

Using Copernicus EO data and services in compulsory education: the MaFiS activity

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Session: EOS1.3 – Science in tomorrow's classroom

If you are a teacher and you want to capture your students' interest

1. Introduction



with eye-catching visualizations

They say a picture is worth a thousand words.
In such case satellite images can be worth a lot more, specially to school children



of local events that your students relate to

You can produce them yourself using free satellite imagery tools and build a simple interdisciplinary classroom activity around it, tailored to your local needs.



you don't need to rely on available pre-processed satellite images

2. Objectives

To demonstrate the feasibility of designing an educational activity which exploits free and open satellite images without requiring any processing expertise.
To explore its localization potential and flexibility.
To study the classroom benefits in terms of student interest, interdisciplinary functionality and cognitive results

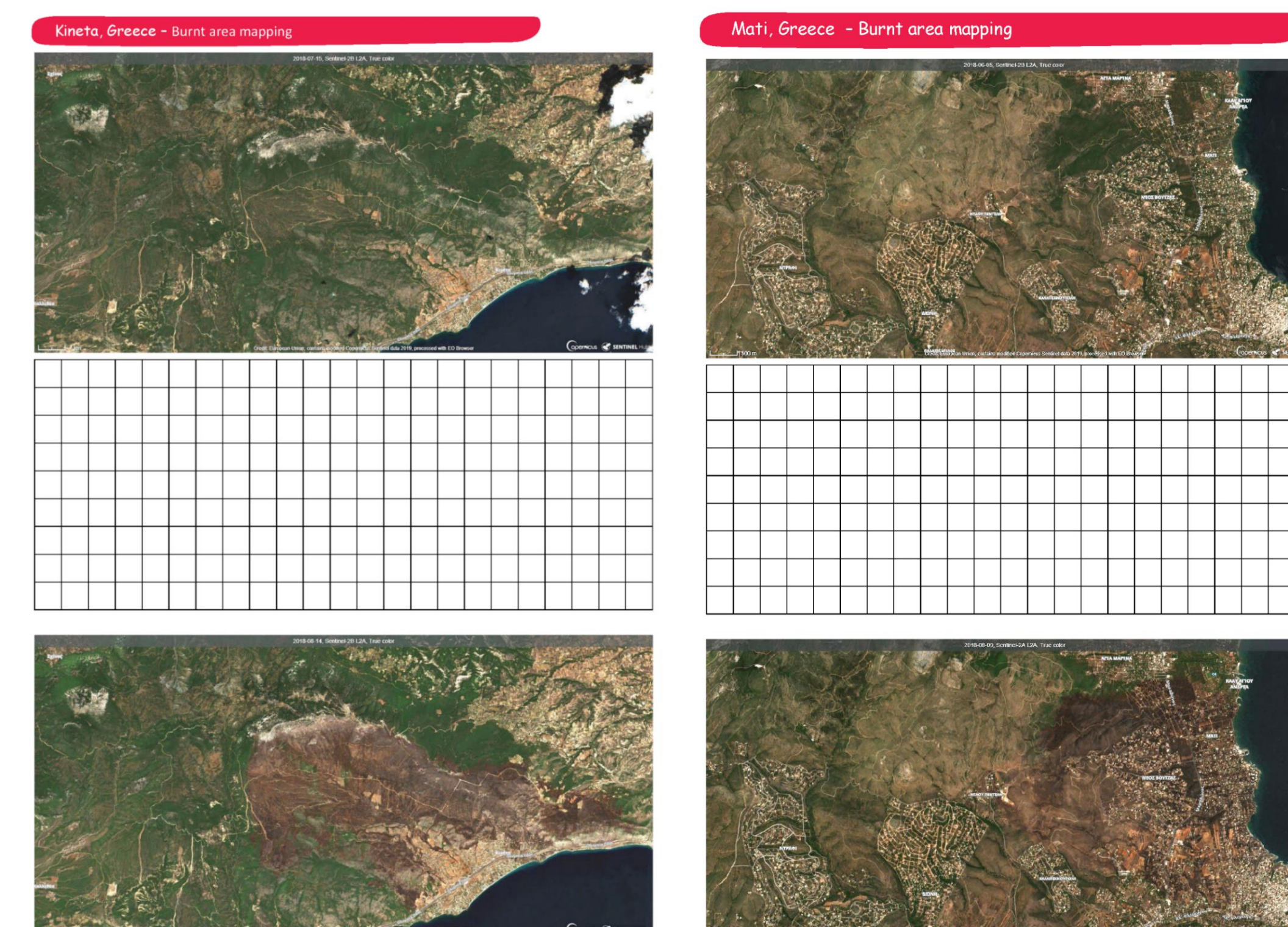


3. Data & Methodology

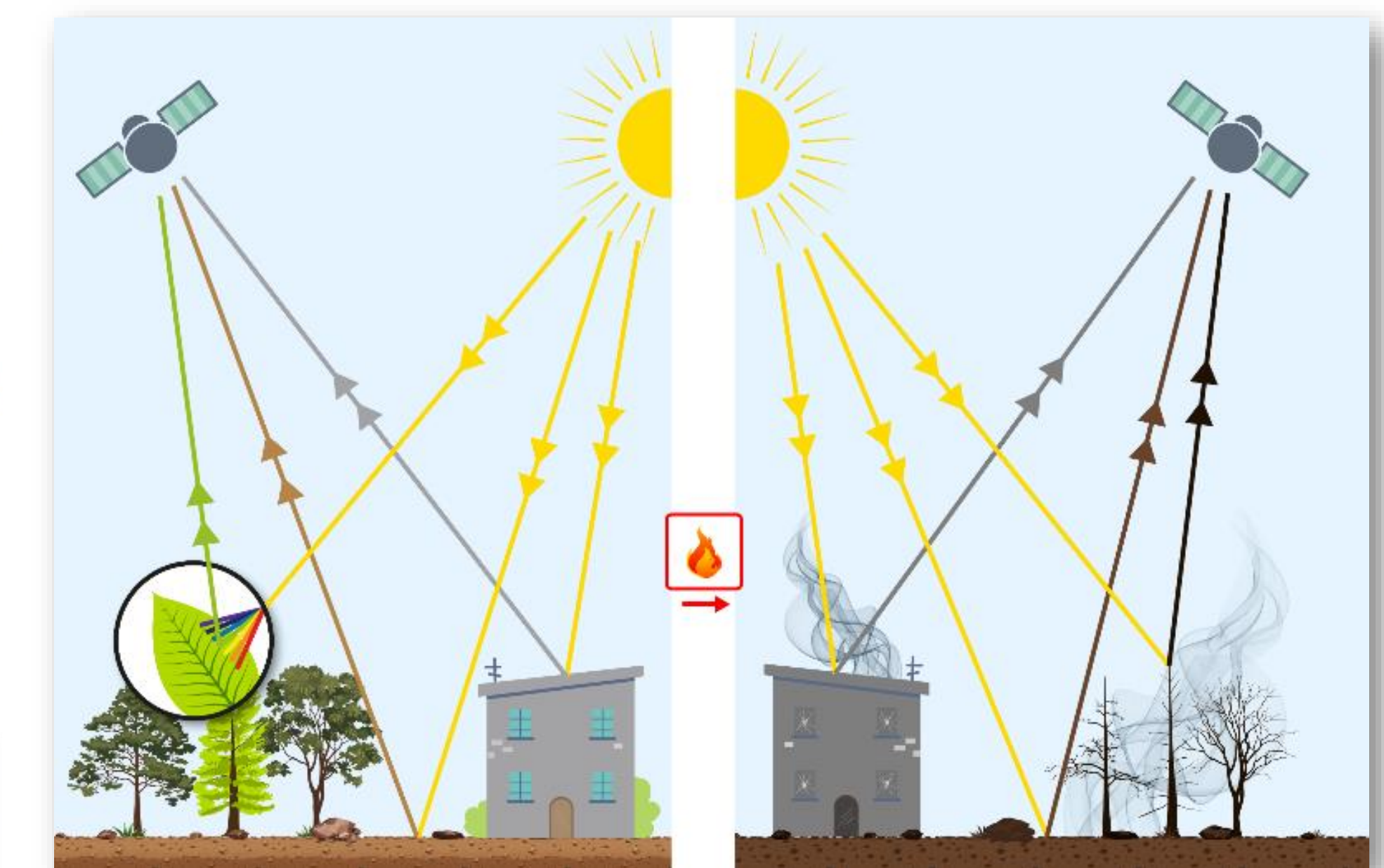
We designed the **MappingFireScar (MaFiS)**, a ready-to-use, customizable classroom activity for mapping burnt areas based on satellite images.
We used **Sentinel Hub EO Browser**, because of its free license policy and the ease of use for acquiring satellite images.
The activity was modeled after **ESA's classroom resources**. It contains a wild fire quiz and supporting info, as well as original graphics for explaining how satellite remote sensing works and how light reflects on different surfaces.

4. MaFiS Material

As a case study we chose the deadliest wildfires in Europe that devastated the surrounding Athens area (**Kineta, Mati**) in the summer of 2018, both for educational and public awareness reasons.
The two case studies occurred at the same day, allowing for MaFiS to demonstrate how urban burnt scars compare to rural ones are seen from space in "true color", and explore the remote sensing limitations.

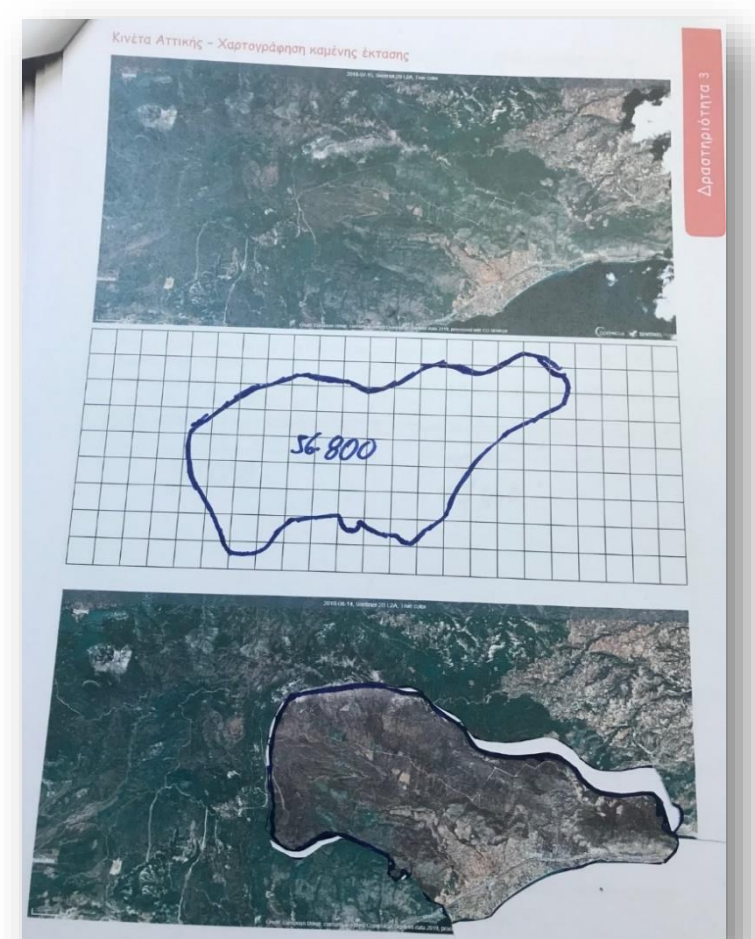
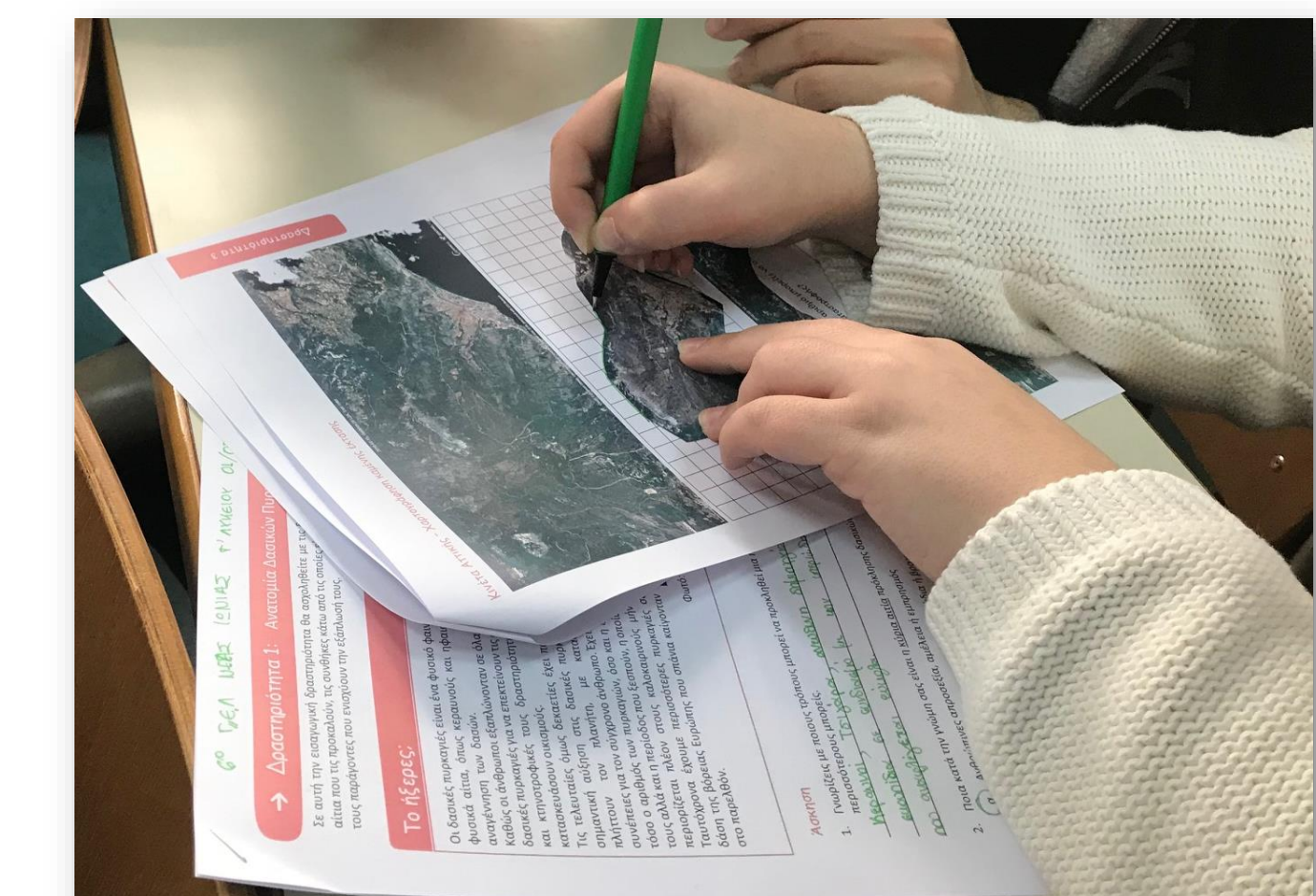


MaFiS student worksheets for calculating Kineta (left) and Mati (right) burnt scar



Graphical representation of the way light reflects on different surfaces and of the way reflection properties change after a wildfire (courtesy: K. Hantzis)

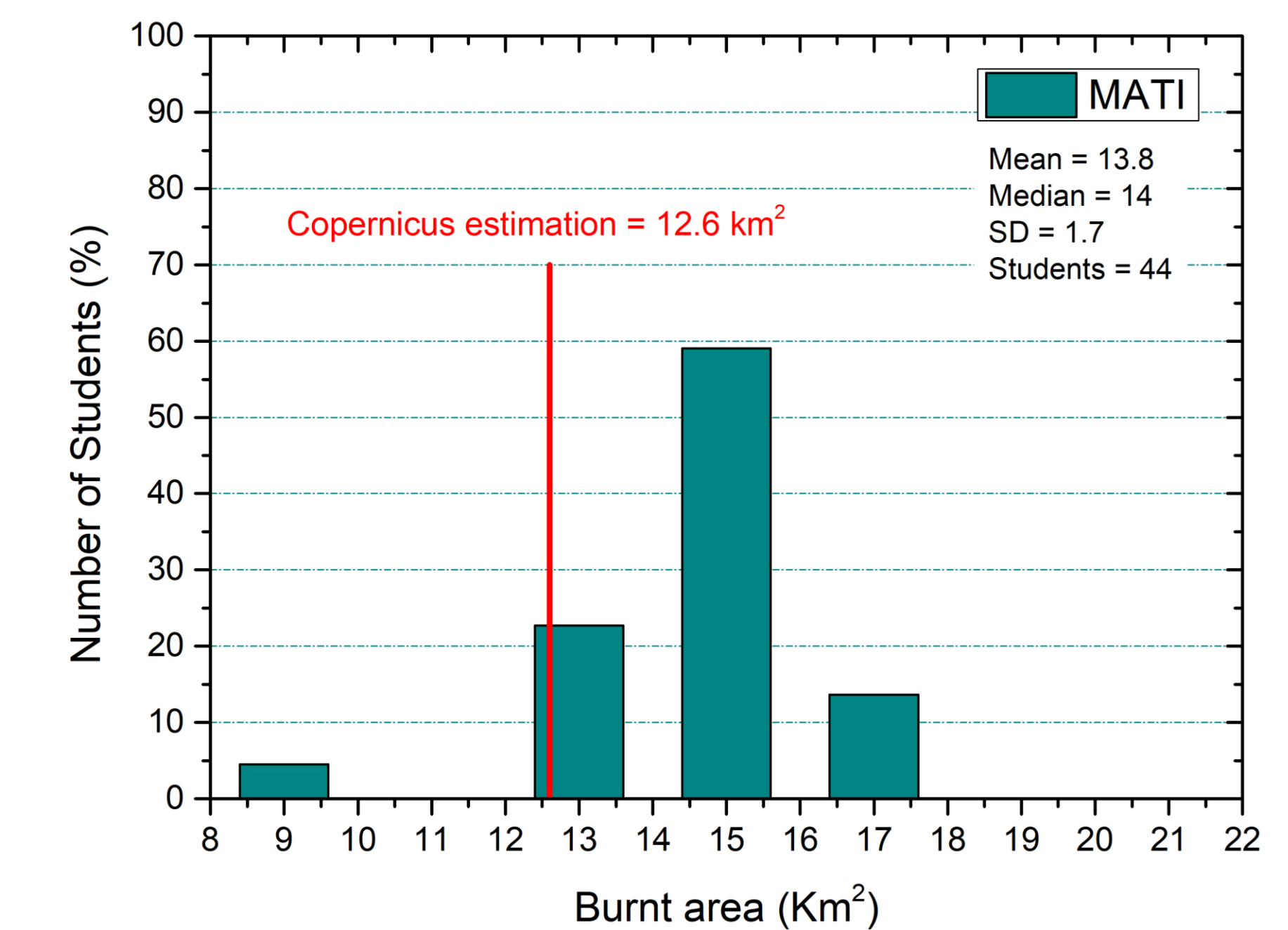
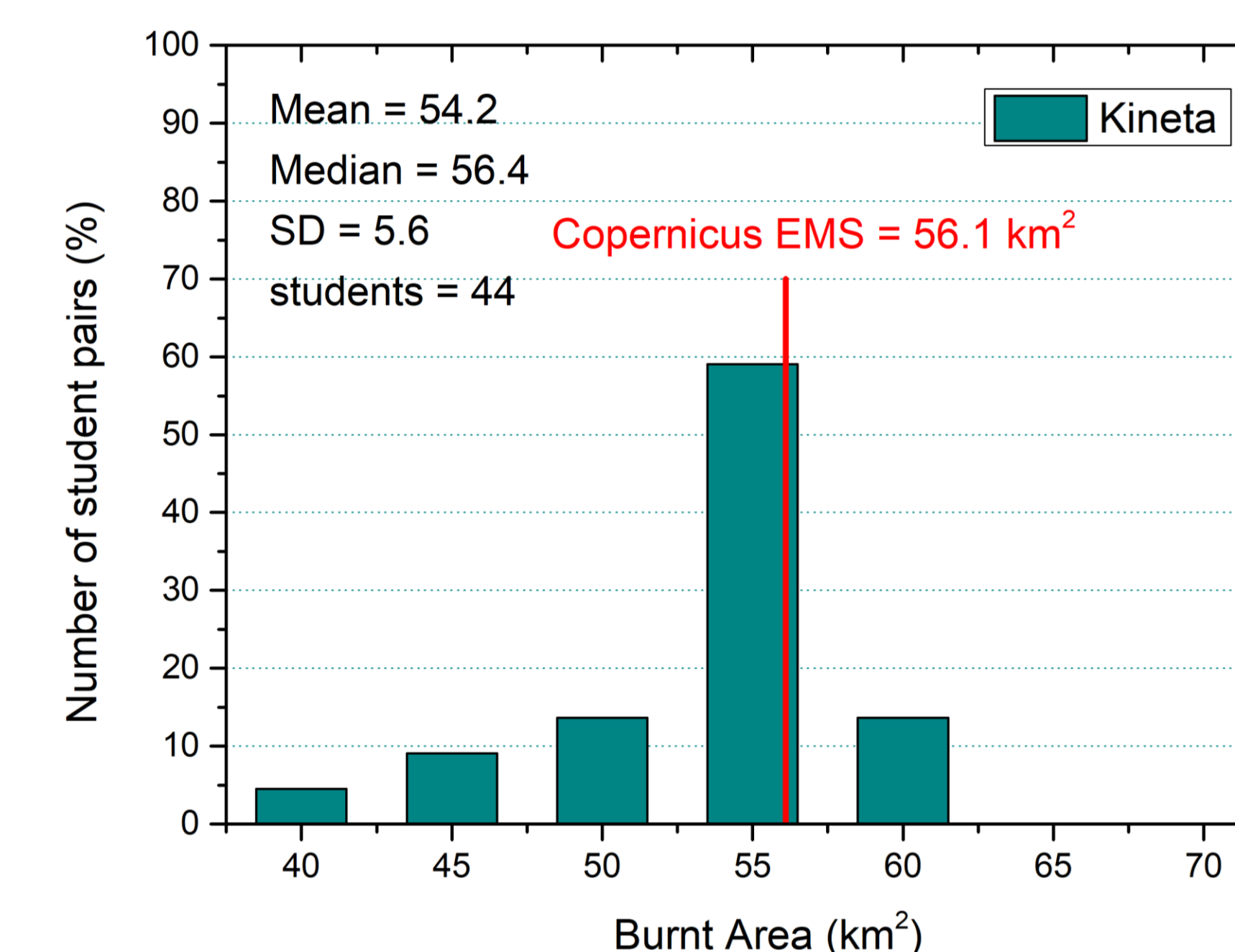
5. Pilot Study



MaFiS activity pilot study, conducted with the help of 43 students from two different secondary schools of Athens

6. Results

The results of the student trials showed a **60% mapping accuracy in the case of Kineta** and **20% in the case of Mati**. Over 70% of students overestimated the burnt scar in Mati. This was anticipated as urban area burnt scars are not easily noticeable in "true color" satellite images compare to rural ones.
Students who ignored the supporting info about the way light reflects on different surfaces, included the residential area in the case of Mati due to public awareness and excluded it in the case of Kineta.
Students showed great interest and maintained their focus throughout the activity



Students' mapping accuracy based on data collected from the pilot study of the MaFiS activity for Kineta (left) and Mati (right), compared to the Copernicus EMS burnt scar official estimations

Acknowledgements:

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