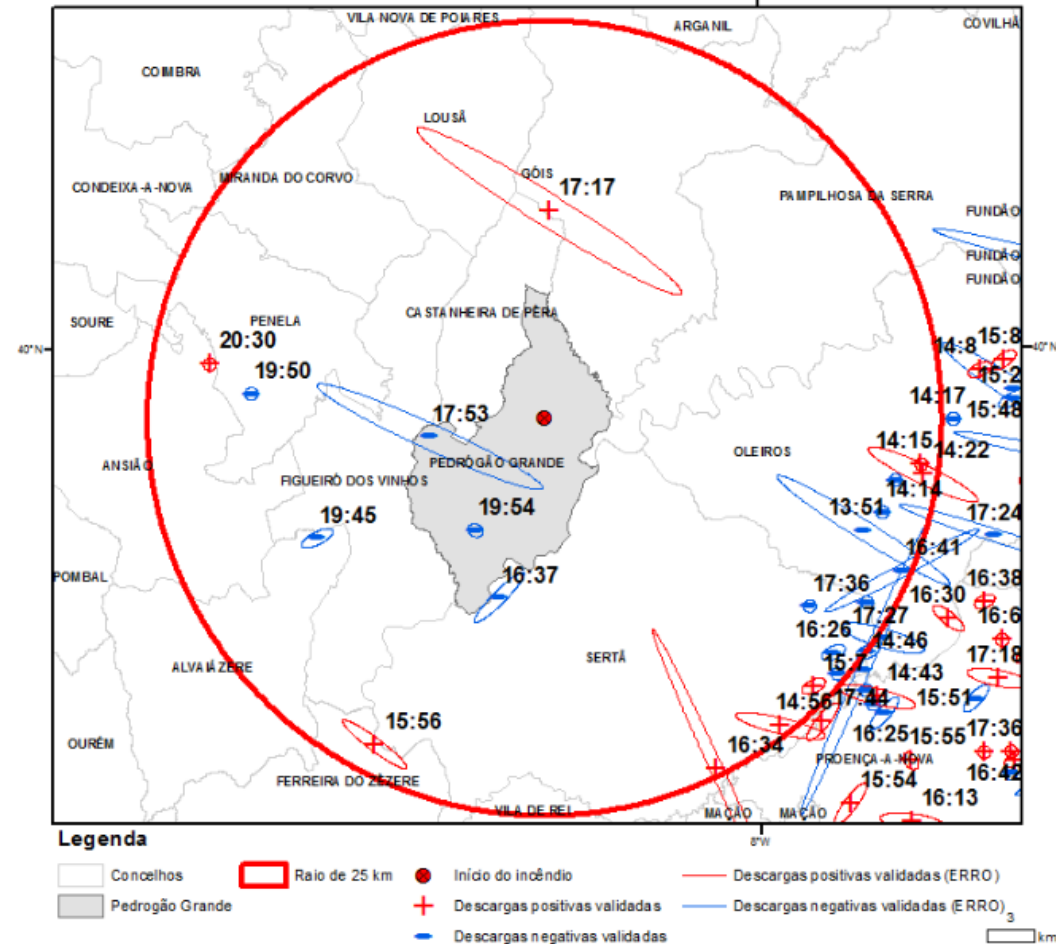
The fire of Pedrogão Grande

- This was the first major disaster that we faced in 2017.
- In a day with $T > 46^{\circ}\text{C}$ and $\text{RH} < 20\%$, a thunderstorm causing lightning ignited fires, several fires broke out in Central Portugal.
- Among them we had a complex of five fires that caused 65 deaths and 46 kha of burned area.





- The Meteo Institute analysed with great care the lightning strikes that were registered in the region of the fire



- Origin of the fires





14h45



15h15



15h30



15h45



16h00



16h25



16h25 (inversão)



16h30



16h35



16h45



17h00



17h15 (inversão)



17h30



17h45



17h50 (inversão e focos secundários)



18h00



18h05

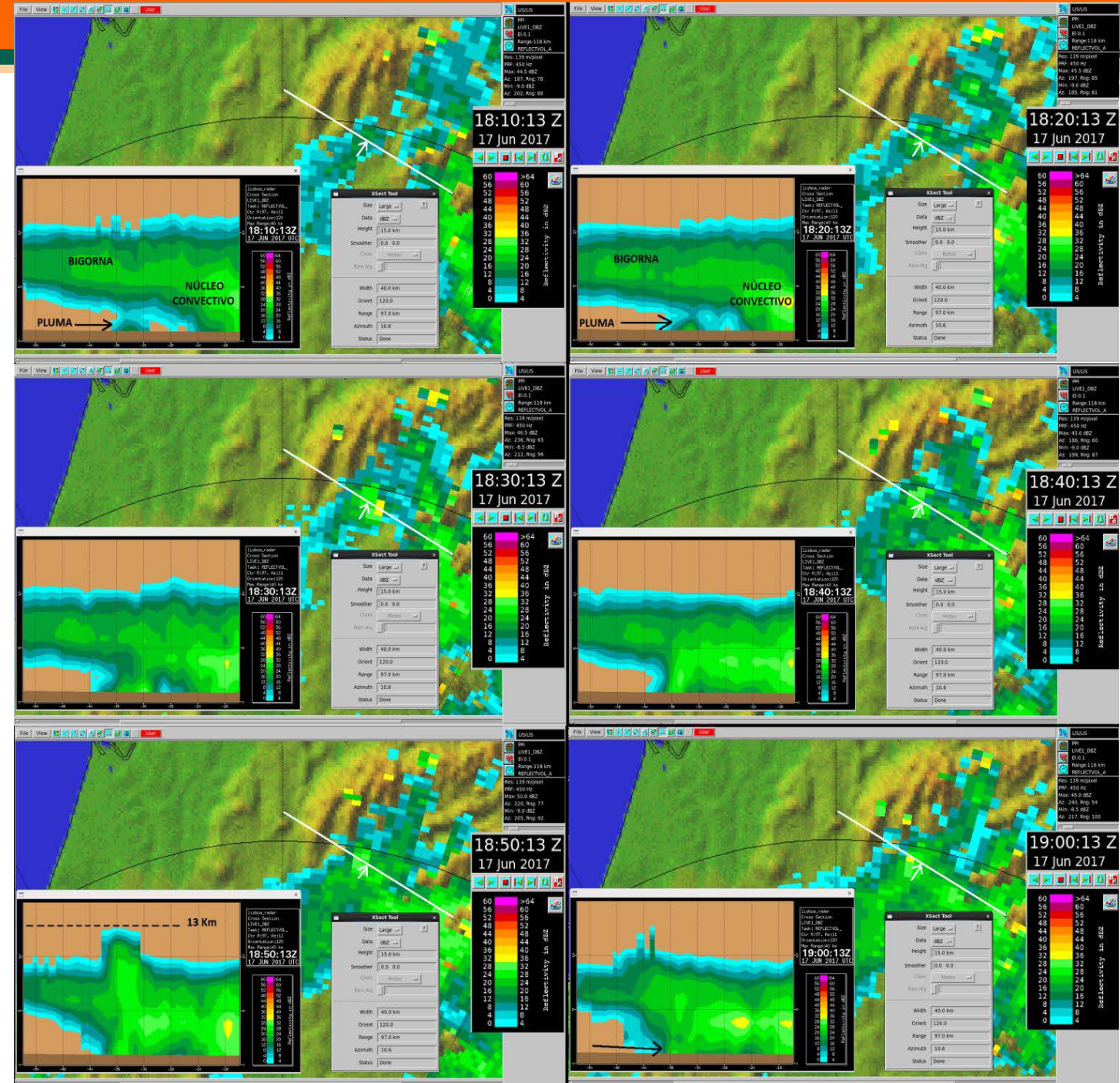


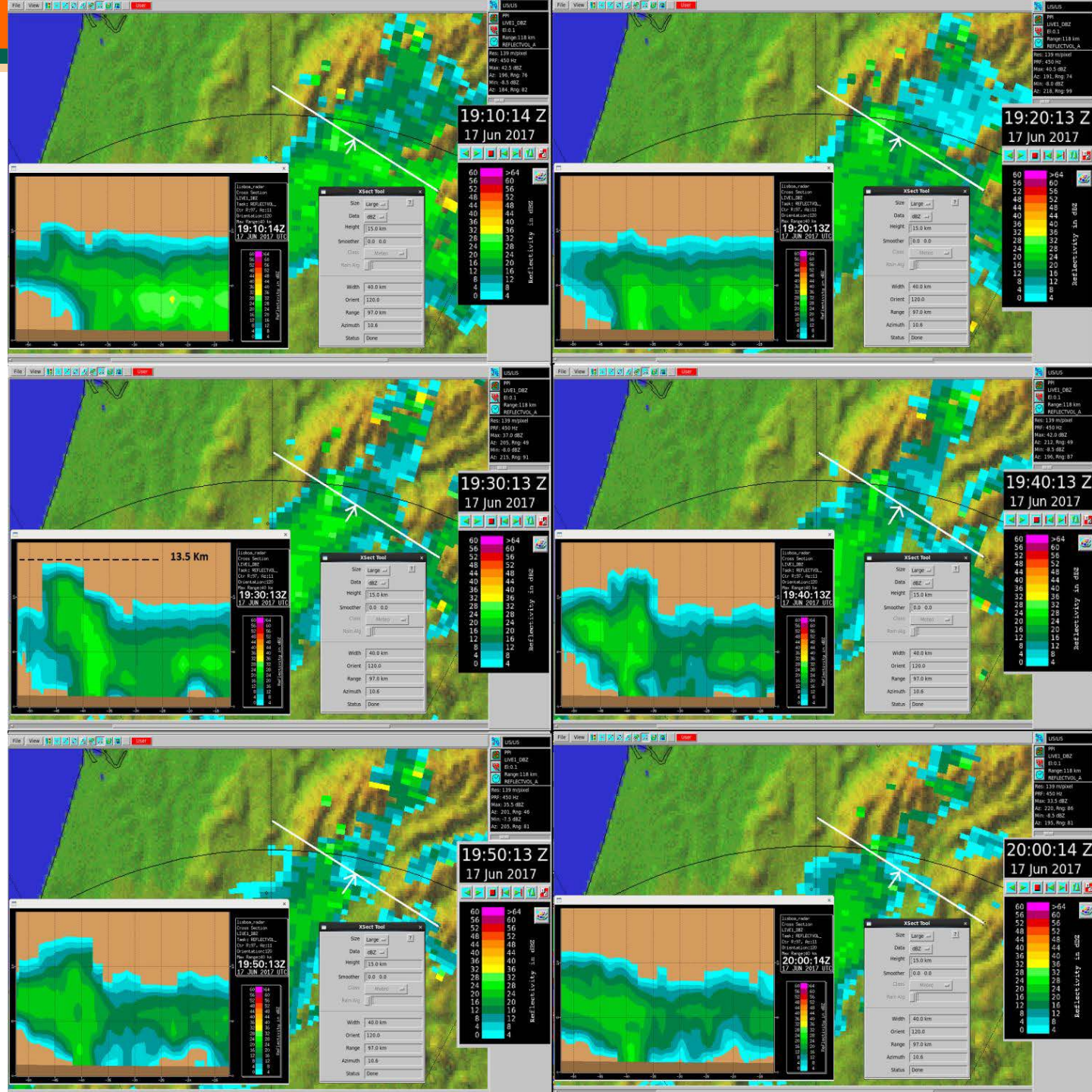
18h10



18h15

- Radar tracking of the smoke and of the thunderstorm clouds





18.30h



18.45h



19.00h



19.05h



19.10h





19h15



19h20



19h25



19h30



19h35



19h40



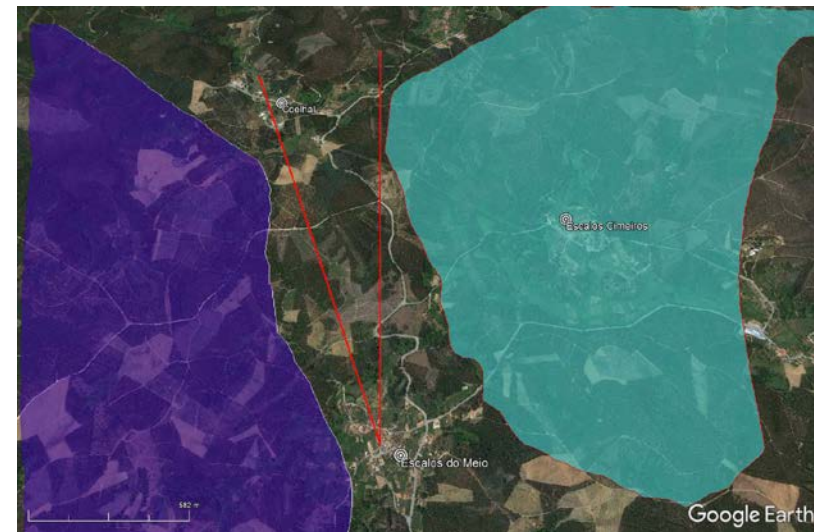
19h45

Encontro dos incêndios de Escalos e de Regadas

19.05h

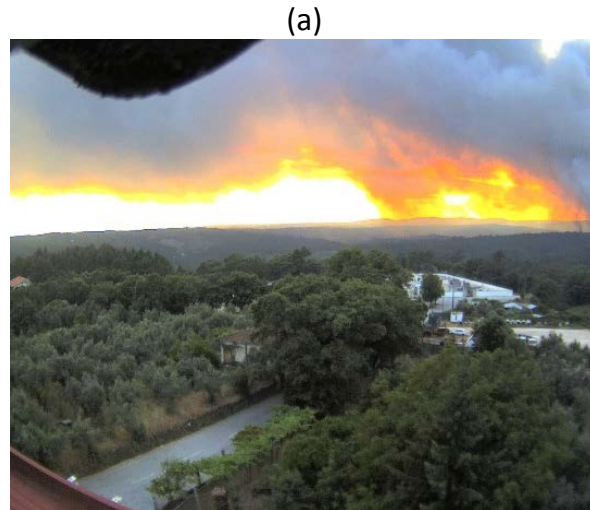


19.30h

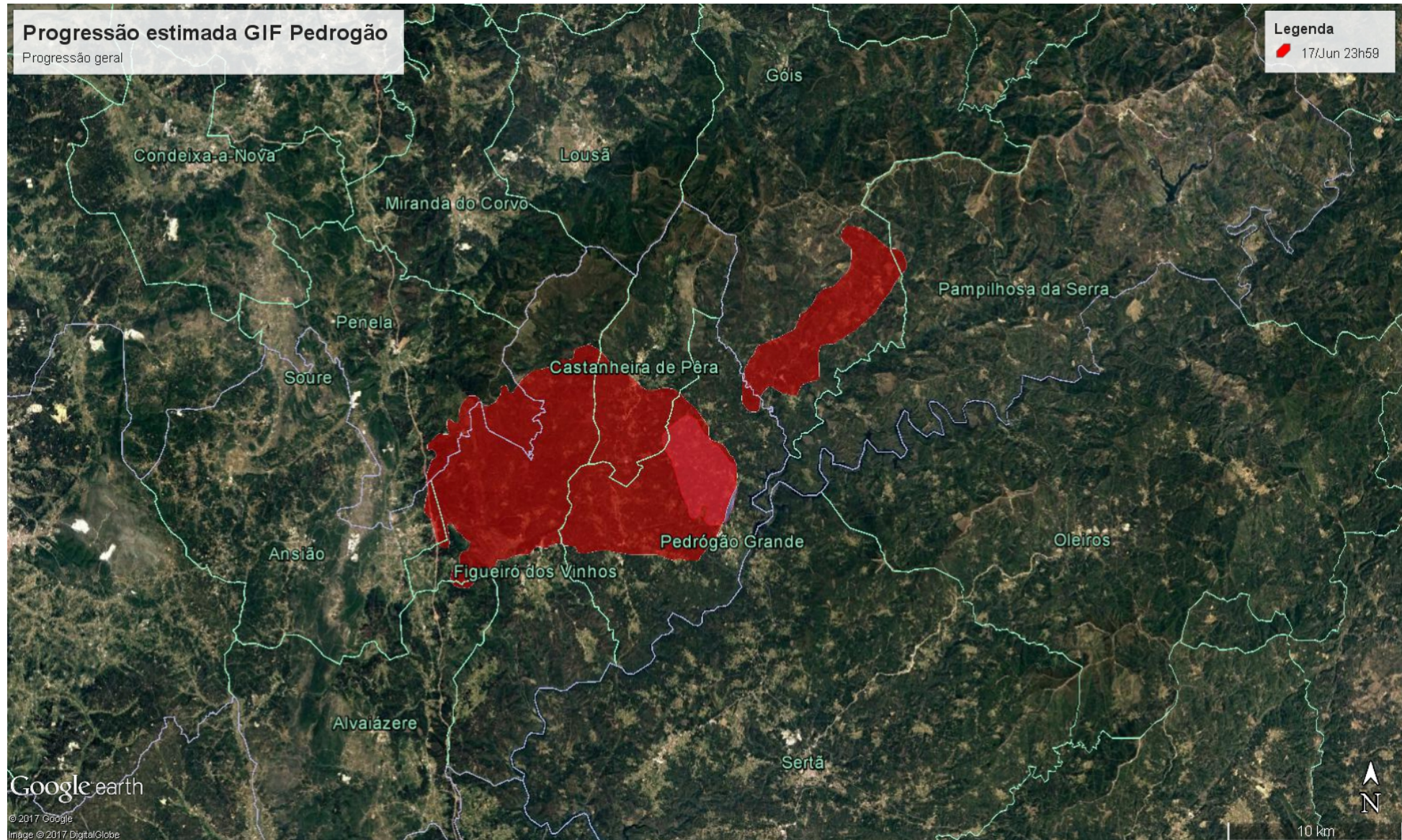


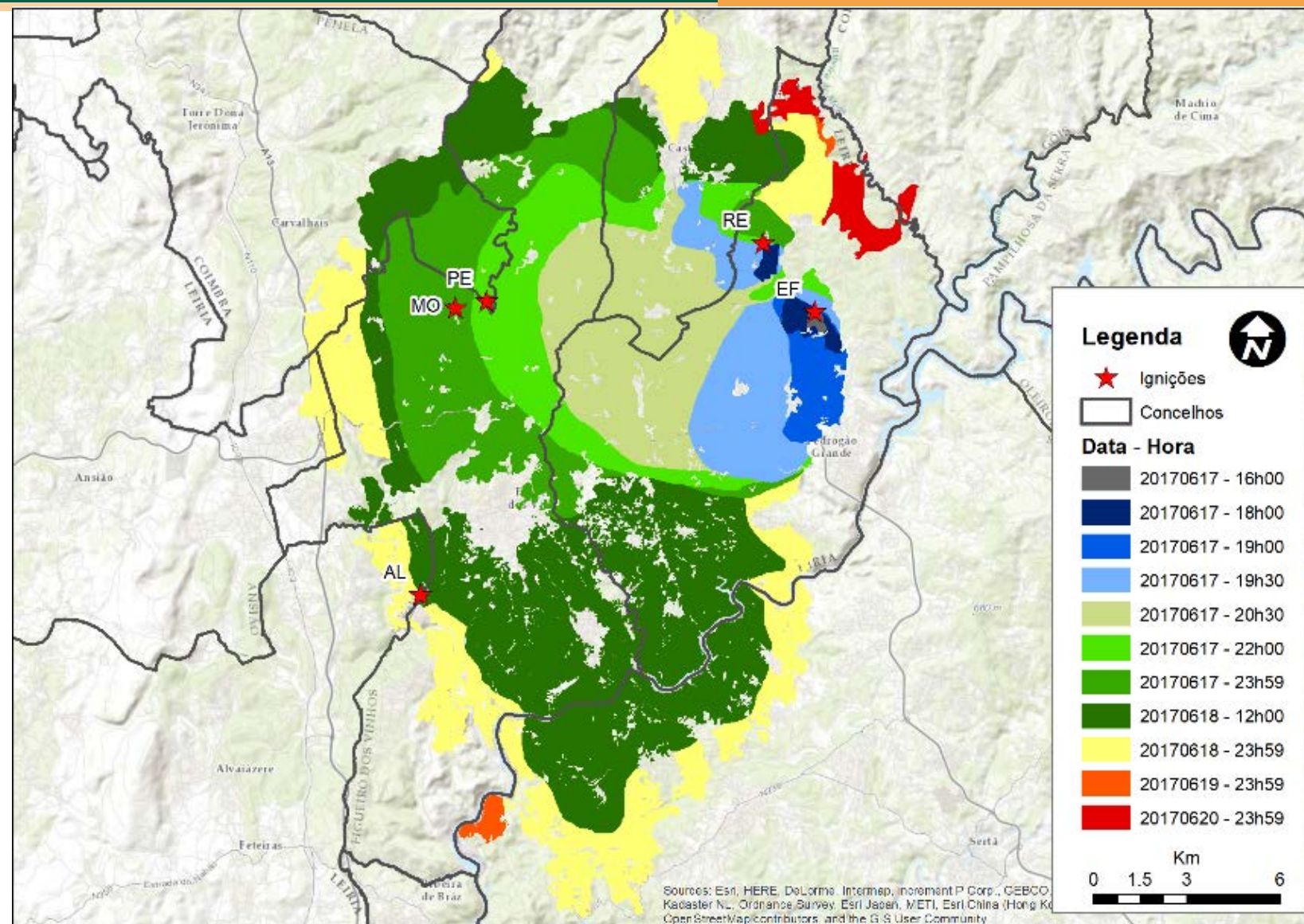
Observação do encontro de frentes

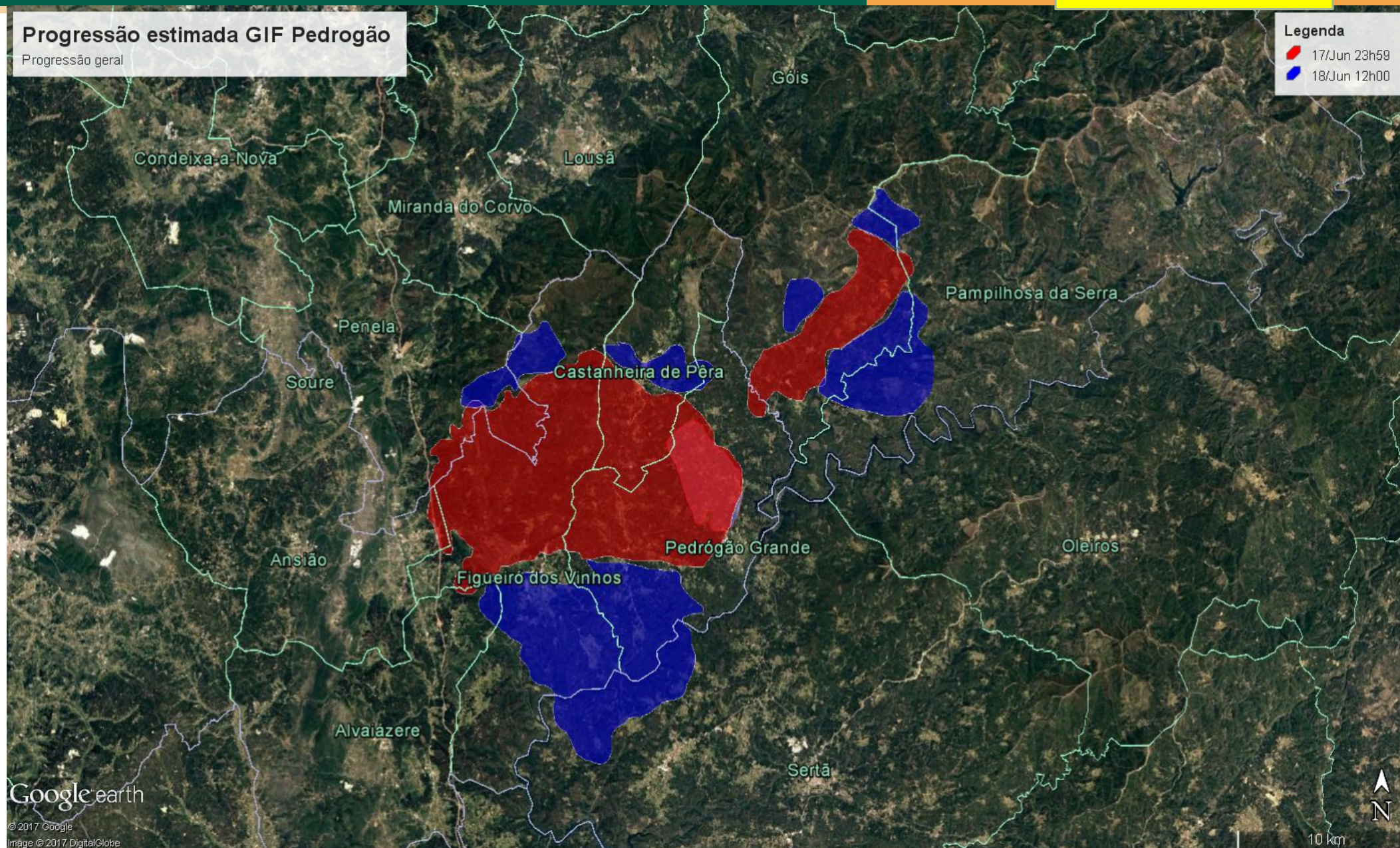
- 19.00
- 19.25
- 19.35
- 20.00

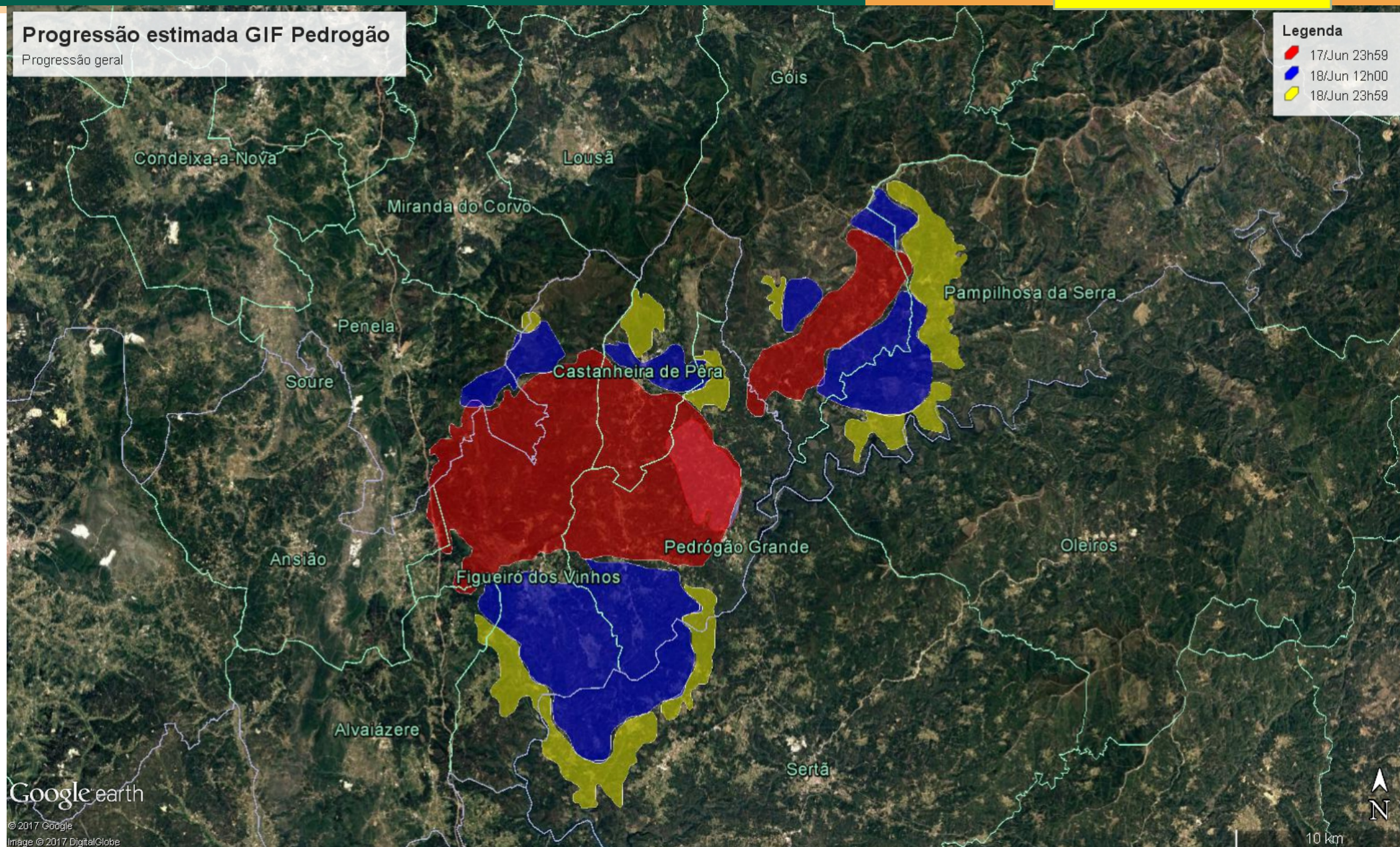


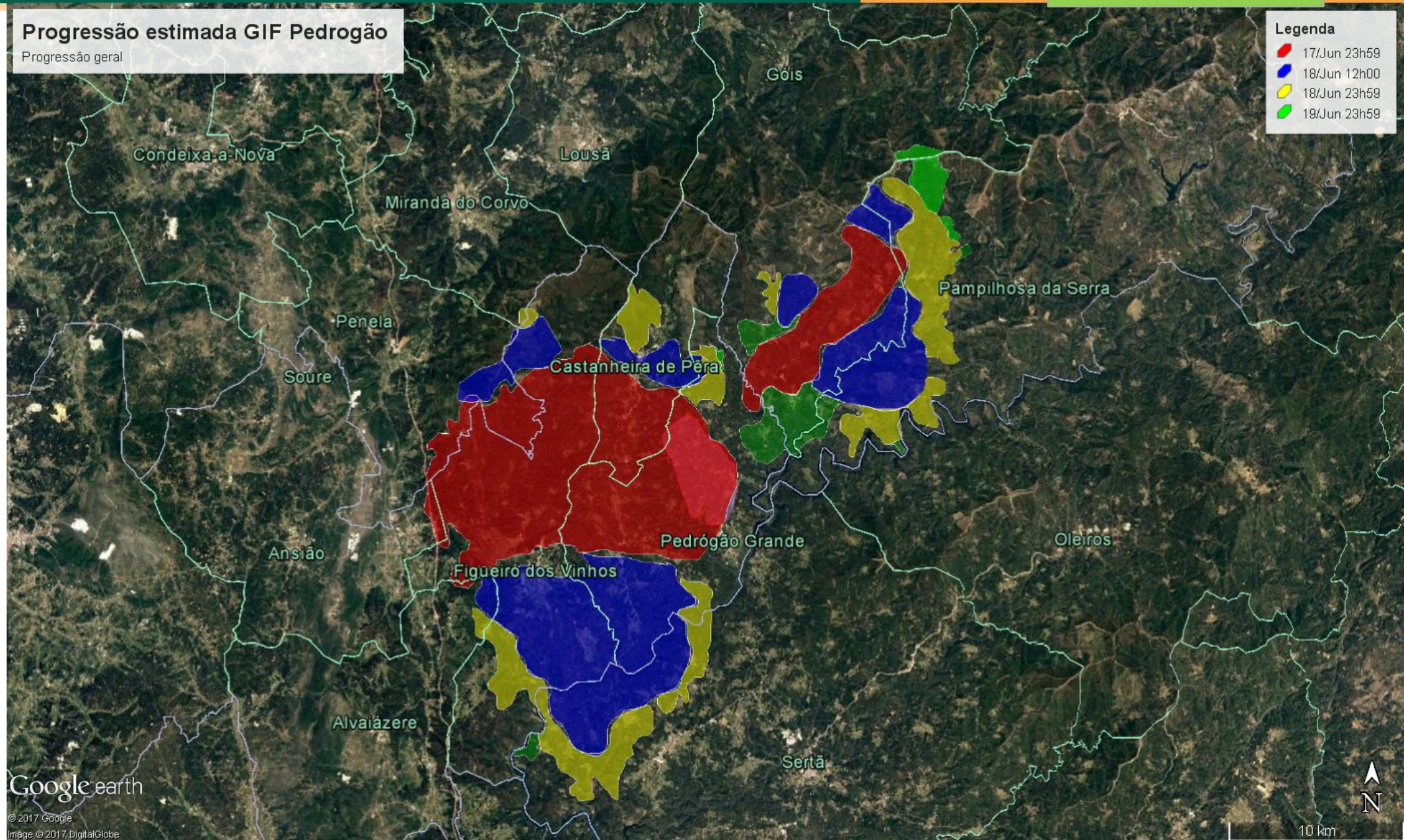


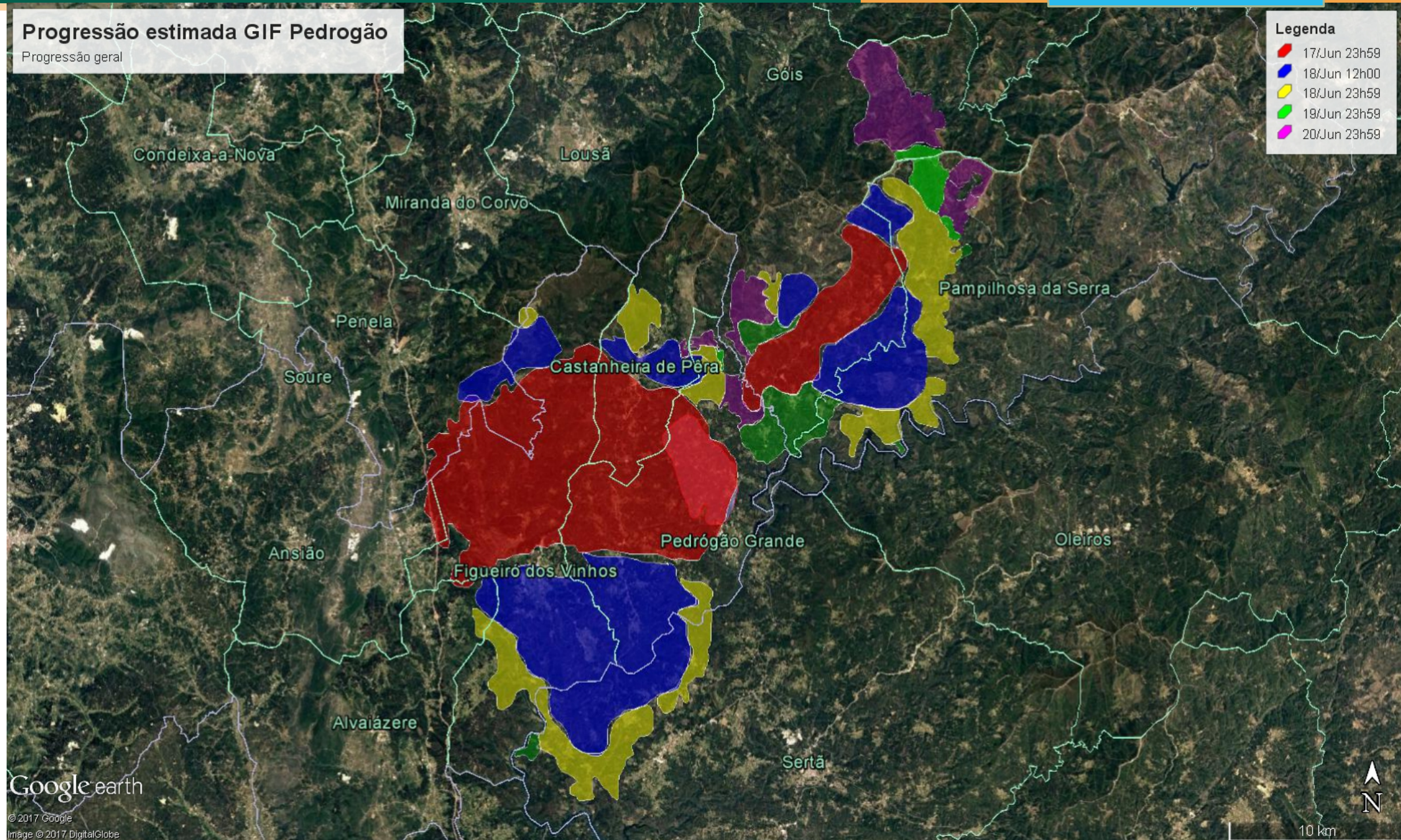


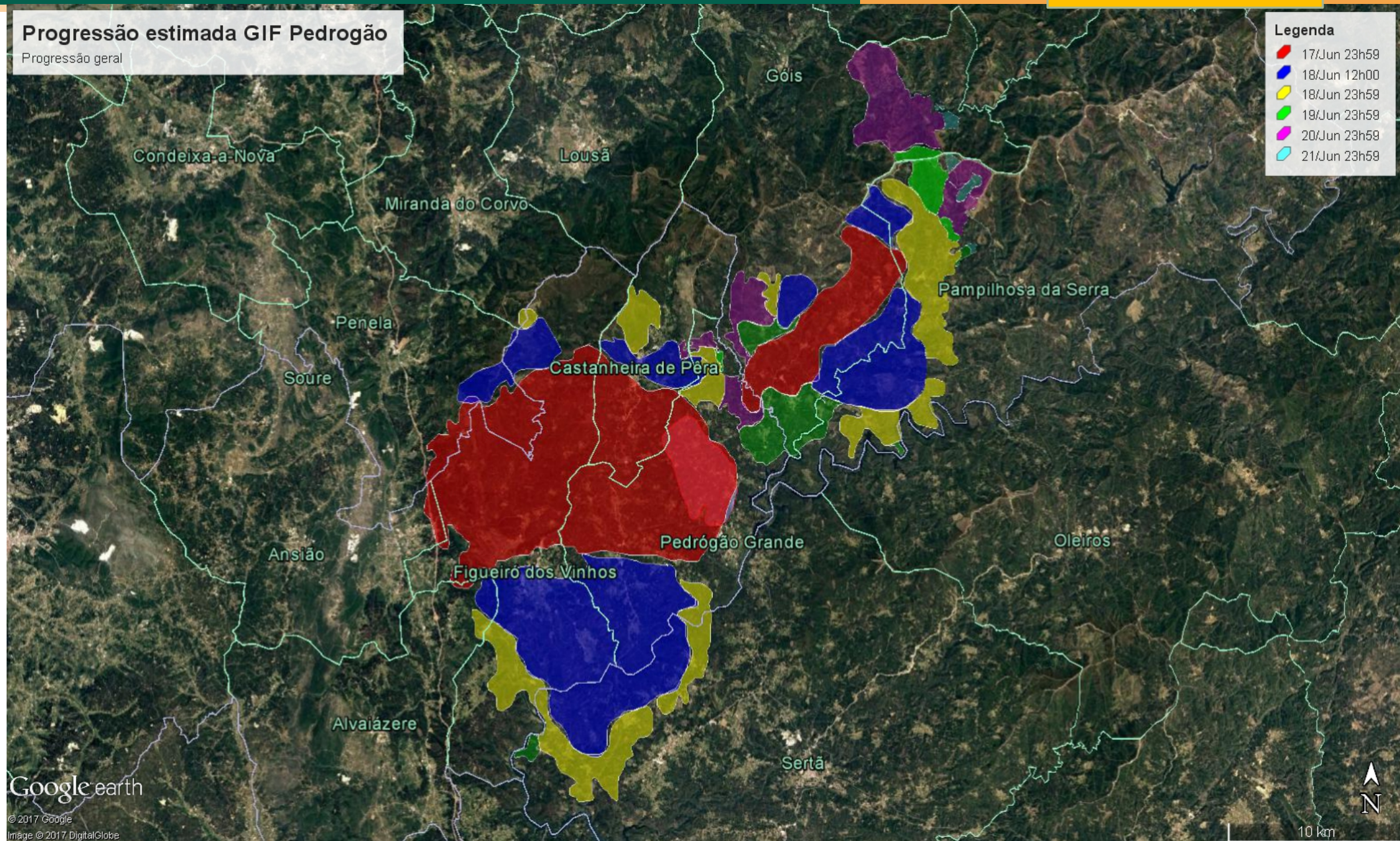
















- Wind whirls



Fire whirls



Wind whirls



Horizontal vortices



- Aerial flames



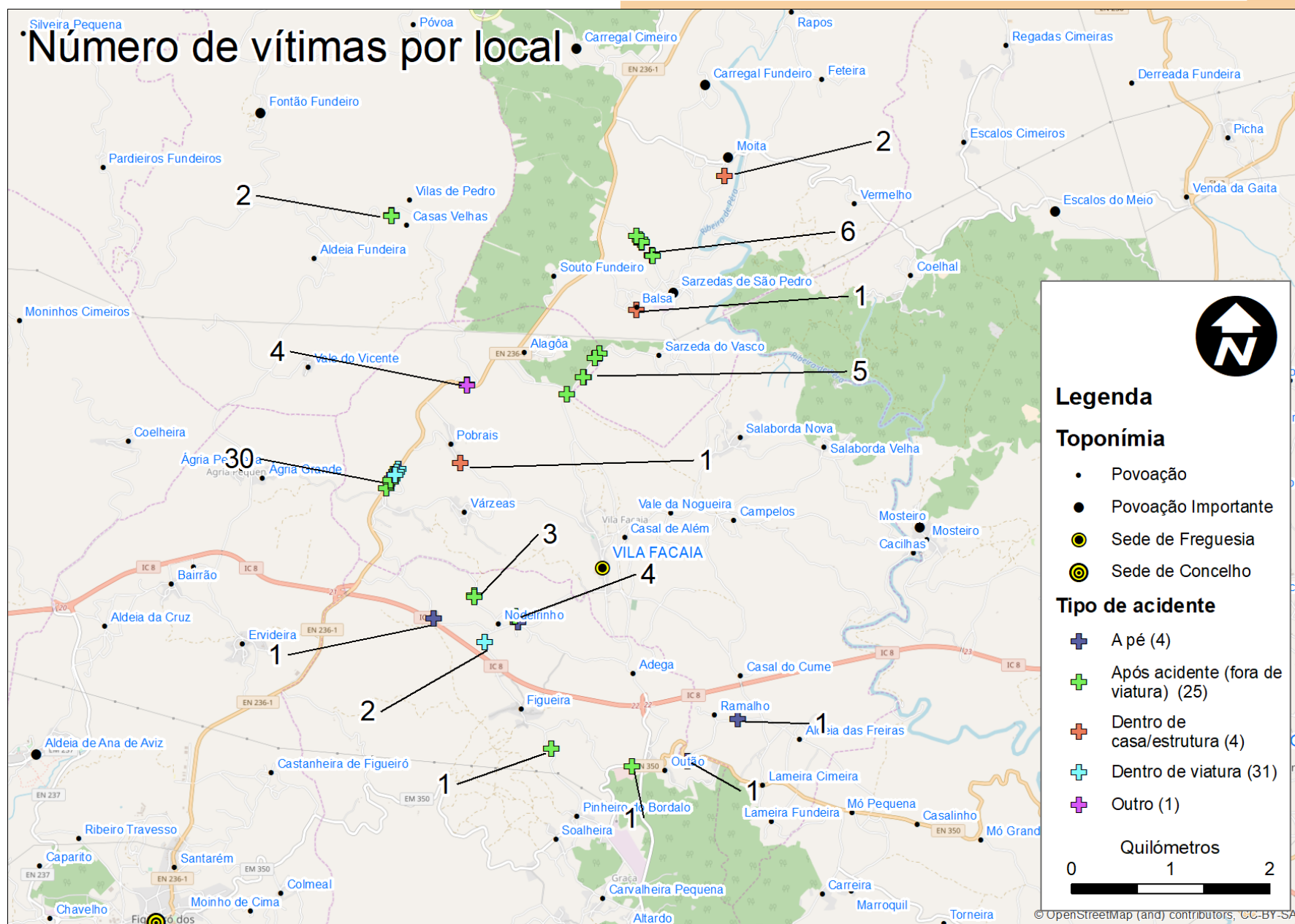
Figura 1 – Língua de fogo e chama aérea na zona do troviscal pelas 23h15 (imagem retirada do Vídeo: Youtube, Incêndio Pedrógão Grande - Anchas (Castanheira de Pera). Parte IV Fonte: <https://www.youtube.com/watch?v=ci-ecH>)



- Independent crown fires



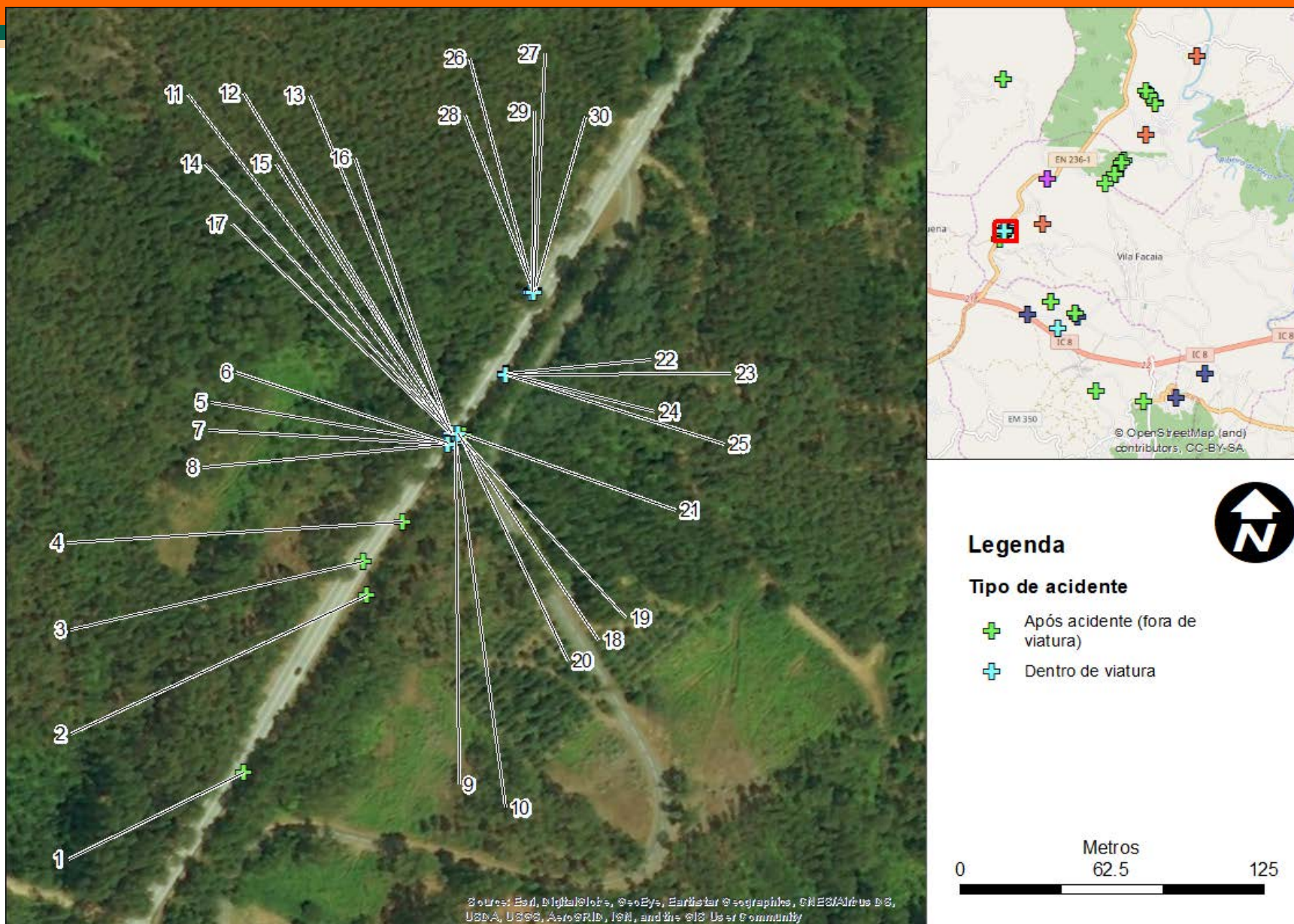
- 65 fatalities



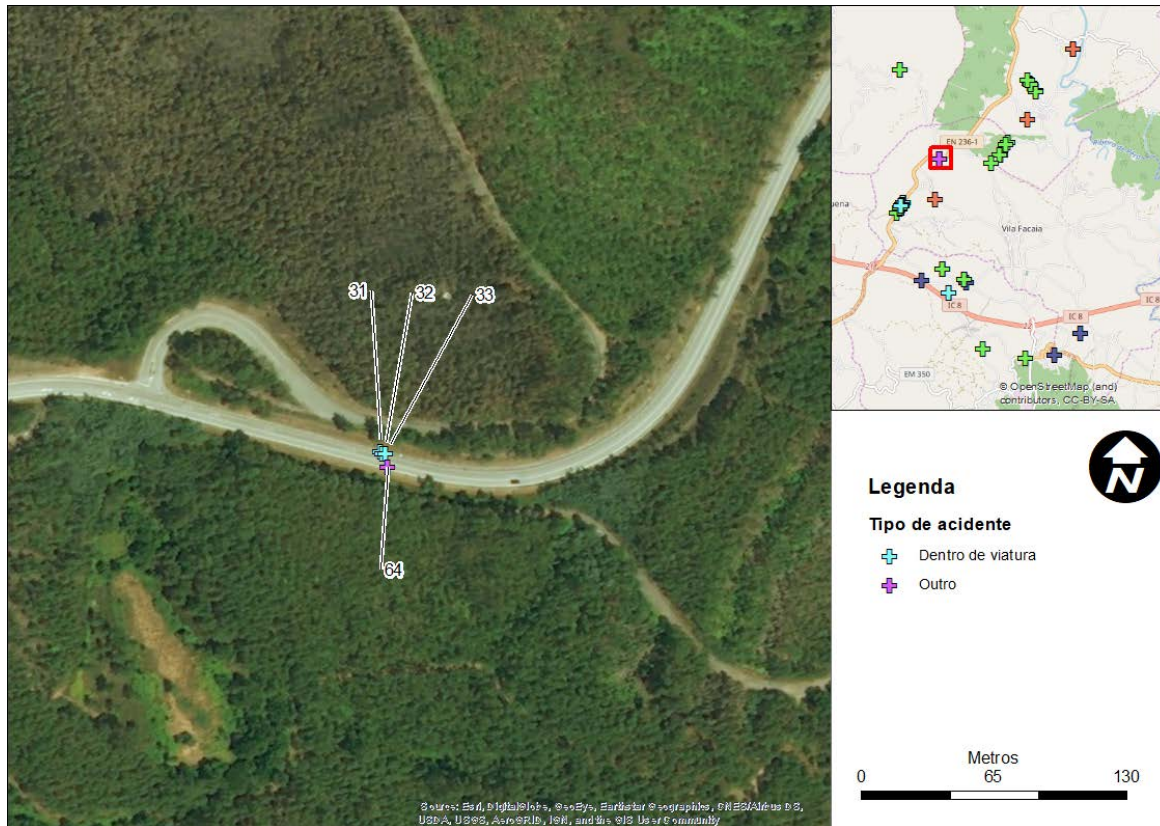


Troço da EN 236-1









- Accident involving a fire truck (4 victims)





- 9 persons left this house to get away from the fire

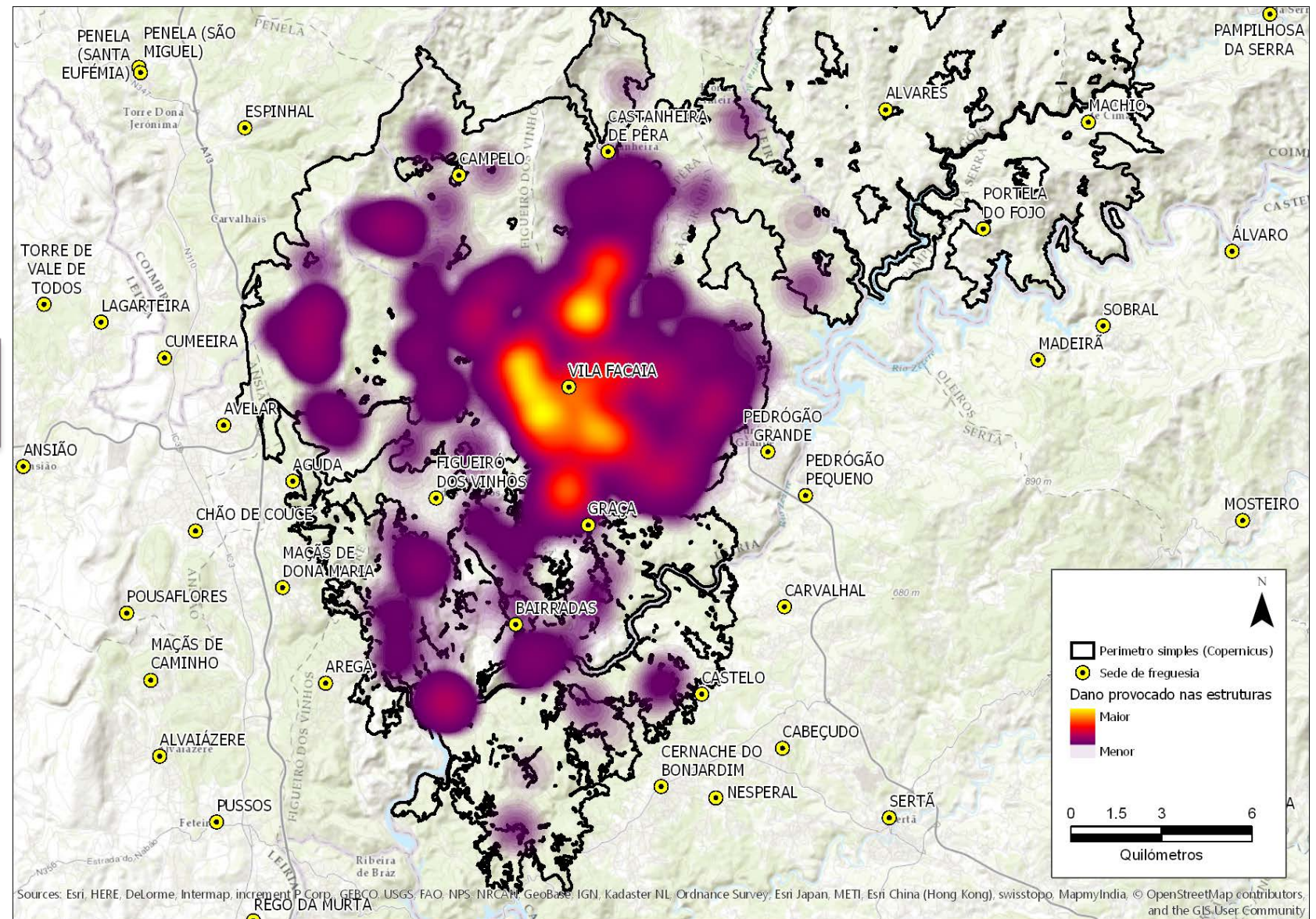


- Community survival



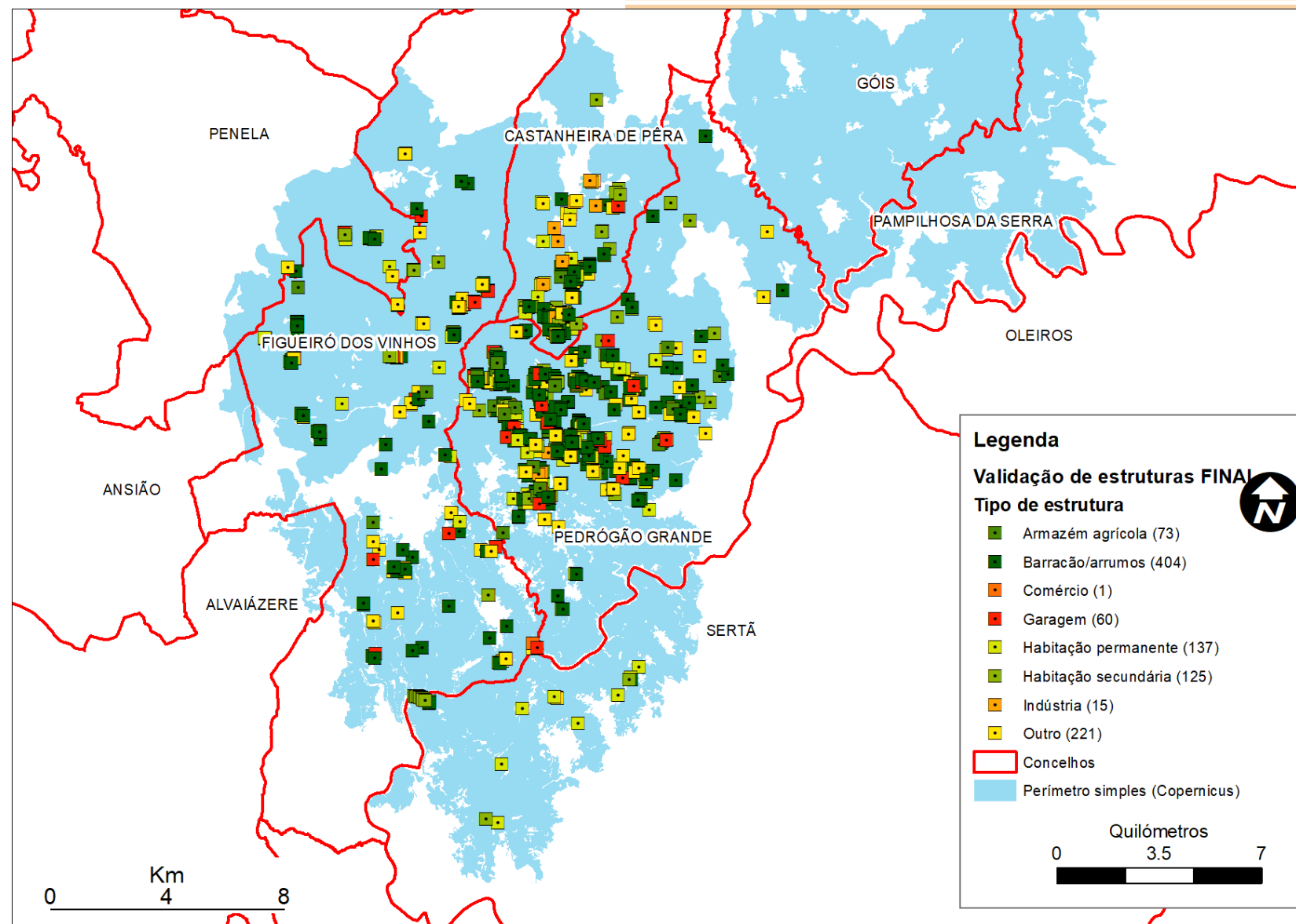
Impact on structures and communities

Heatmap de danos
provocados às estruturas

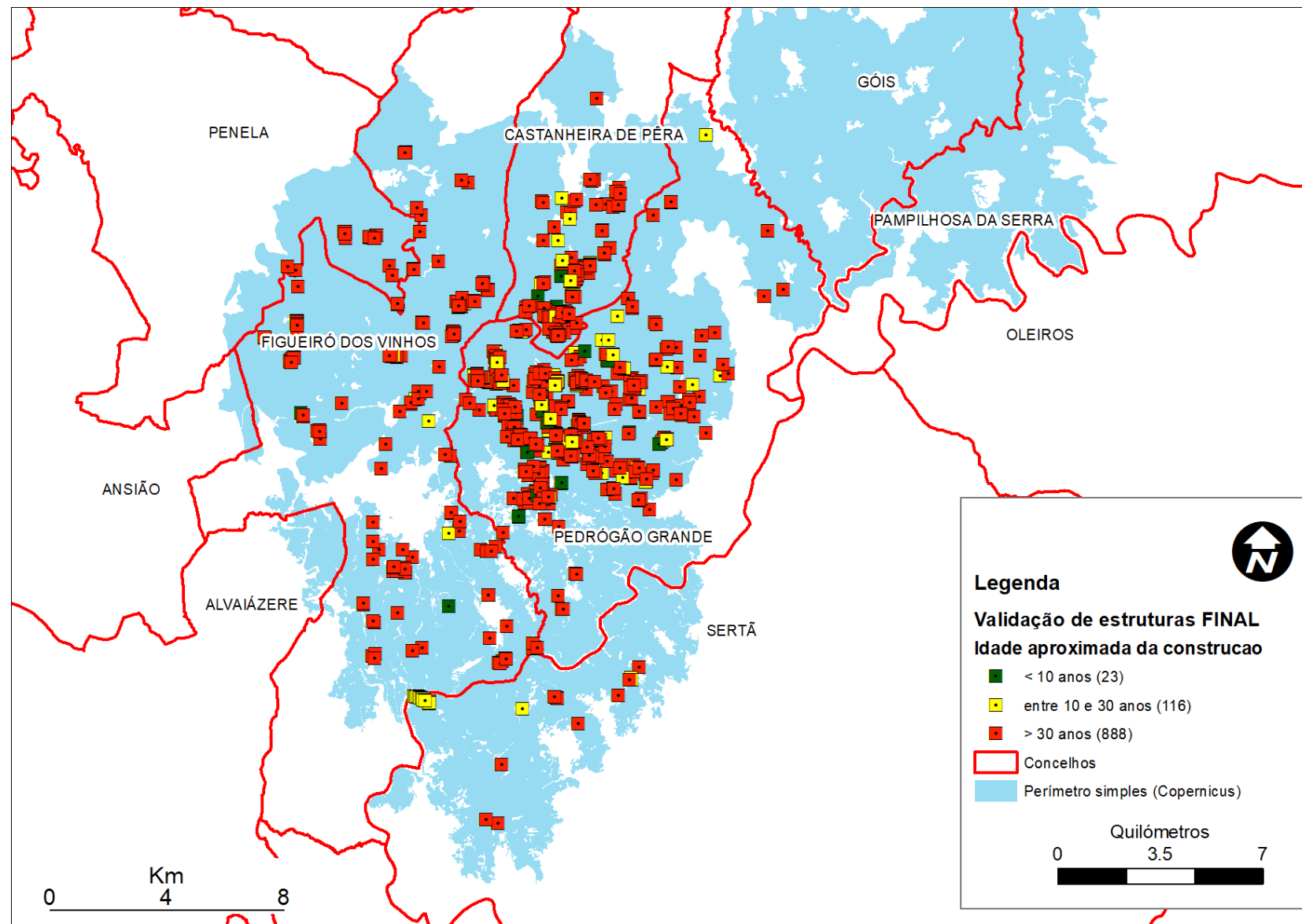


Outro tipo de estrutura

- palheiro (1)
- oficina e viveiro de animais (1)
- não perçetível (1)
- jardim de infância (1)
- galinheiro (1)
- estábulo (1)
- estrutura devoluta (130)
- espaço cultural (1)
- desabitada (1)
- curral (13)
- cozinha exterior (6)
- contentor (1)
- churrasqueira (1)
- casa desabitada (58)
- casa de madeira nas árvores (1)
- capela (2)
- anexo (1)
- Salão paroquial (1)



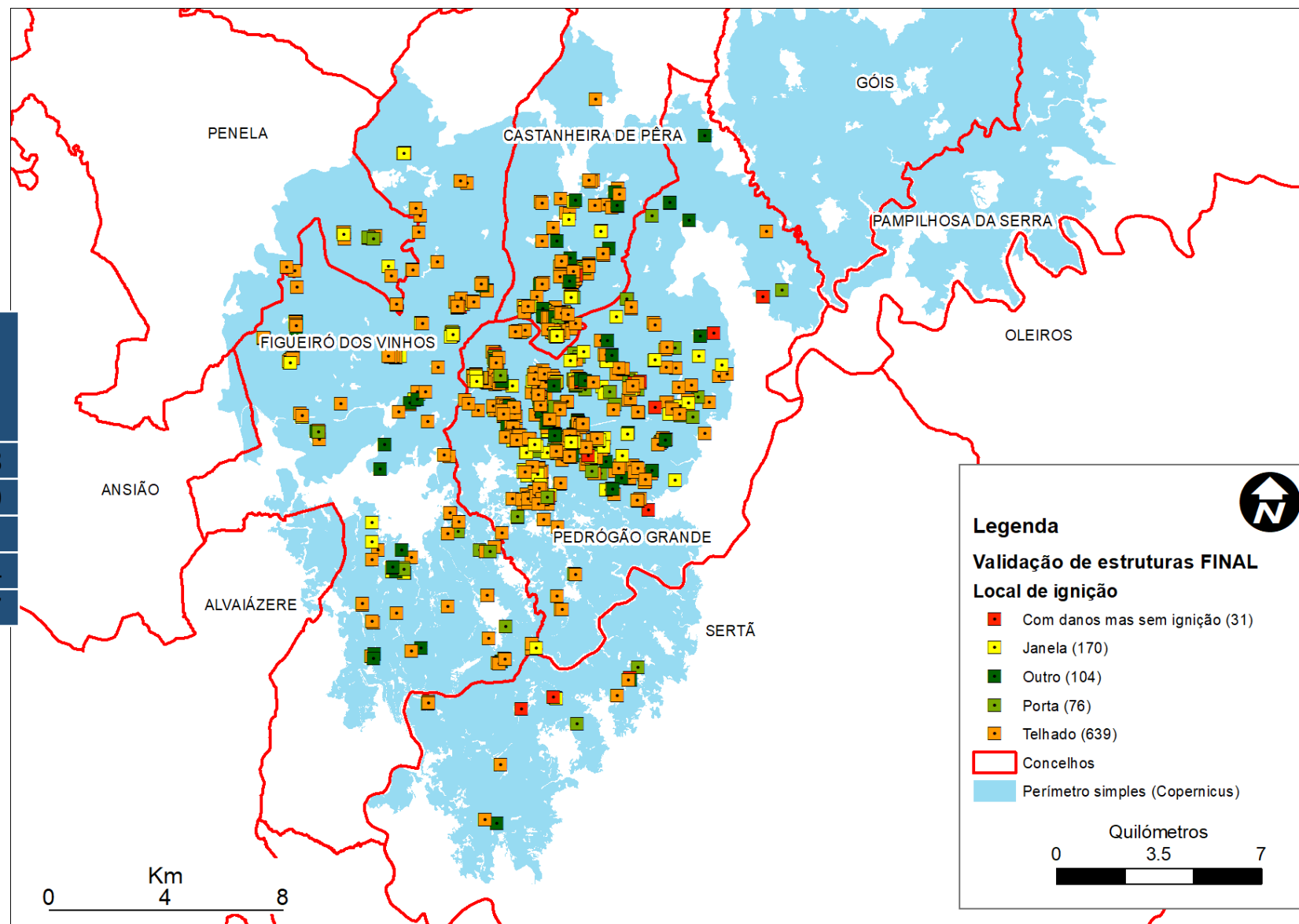
No geral, estruturas de idade avançada



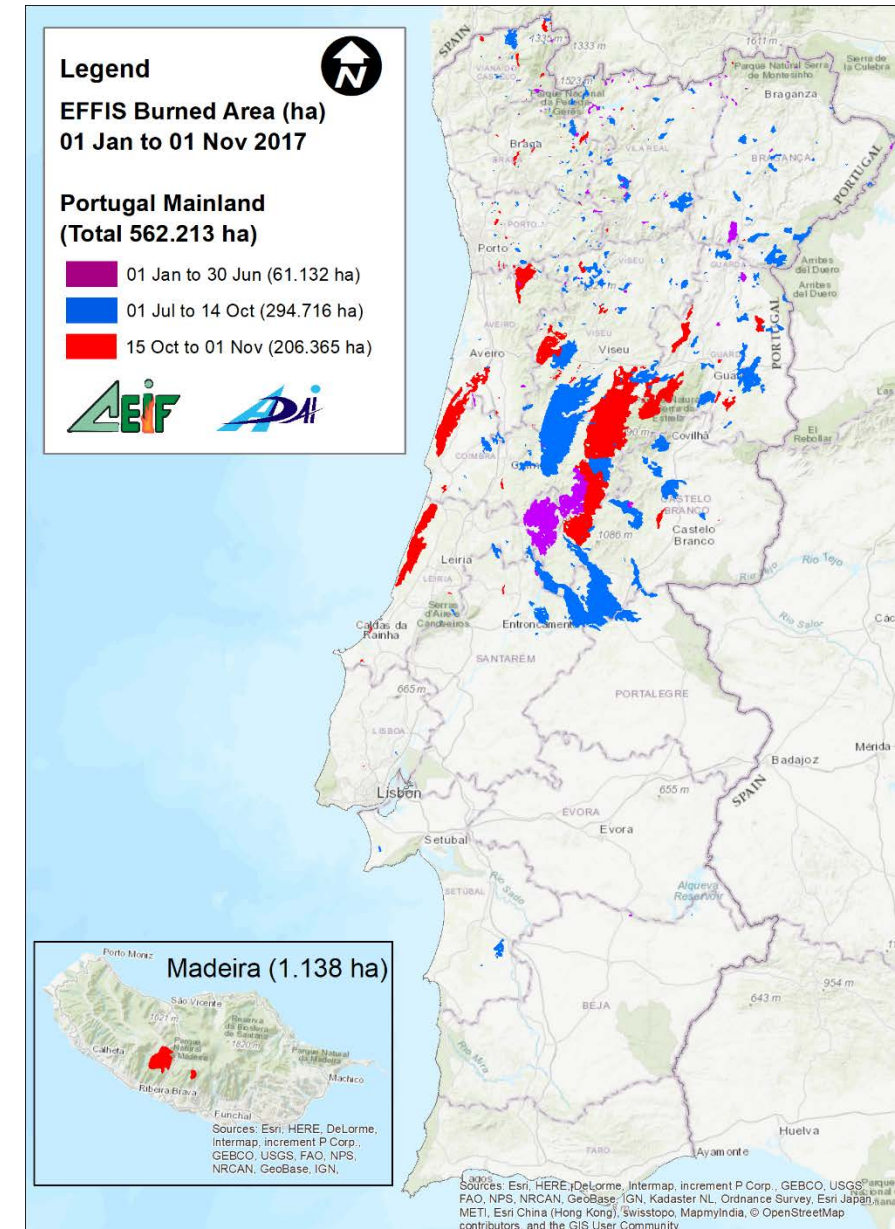
Ignição maioritariamente por fagulhas e pelos telhados

		Como se deu a ignição				Total
		Fagulhas (projeções)	Impacto direto do fogo	Materiais a arder na imediação	Outro	
Local de ignição	Telhado	347	236	54	1	638
	Janela	69	70	30	0	169
	Porta	31	33	12	0	76
	Outro	45	44	15	0	104
Total		492	383	111	1	987

Com danos mas sem ignição	
Vidros	2
Chaminé	1
Paredes, persianas e vidros das janelas	1
Persianas	4
Persianas e vidros das janelas	1
Telhado	18
Telhado e persianas	1
Vidros das janelas	3
Total	31



In Between



The fires of 15/16 October

- On the 15th October during the passage of Ophelia Ciclone in the Atlantic we had another surge of fires (>500 ignitions).
- Under strong wind and high temperatures in two days more than 200 kha were burned and 47 persons killed.

<https://www.publico.pt/2017/11/17/video/nasa-mostra-evolucao-dos-furacoes-deste-ano-no-atlantico-2017>

Forest fires in Portugal – 2017 (ICNF Report)

- The Large Wildfires
 - Wildfires are considered large when the total area affected is equal to or greater than 100 ha.
 - Until October 16, 2017, there were 188 fires in this category that burnt 389780 hectares of forest areas, about 93% of the total area burnt.

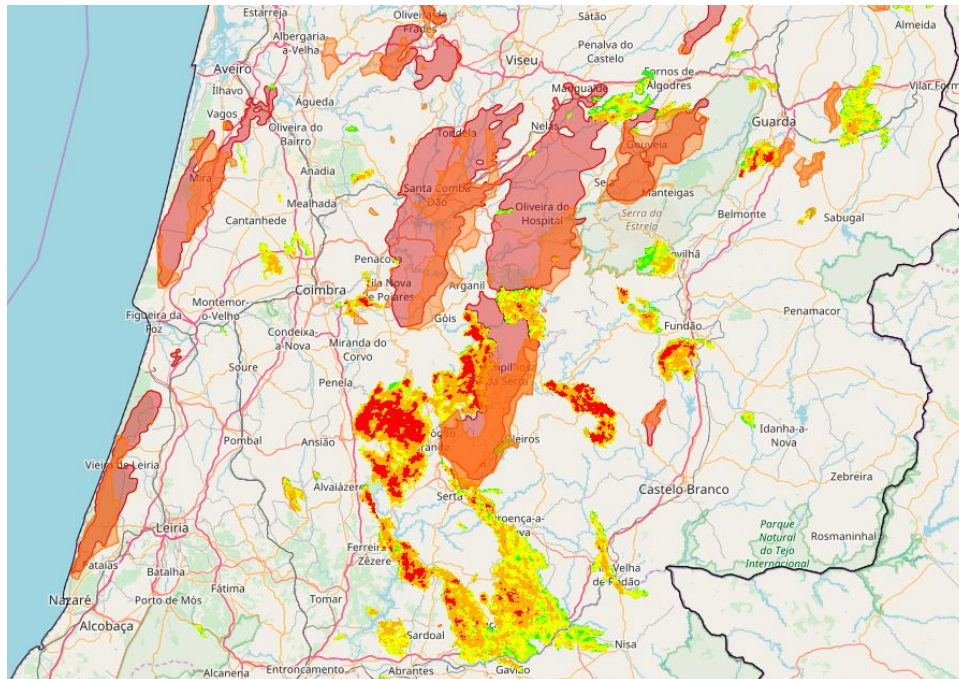


Fig.4: Large hot spots in the center of Portugal in areas of important population density, in the districts of Leiria, Coimbra, Viseu, Guarda and Aveiro – 16 Oct. Source: *Observador* journal by EFFIS images, 18Oct.

Forest fires in Portugal – 2017 (ICNF Report)

- Forest fires on the National Protected Area (RNAP)
 - Until October 16, 2017, was estimated which 37332 hectares of forest land was burnt in RNAP;
 - The most affected protected areas were:
 - Natural Park of *Serra da Estrela* - the largest burnt area (20116 hectares, about 22.6% of the total area of the park);
 - *Serra do Açor*;
 - Natural Monument of the *Portas de Ródão*;
 - 80% of the “Mata Nacional de Leiria”, was burnt (10000 to 11000 ha)



Fig.5: National Forest of Leiria;
Source: Turismo Centro de Portugal, 2017.



Fig.6: National Forest of Leiria affected by the fire
 (15 Oct 2017); Source: Diário de Notícias, 16 Oct.

Photos of the Forest Fires 15 Oct 2017 – Portugal

The day with more fires of the year

Lousã



Fig.7: Vila Nova de Poiares in Lousã; Source: Ricardo Graça/LUSA.

Photos of the Forest Fires 15 Oct 2017 – Portugal

Lousã



Fig.8: Lousã; Source: Fernando Fontes / Global Imagens.

Photos of the Forest Fires 15 Oct 2017 – Portugal

Viseu



Fig.9: Viseu; Source: TVI24,2017.



Photos of the Forest Fires 15 Oct 2017 – Portugal

Vieira de Leiria



Fig.14: Vieira de Leiria; Source: H lio Madeiras









Photos of the Forest Fires 15 Oct 2017 – Portugal

Braga



Fig.10: Braga; Source: Gonalo Delgado/ Global Imagens

Photos of the Forest Fires 15 Oct 2017 – Portugal

Valongo



Fig.11: Valongo; Source: Leonel de Castro / Global Imagens

Photos of the Forest Fires 15 Oct 2017 – Portugal

Ericeira



Fig.12: Ericeira; Source: Nuno Pinto Fernandes/Global Imagens

Photos of the Forest Fires 15 Oct 2017 – Portugal

Leiria



Fig.13: Leiria; Source: Leandro Grumete/Global Imagens



Conclusion

- The fires that occurred in Portugal raised a great concern in the society and are demanding changes and reforms.
- The scientific community is also challenged.
- They should constitute a study case for one or more international research projects.

8th INTERNATIONAL CONFERENCE ON

FOREST FIRE RESEARCH

Conference Chairman: Professor Domingos X. Viegas (ADAI, University of Coimbra, Portugal)



10 – 16 November 2018
Coimbra, Portugal



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Conference Topics

A wide range of topics involved in this pluri-disciplinary problem can be covered by the authors during the Conference. Papers or posters dealing with the most relevant topics related to forest fires on a scientific basis will be accepted. These topics are only indicative therefore submissions can cover other relevant aspects:

- Human and Institutional factors
- Forest management and Fire Prevention
- Fire at the Wildland Urban Interface
- Forest Fire Risk assessment and Climate Change
- Fire Detection and Monitoring
- Remote Sensing
- Fire Management
- Fire Suppression and New technologies
- Large Fires
- Fire Safety
- Economic Issues
- Fire Ecology
- Evaluation and management of burned areas

Related events

V Short Course on Fire Safety(10 November 2018)

|

VIII Short Course on Fire Behaviour (11 November 2018)

Contacts

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3031-601 Coimbra
PORTUGAL

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Fax.: +351 239 790771
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www.adai.pt/icffr

Deadlines

The deadlines for participating in the Conference are:

- Presentation of Abstracts 15 February 2018
- Acceptance of Abstracts 30 April 2018
- Full version of Papers or Posters 30 June 2018
- Early Registration 30 September 2018
- Early Hotel Reservation 30 September 2018
- Definitive Program 31 October 2018

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