

One year of the OVERWATCH project!



Consortium meeting

In a momentous gathering, the first annual meeting of OVERWATCH project was held, marking a fundamental milestone in the collaborative effort. The meeting, hosted in by ISQ (Lisbon, Portugal), brought together all consortium members to discuss and celebrate the remarkable advancements achieved over the past year. As the meeting concluded, project partners expressed their enthusiasm for the year ahead, with shared vision. The collaborative spirit and advancements discussed at this first annual gathering have set a solid foundation for the OVERWATCH's future success.

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Technological development

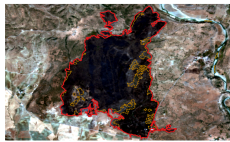
Progress relative to the EO and AI component: preparation of annotated dataset for the training and validation of the machine learning model for burned area segmentation is ongoing and led by the coordinator team. The dataset generation consists collection of the pre- and post-event Sentinel-2 images, related to EFIS fire activities. Afterwards, the collected images are used to automatically generate first approximations of the burned area delineation utilizing a procedure based on the computation of the **delta Normalized Burn Ratio (dNBR)** index.

$$dNBR = NBR_{pre} - NBR_{post}$$

The **Normalized Burned Ratio (NBR)** was calculated for each pre- and post-event image, in order to compute the dNBR.

$$NBR = \frac{NIR - SWIR}{NIR + SWIR}$$

The procedure makes use of the **Near Infrared and Shortwave Infrared bands (NIR and SWIR)**. From the dNBR, through a thresholding procedure, it is possible to obtain a first estimation of the burned area, as a binary mask. To support the automatic procedure and improve the thematic accuracy of the first ground truth images, the results were inspected and manually corrected by skilled operators. In conclusion, some challenges were encountered during the dataset preparation: (i) areas that were already burned in the pre-event images were often missed and had to be manually included (false negatives); (ii) in some instances, water bodies and terrain undergoing substantial changes between the pre- and post-event phases, were erroneously categorized as burned areas (false positives). In the post-event satellite image below, it is possible to see an illustration of the area generated by the automated procedure (orange dashed line) and the final area refined through manual corrections by an operator (red continuous line). Hundreds of similar outcomes have been gathered and prepared for the further step: training of the machine learning model.



Horizon Result Booster webinar

The cross-project peer learning webinars

As a result of the **Horizon Result Booster**, two webinars have been organized by SAFERS and took place on 6 and 8 November. Several wildfire emergency and risk management projects have participated, namely FIRELOGUE, TREADS and OVERWATCH. During the webinars OVERWATCH had the opportunity to present the role of the civil protection during the wildfire emergency and citizens engagement. Present the innovative technical results (AI and drones technology) in the wildfire risk management sector to different stakeholders, especially the end-users. This event enhanced collaboration and synergies between EU funded projects.



[LINK](#)

Published Articles

- A multimodal supervised machine learning approach for satellite-based wildfire identification in Europe. (IGARRS, California, USA).

[LINK](#)

- Land cover segmentation with sparse annotations from Sentinel-2 imagery. (IGARRS, California, USA).

[LINK](#)

- Robust Burned Area Delineation through Multi-task Learning. ECML PKDD 2023 (MADLEAN Workshop).

[LINK](#)

Other topics of Interest

- The Overwatch project was mentioned within the presentation "The EU Space Programme enabling innovation in disaster prevention" by PD. Vasilis Kalogiros.



[LINK](#)

- The Overwatch project was mentioned in the presentation "EU SPACE FOR CLIMATE CHANGE" (page 3) by Professor José Alberto de Jesus Borges during the "EUSPA Administrative Board Workshop on EU Space for Emergency Management's Humanitarian Aid".



The Team

OVERWATCH consortium is composed of 10 partners across 5 different countries: Poland, Germany, Italy, Portugal and Denmark.



[Meet the partners](#)

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