

Author's response to comment from Paulo Fernandes on

"Tracing devastating fires in Portugal to a snow archive in the Swiss Alps: a case study", by Dimitri Osmont et al., submitted to TC

We would like to thank Paulo Fernandes for his constructive comment which helped us to improve the quality of this paper. Please find below our response to your comment (in blue) and our changes to the manuscript (in grey and italic).

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This is interesting work. Just a short comment in relation to the burned area estimate. The fire blowup, with extremely high rate of spread and pyCb formation and collapse that killed 66 people, occurred on the first day of its development. As such your 17th June burned area estimates are underestimated by one order of magnitude. According to our reconstruction (CTI 2017), resulting from the combination of various ground- and remote sensing-based information, burned area on the 1st and 2nd days was 128 and 211 km², respectively. Thus remote sensing products did not detect fire growth nor peak FRP happening at about 19-21 h PM on the 17th, presumably because of the combination of dense smoke with thunderstorm clouds.

Thank you for your comment. We actually analysed remote sensing data for the 17th, but did not describe this in detail in the manuscript. On the 17th, the fire was early detected by Soumi/VIIRS (375m) about 13:46-13:47 UTC few kilometres from a thick cumulonimbus cloud. For Aqua/MODIS 1km data (overpass time 13:45-13:50 UTC – almost simultaneous overflight), the fire was too small to be detected. This explains why FINN has no emission entries for the 17th. This was included in the manuscript.

An additional comparison of the Aqua/MODIS and VIIRS/NPP Active Fire Product (375 m spatial resolution; Schroeder et al., 2014) showed, that the fire was early detected by the VIIRS/NPP Fire Product at ~13:46 UTC. The fire was located few kilometres away from a thick cumulonimbus cloud. Though, the overpass time of Aqua/MODIS was almost simultaneous (i.e. 13:45-13:50 UTC), the fire was too small to be detected by the coarser spatial resolution sensor (1 km). This explains why FINN v1.6 has no emission entries for 17th June.