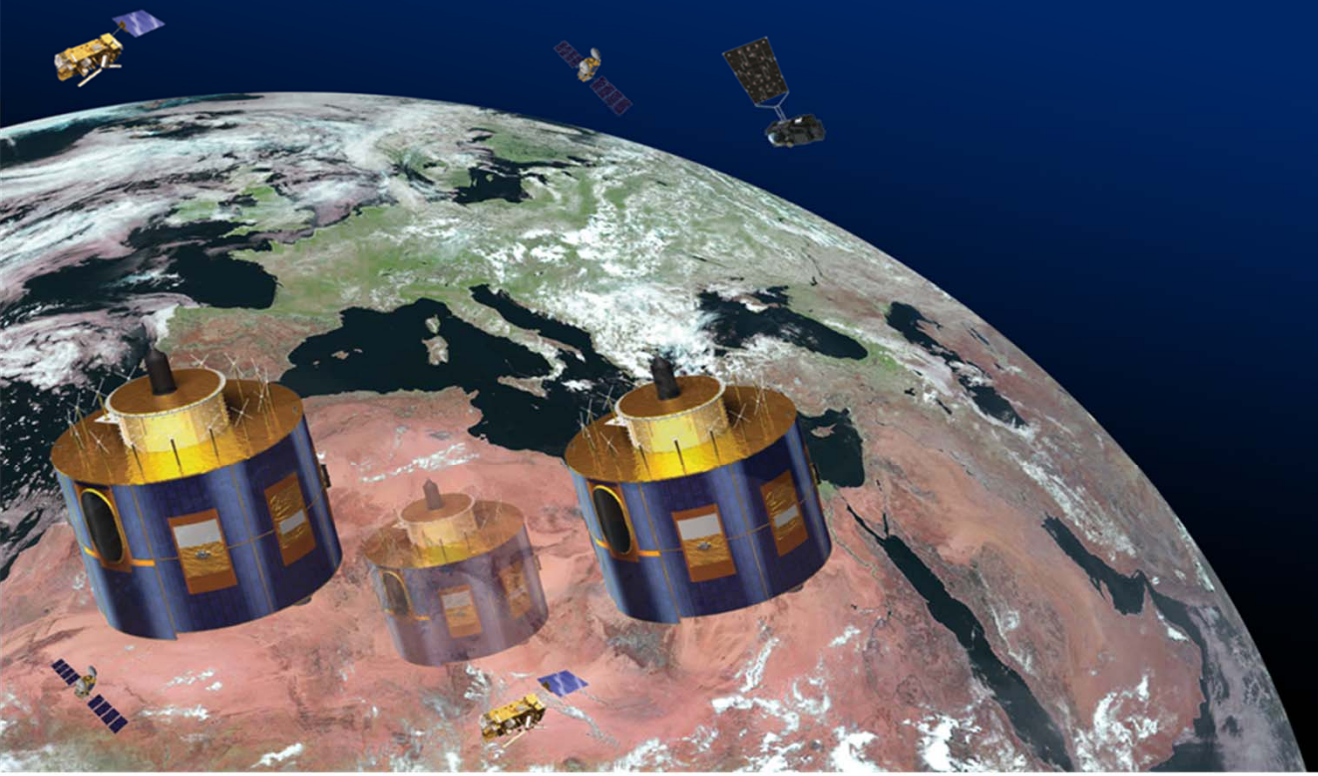
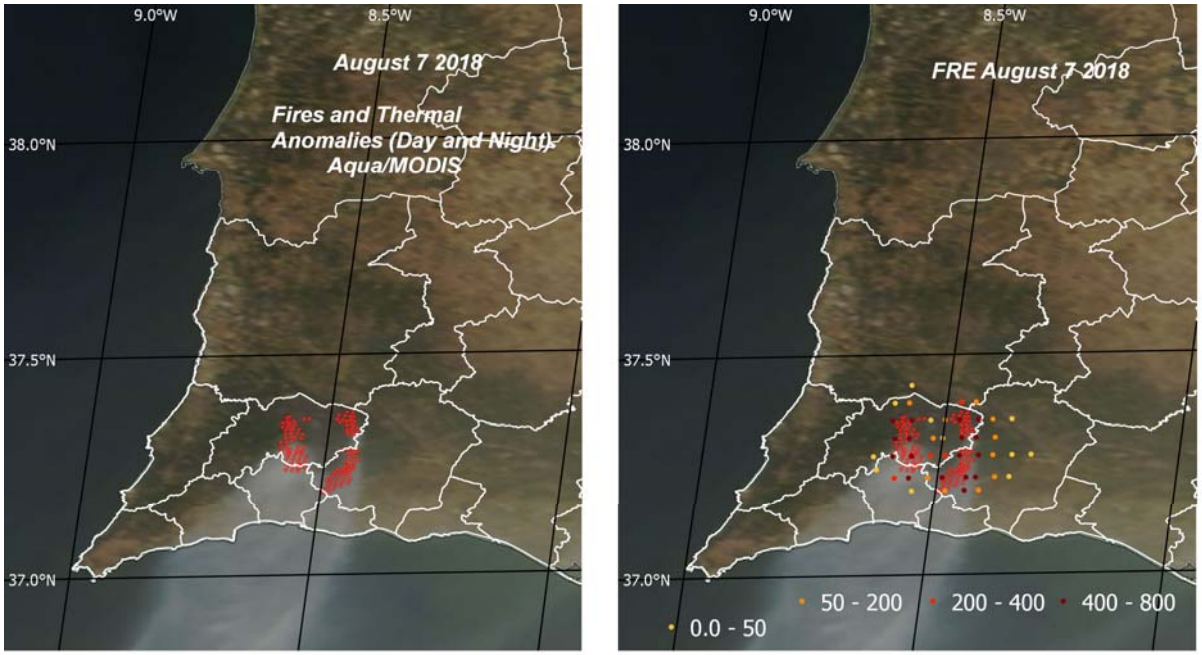
MTG key applications: 2018-08-04 Fires Portugal

- case overview



Scope: Fire products and advanced resolution fire monitoring

- **Algarve, Portugal - threat to tourists and vegetation**
- **Advanced resolution brining improved fire, smoke and burnt scars detection**



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Data and imagery

- **MODIS:** Fire Temperature RGB @1km
  (channels used 3.7um, 2.1um and 1.2um, 1.6um channel detectors not working properly with MODIS)

- **SEVIRI:** Natural Colour RGB @3km
  HRV Composite @1km

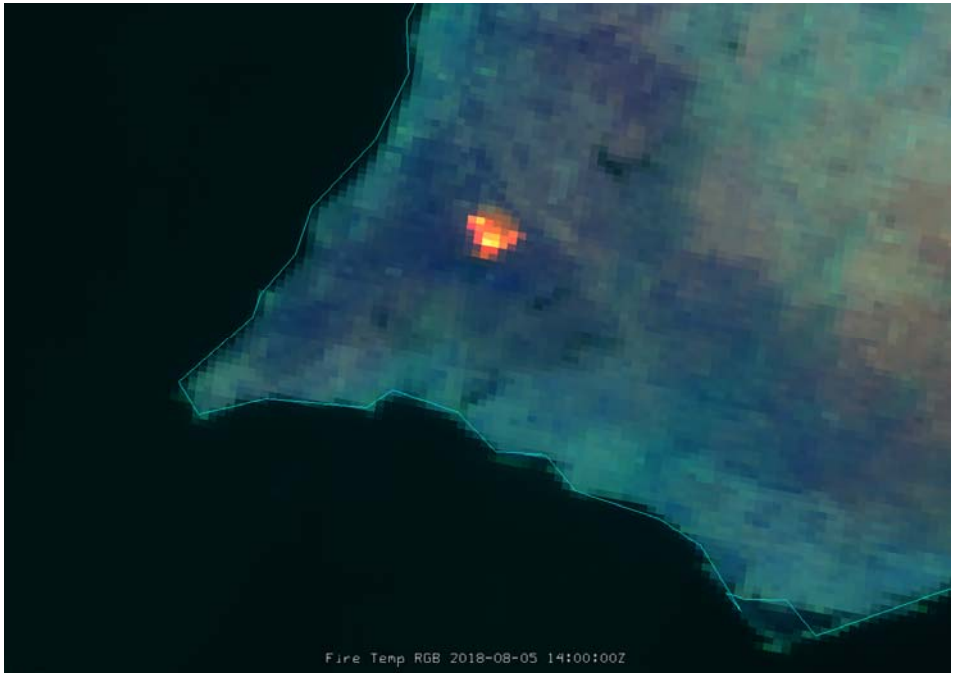
- **6-day FRE product L-SAF Product:**Rendered imagery
  (FRP and FRE reachable in shapefile from IPMA)

Additional info

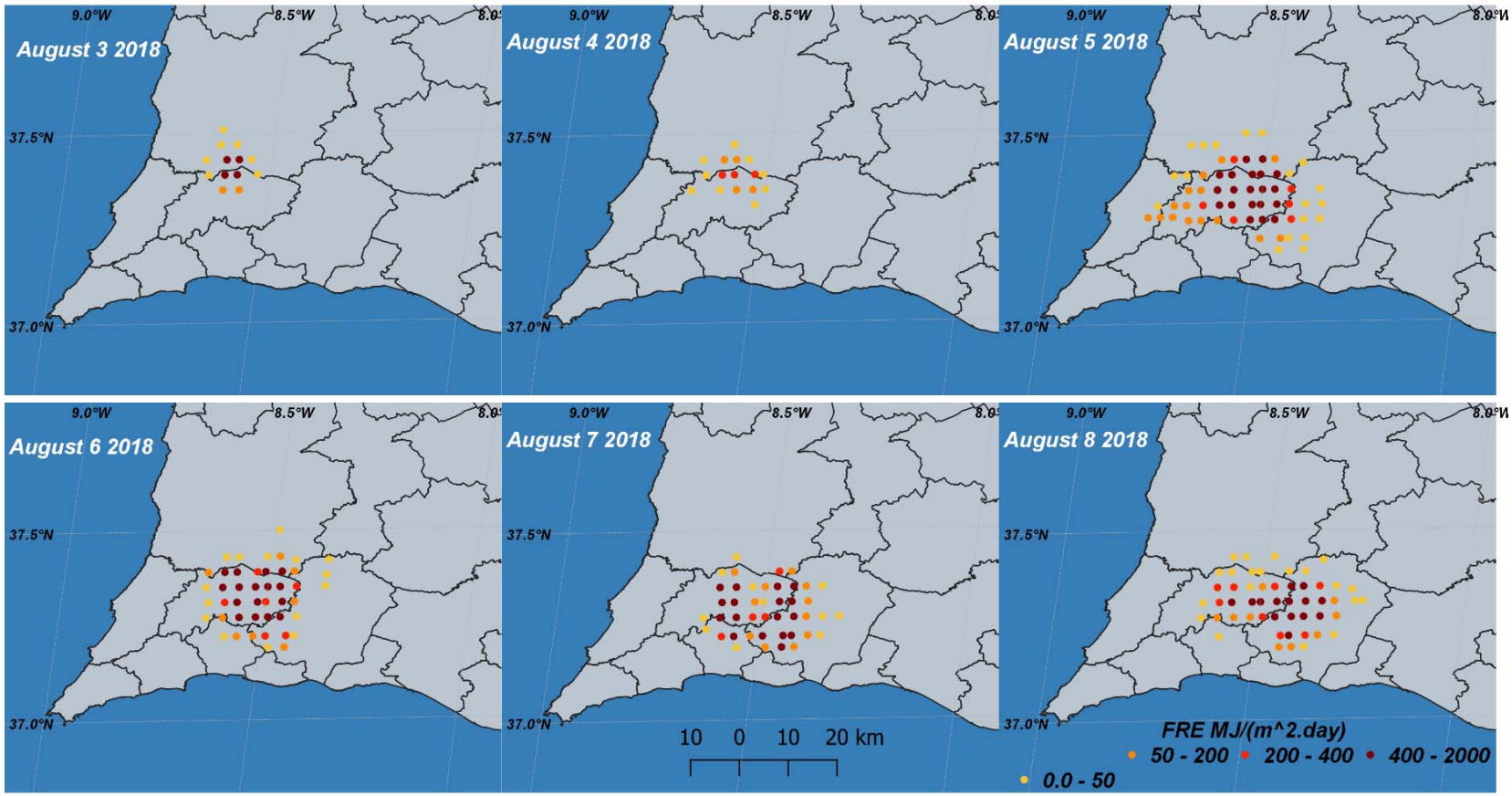
There were questions in connection Fire Temperature RGB below. Whether some imagery can be overlaid that would show smoke as well?

Answer: not possible because:

- if there is considerable smoke in the scene then fire intensity is not that clearly detected (which is the purpose of the product);
- channels used for RGB components not suitable for smoke detection'
- overlay of, for instance Natural Colour RGB, would influence the colour scheme too much.



Few days of active fires - FRE product



FRE product overview

The *FRPPIXEL* product records information on the location, timing and fire radiative power (FRP, in MWatts) output of landscape fires (wildfires) detected every 15 minutes across the full Meteosat disk at the native spatial resolution of the SEVIRI sensor.

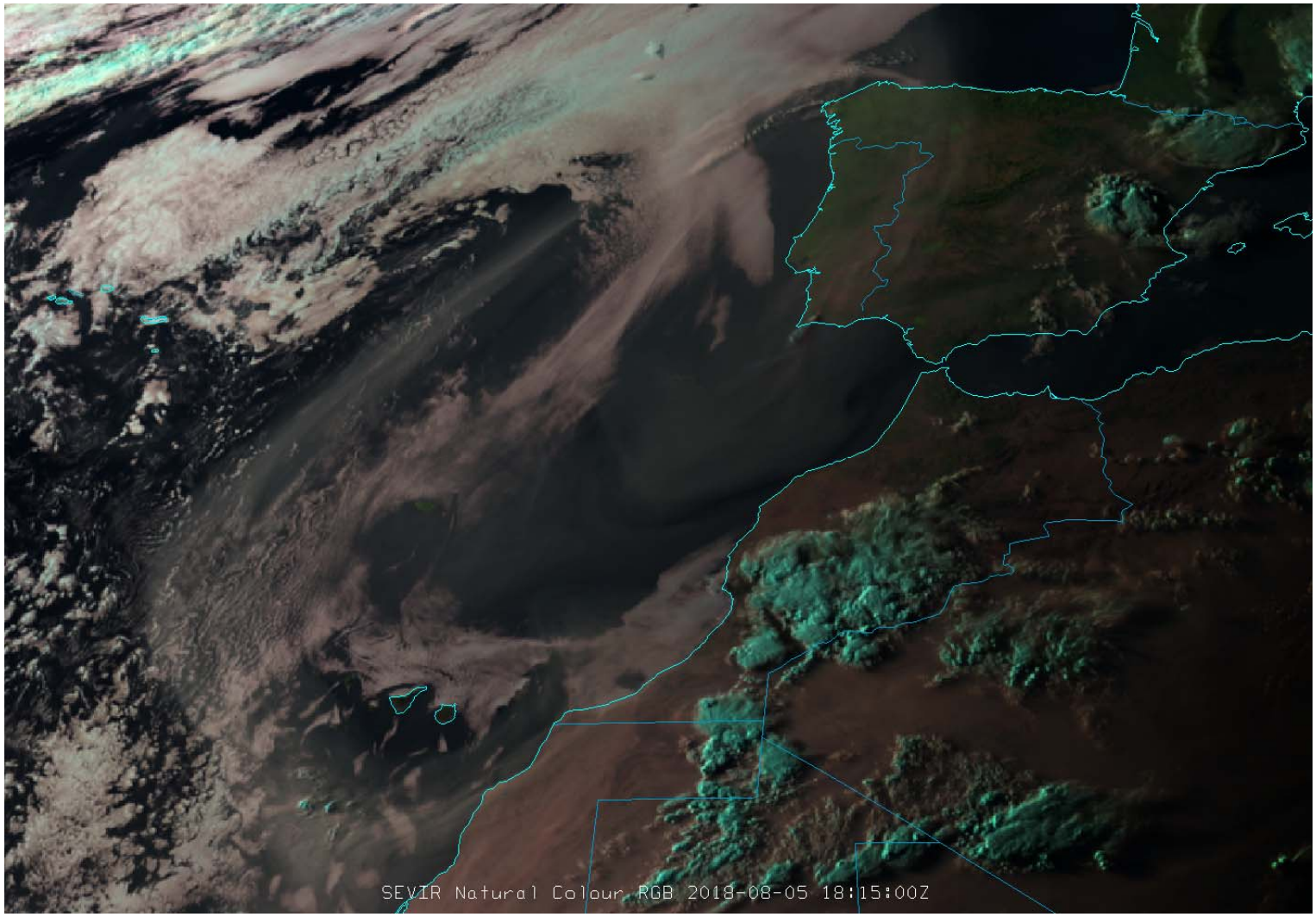
It has been demonstrated in small-scale experimental fires that the amount of radiant heat released in a fire per unit time (i.e. the Fire Radiative Power) is closely related to the rate at which fuel is being consumed.

This is a direct result of the combustion process, whereby carbon-based fuel is oxidised to CO_2 (and other gaseous and particulate products) with the accompanying release of a certain 'heat yield'.

Measuring this FRP and integrating it over the lifetime of a fire provides an estimate of the total Fire Radiative Energy (*FRE*) released, which for landscape fires should be proportional to the total amount of biomass burned

Overview: 2018-08-05 Fires Portugal

Dust from Western Sahara swirled over Portugal into the scene (embedded in the anticyclone), obscuring the fires to a degree



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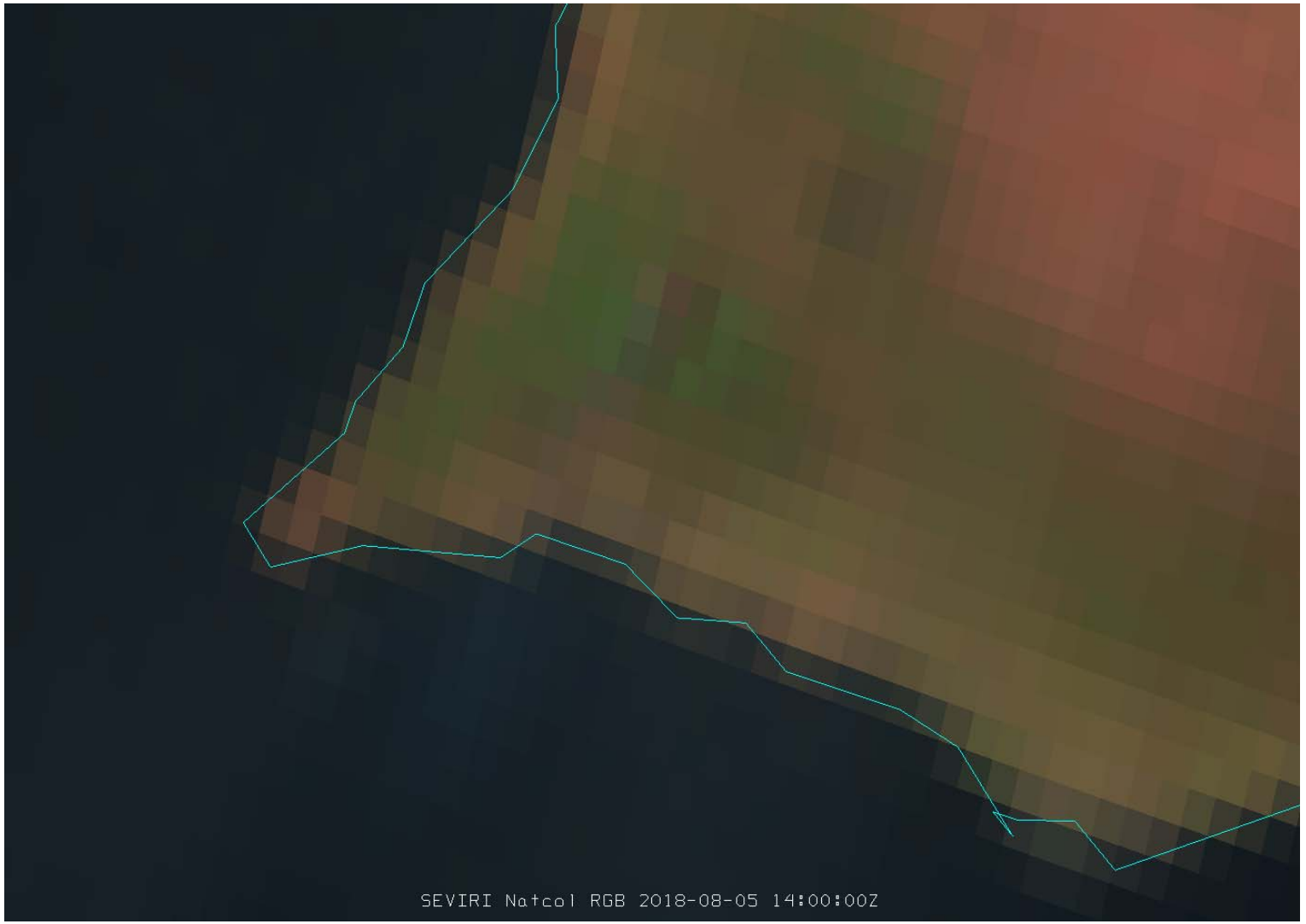
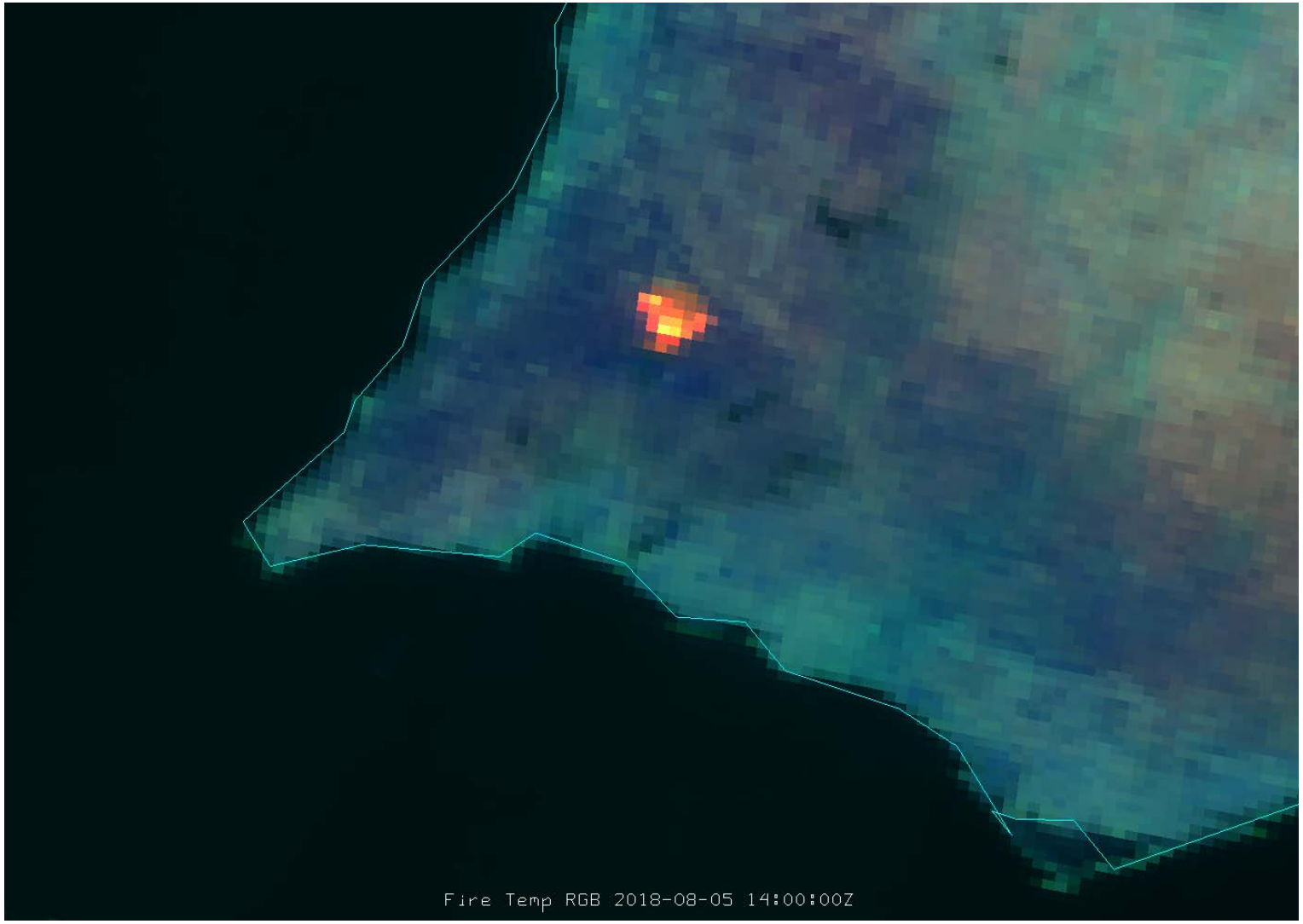
SEVIRI view – 05/08/18

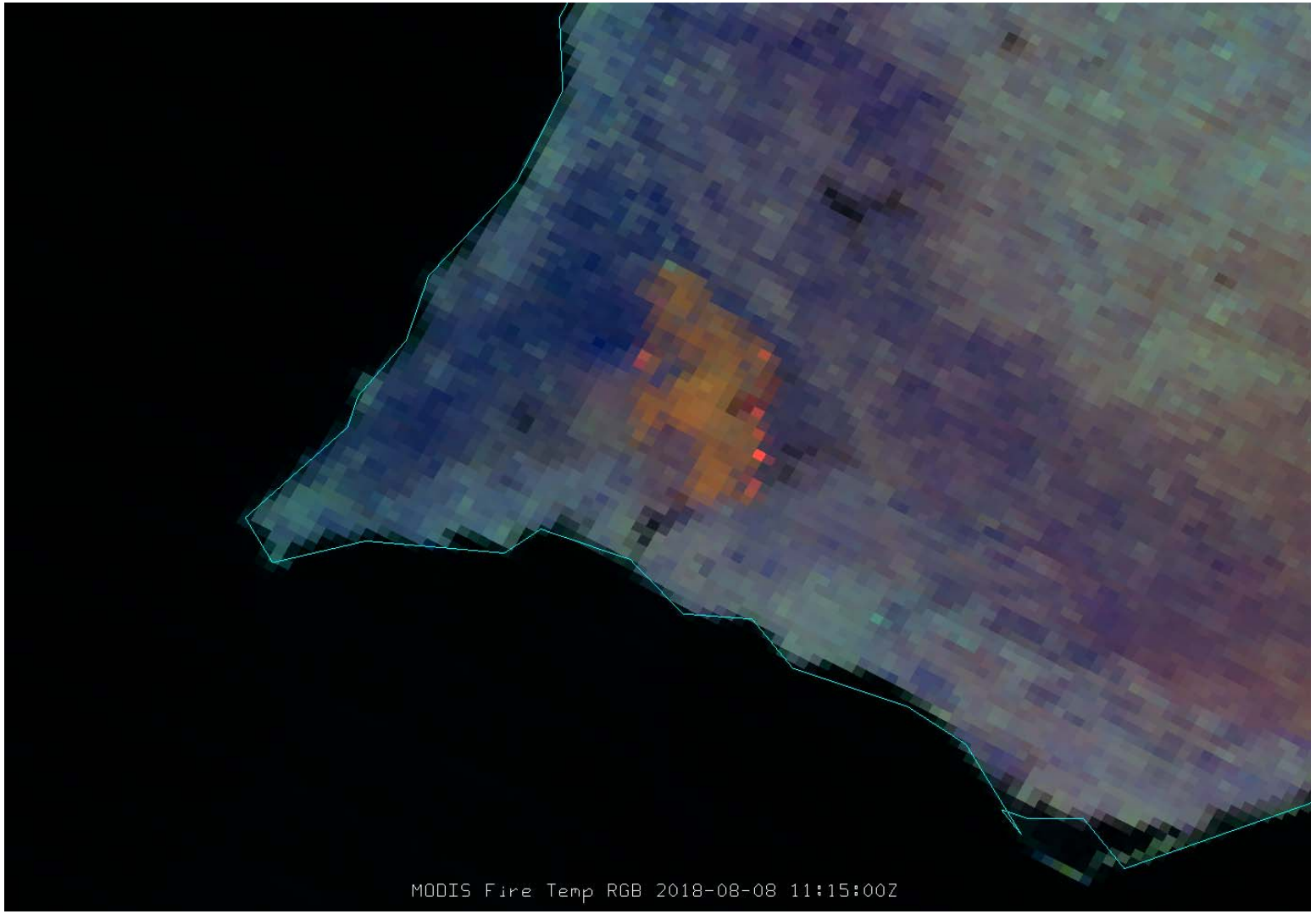


MODIS view – 05/08/18



MODIS View – 08/08/18

Burn scars (in brown shades) plus active fires visible



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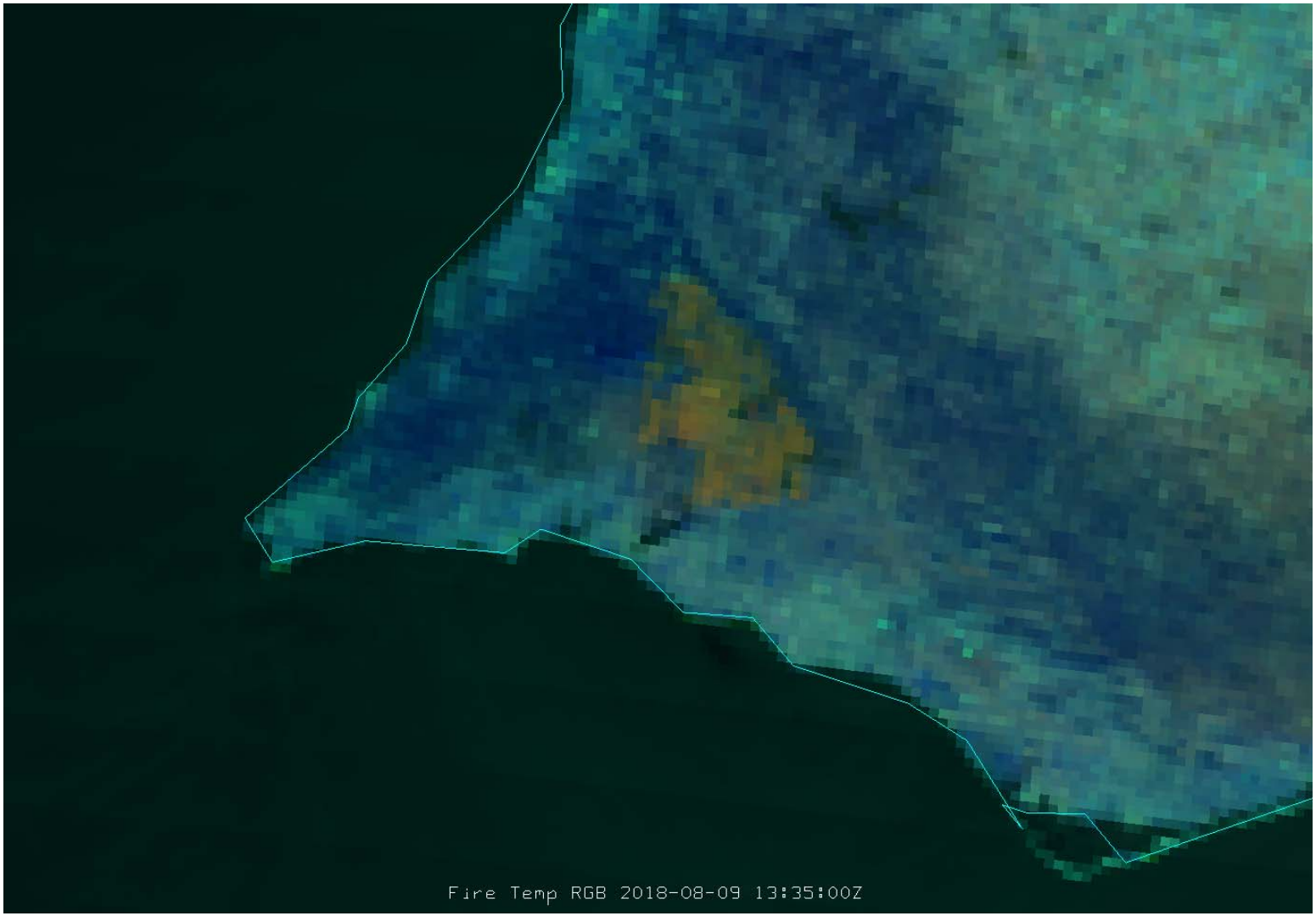
MODIS View – 09/08/18

Only burn scars left, fire activity at minimum



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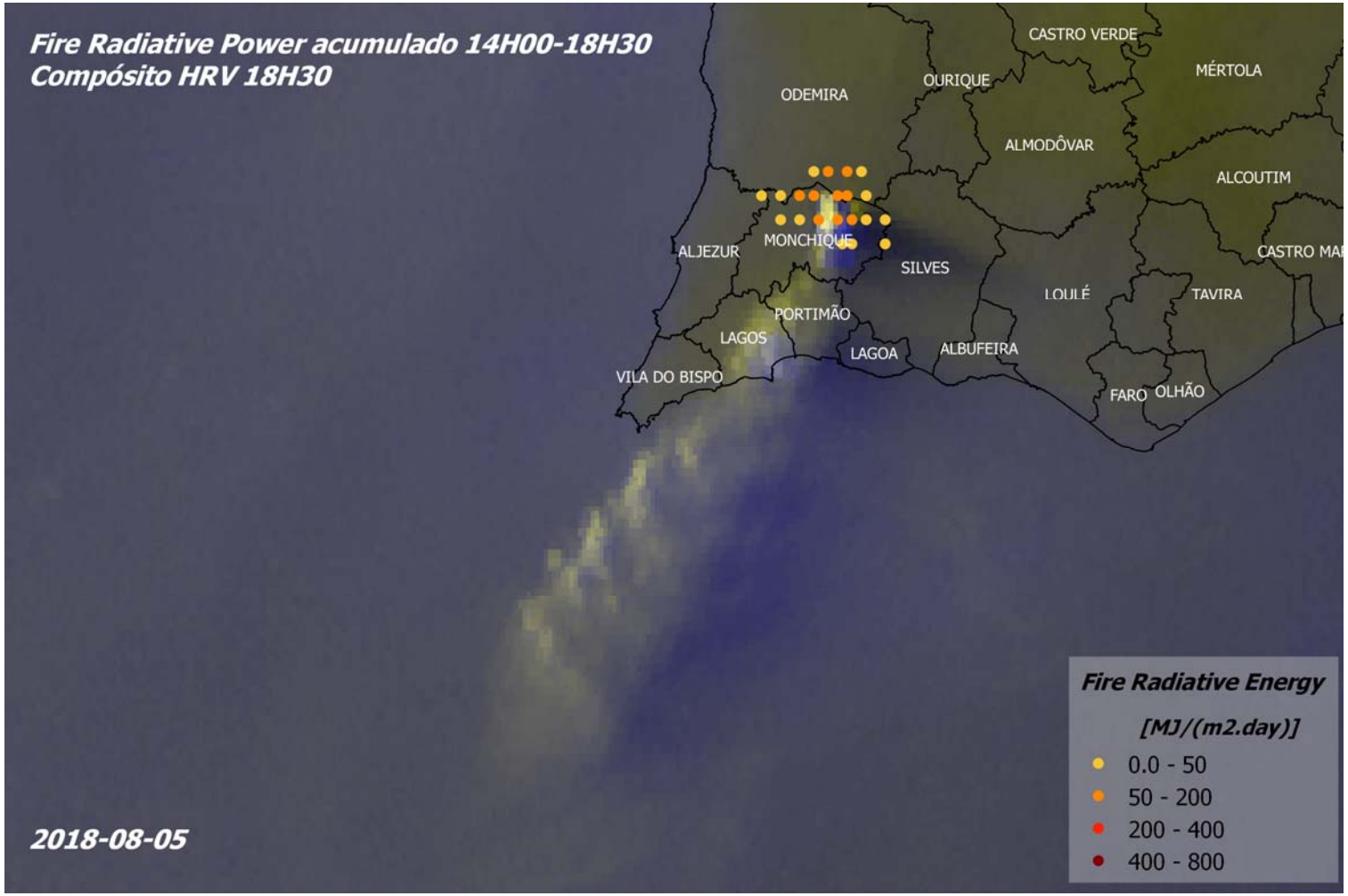
SEVIRI with FRE product overlaid



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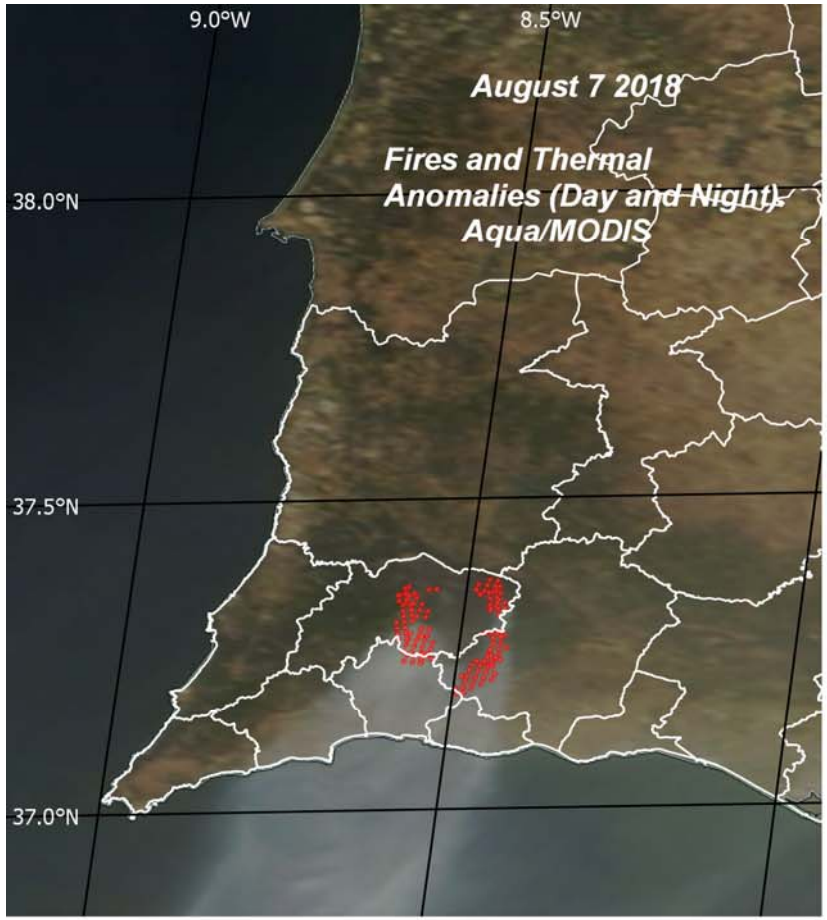
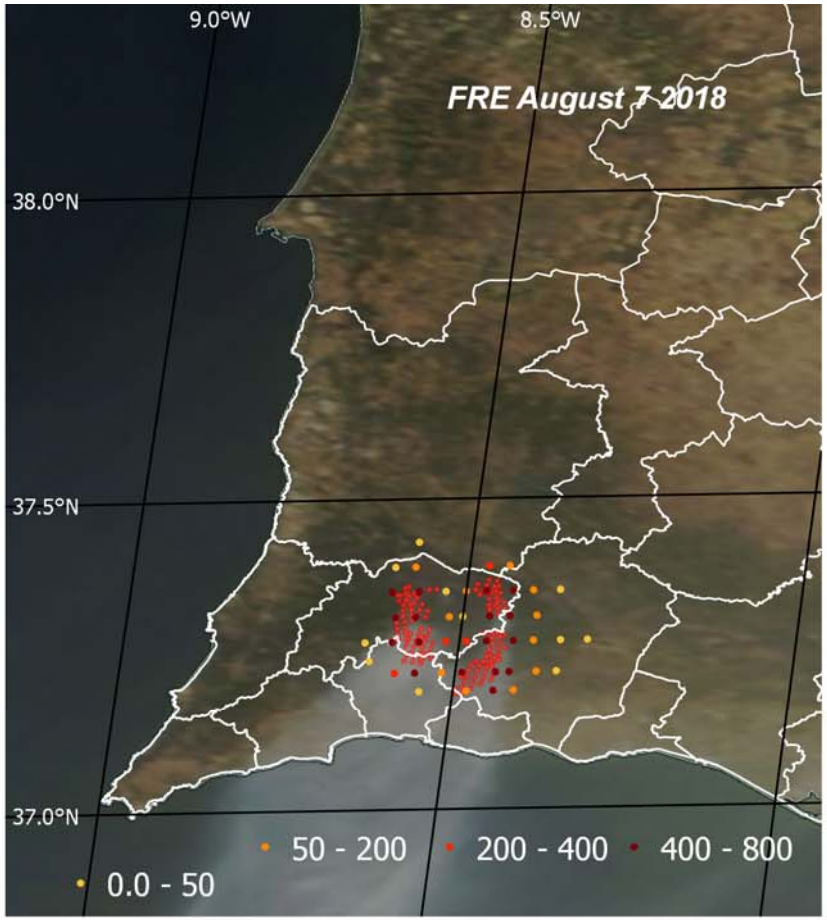
MODIS with FRE product overlaid

FRE (from SEVIRI) vs Fires and Thermal Anomalies (Day and Night) from AQUA/MODIS, 7 August 2018.

The FRE in this image are the daily values (MJ/(m^2.day))





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