

Supplement of “Satellite vs. Ground-Based Estimates of Burned Area in Greece: Validation of MODIS MCD64A1 Data Using Fire Service Reports”

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Section 1. Study area categorization

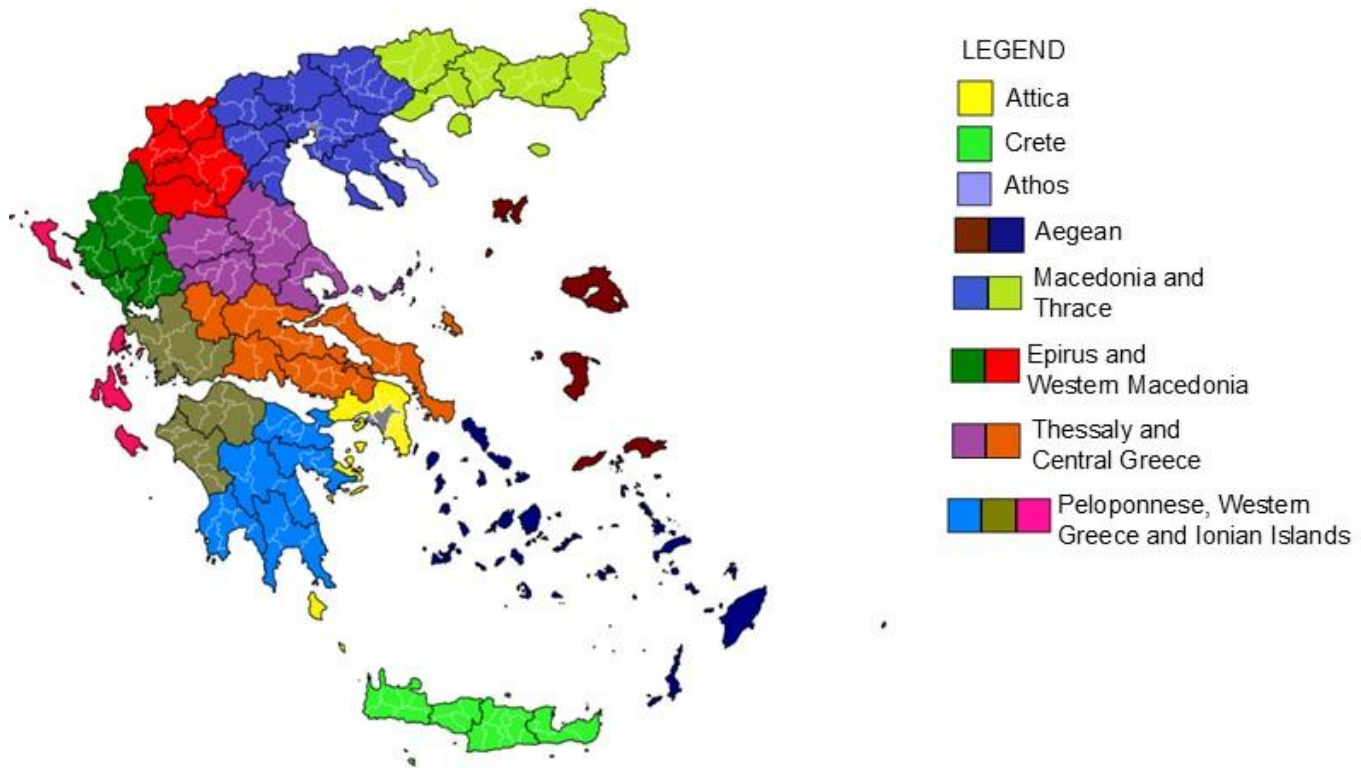


Figure S1. Decentralized administrations of Greece in accordance to Greek state Law 3852/2010 (Kallikratis Programme).

Section 2. Annual burned area maps for 2020-2023

Figures S2-S5 display the spatial variation on burned area for Greece for MODIS MCD64A1 and Fire Service's reports for the years 2020-2023. Since 2020, the Fire Service has recorded fire events as simply point locations (x, y coordinates), rather than delineating the exact BA. Maps that are based on Hellenic Fire Service records, show a representative burned area relative to the total area. However, this area is depicted as a circle around the recorded coordinates, which does not coincide with the actual shape and perimeter of the burned area. While the total burned area is depicted in hectares, the geometric depiction does not capture the boundaries of the fire.

The country maps in Figs. S2-S5, show the cumulative burned area for selected years, with the month of detection, are indicated in the legend. The left side maps are derived from the MCD64A1 burned area product at full spatial resolution (nominal 500m, actual 463 m), sourced from Global Wildfire Information System (GWIS), <https://gwis.jrc.ec.europa.eu>. © European Union, 2020, CC BY 4.0.

It is important to note that, as MODIS is a global product, BA is also depicted in neighboring regions outside Greece. However, the data analysis is focused exclusively on Greece, and these areas are not included in the values of study.

Since satellite-based fire records detect fires in fewer months than those reported by the Fire Service, monthly maps were generated from MODIS data for each month in which a wildfire was detected across Greece. For the same months, corresponding maps were produced using Fire Service data, considering only fires with a burned area (BA) of ≥ 1.466 ha.

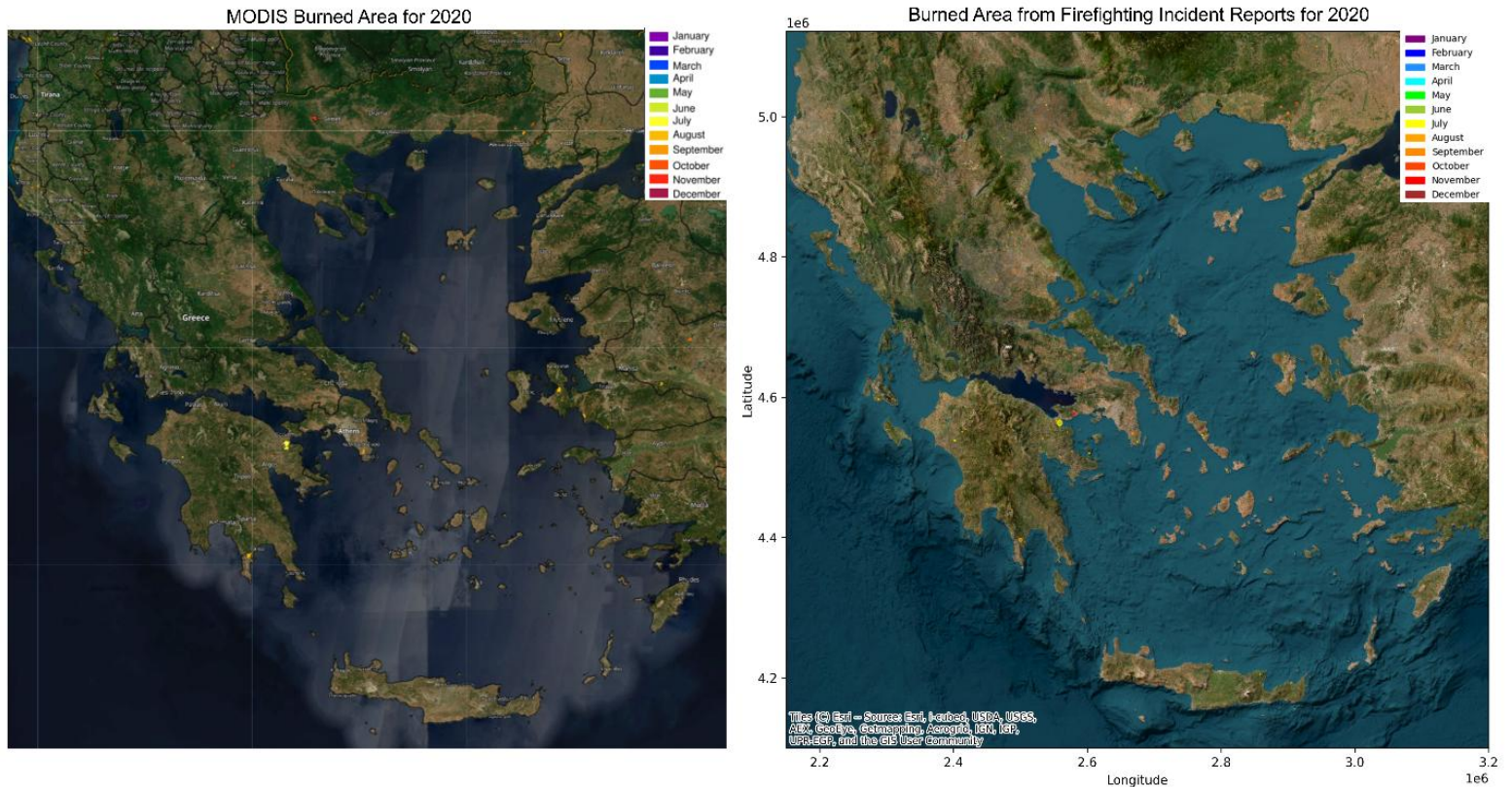


Figure S2. Maps of Greece's burned area in 2020 ($\geq 21,466$ ha) based on MODIS MCD64A1 product via GWIS (<https://gwis.jrc.ec.europa.eu>. © European Union, 2020, CC BY 4.0.) and ground-based reports from the Hellenic Fire Service.

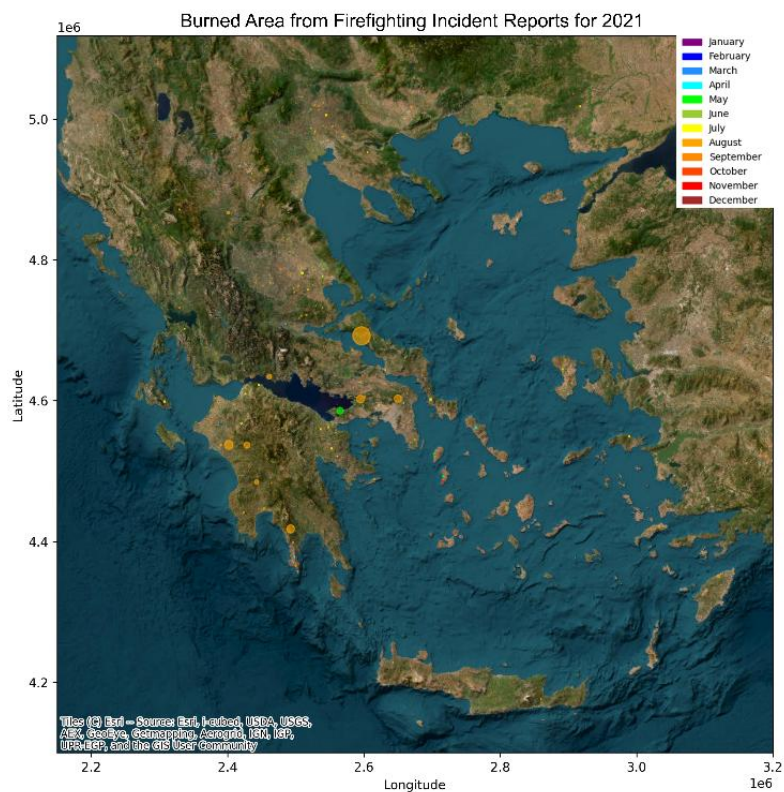
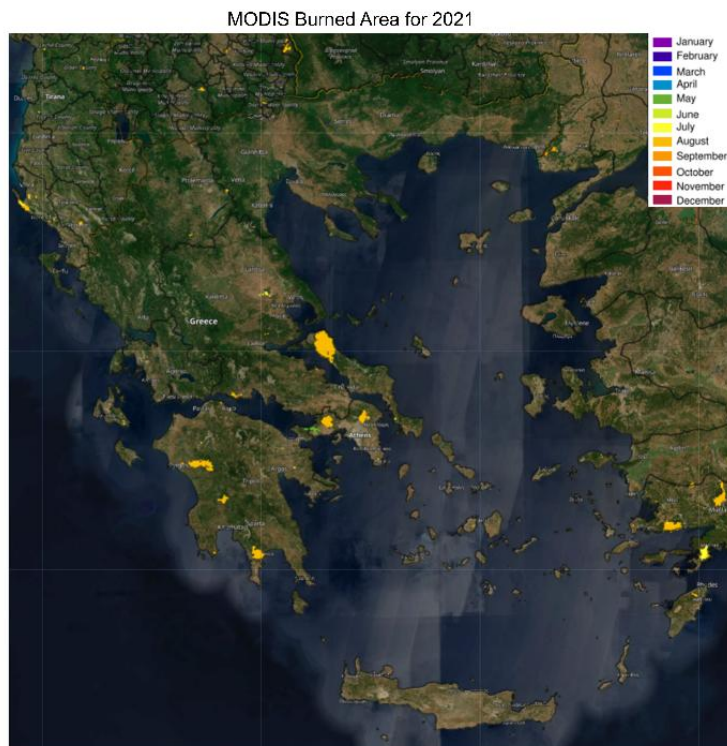


Figure S3. Maps of Greece's burned area in 2021 ($\geq 21,466$ ha) based on MODIS MCD64A1 product via GWIS (<https://gwis.jrc.ec.europa.eu>. © European Union, 2020, CC BY 4.0.) and ground-based reports from the Hellenic Fire Service.

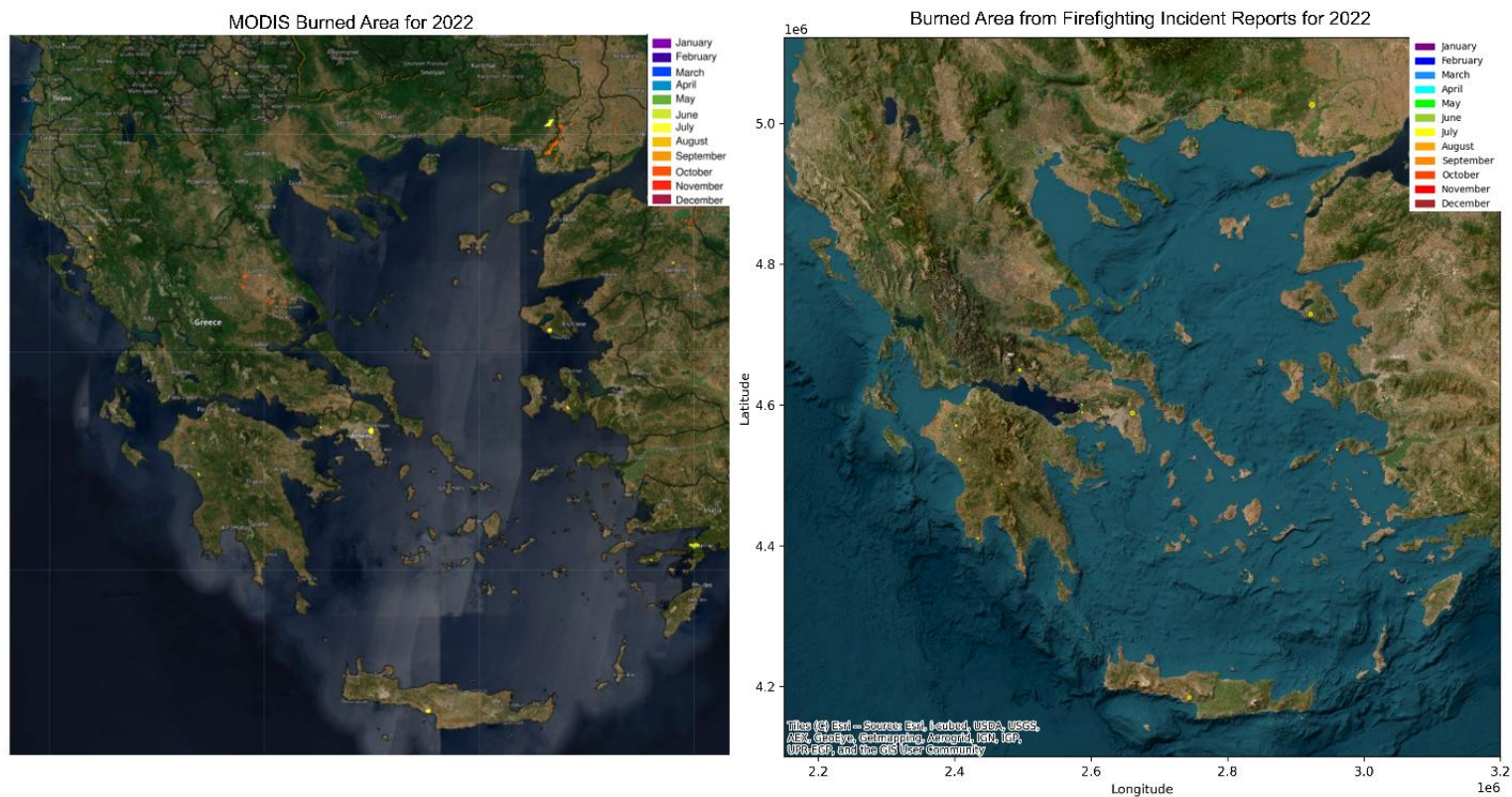


Figure S4. Maps of Greece's burned area in 2022 ($\geq 21,466$ ha) based on MODIS MCD64A1 product via GWIS (<https://gwis.jrc.ec.europa.eu>. © European Union, 2020, CC BY 4.0.) and ground-based reports from the Hellenic Fire Service.

MODIS Burned Area for 2023



Burned Area from Firefighting Incident Reports for 2023

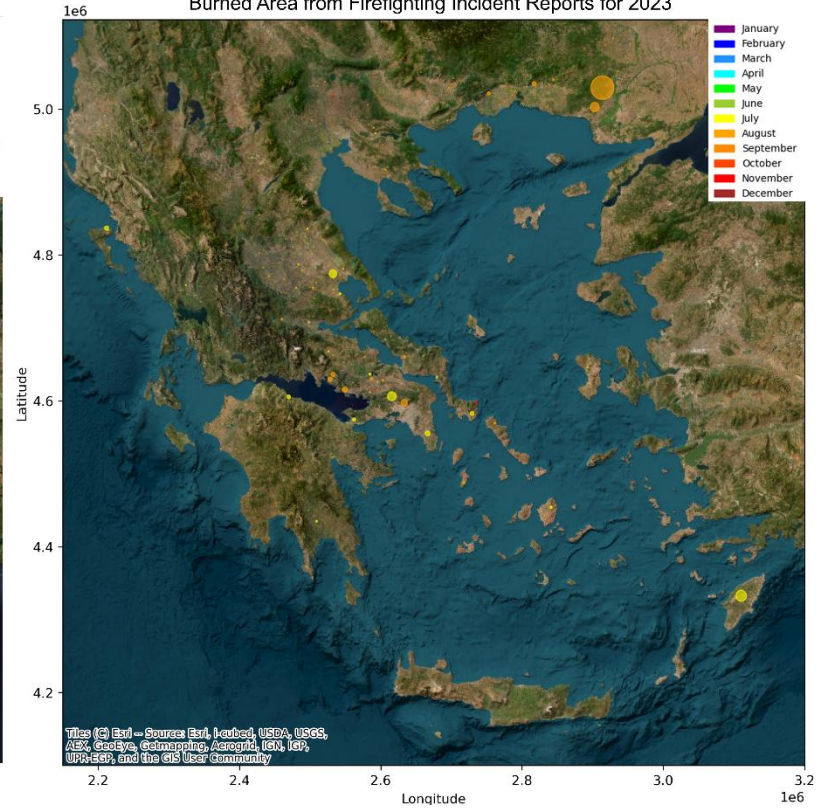


Figure S5. Maps of Greece's burned area in 2023 ($\geq 21,466$ ha) based on MODIS MCD64A1 product via GWIS (<https://gwis.jrc.ec.europa.eu>. © European Union, 2020, CC BY 4.0.) and ground-based reports from the Hellenic Fire Service.