

# CHALLENGES AND NEEDS FACING THE RESPONDER COMMUNITY

The End-User Perspective in Emergency and Civil Protection Operations  
*Drawing from the OVERWATCH project experience*

21<sup>st</sup> November 2025

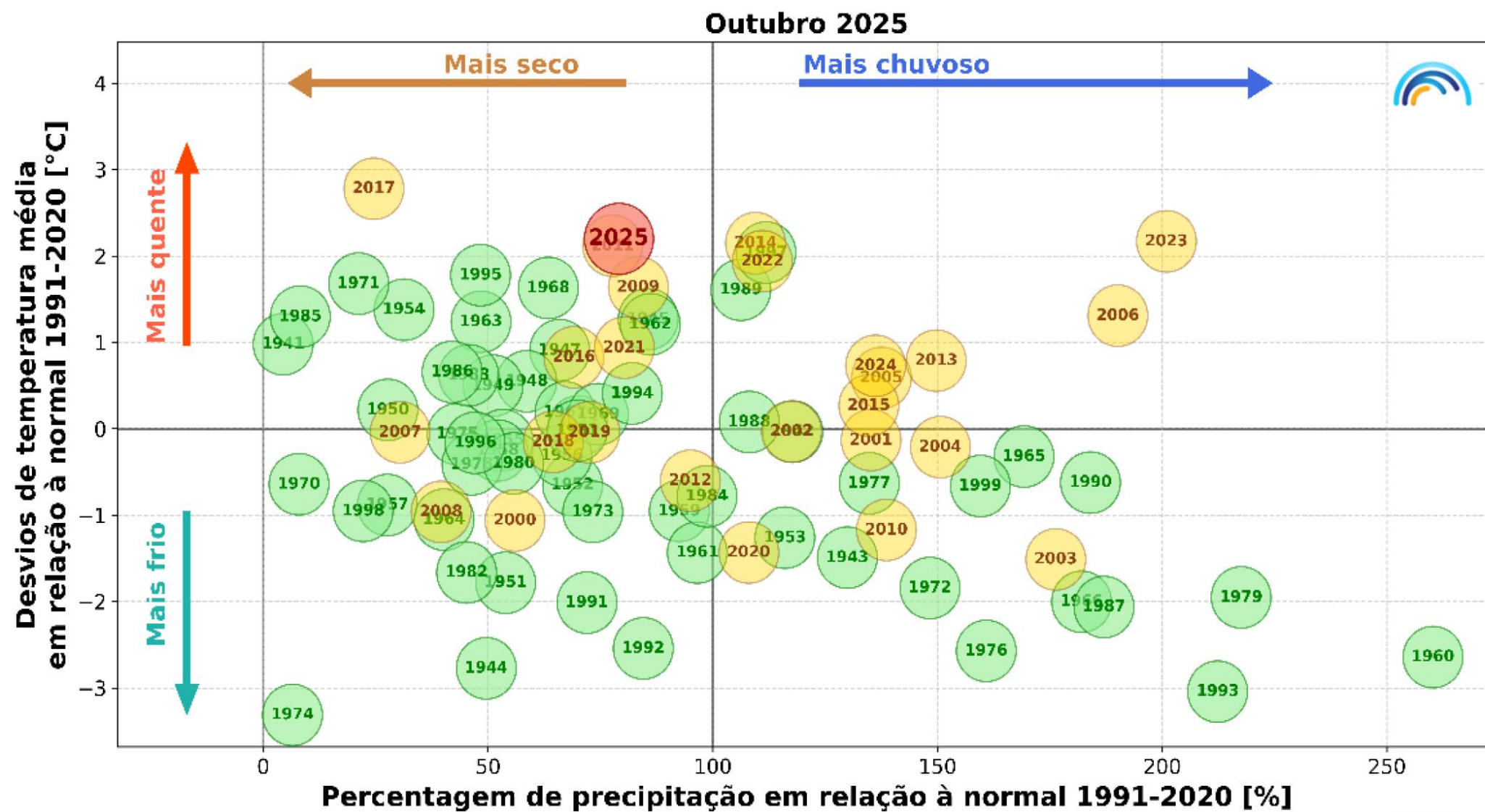
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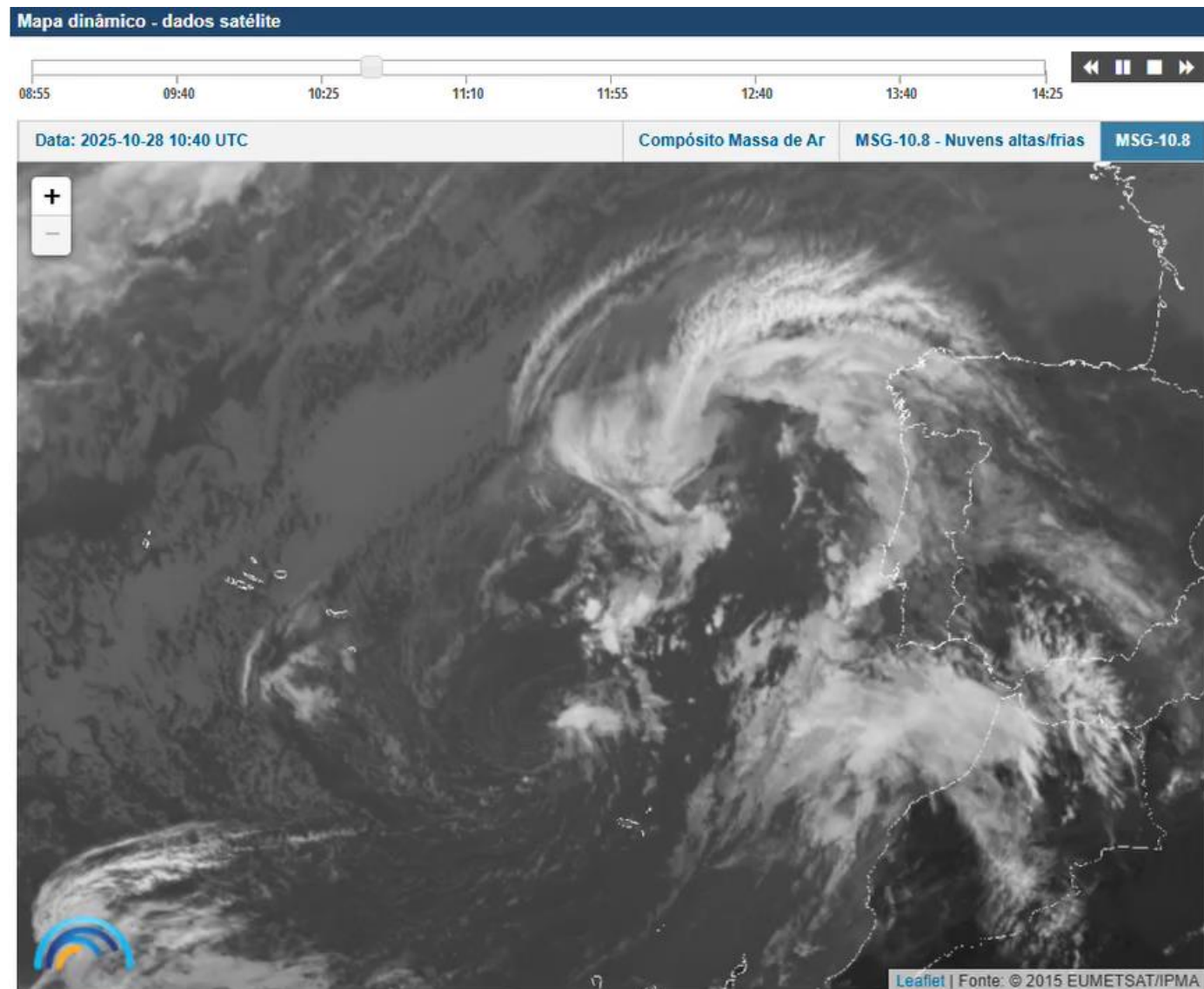














# Europe's Weather Evolving Landscape

- Growing frequency of extreme weather and climate events.
- Increasing complexity of multi-hazard, multi-agency operations.
- Rising need for interoperability, coordination, and real-time information.
- High operational pressure on local responders.

A core challenge is to **ingest dispersed data** into **actionable intelligence** at the right moment.





# End-user Perspective

## What first responders and civil protection teams say



"We need to see what is happening, not only receive reports."

"We have too many systems that don't talk to each other."

"Time and accuracy of information make the difference between success and failure."

"Technology must adapt to our rhythm: not the other way around."

"Technology must serve the people on the ground, not complicate their work."

# Operational Challenges



01

## Communication gaps

network failures, unlinked systems,  
incompatible tools

02

## Decision under stress

fast choices based on uncertain/  
incomplete information

03

## Fragmented data

multiple sources with no  
common platform

04

## Institutional fragmentation

different command languages and procedures

05

## Limited training

in using technology during live operations

**Derived from:** Overwatch field exercise in CMSM, Oct 2025



# Responder Needs



Resilient and redundant  
communication networks

Accessible geospatial  
and real-time data

Seamless data integration  
(EO, drones, sensors, on-site reports)

Simple and visual interfaces  
(dashboards, AR views)

C2 support systems  
connecting all command levels

"The most valuable asset is not technology: it's the **right information**, at the **right time**, to the **right people**."





# Lessons from Overwatch field exercise

(Santa Margarida, Oct 2025)



**Scenario:** rural fire + communication failure + multi-agency coordination.

## Main findings:

- Mobile emergency networks restore communication and improve coordination.
- Availability of decision-support dashboards increase confidence at command level.
- Drones and AR visualisation enhance situational awareness.
- Interoperability between forces remains both a technical and logistical challenge.

Technology must respond to **tactical processes**  
and **shared operational language**.



## Role of Information Systems



**Collect** reliable, multi source data (satellite, drone, field sensors).



**Process** data through AI for pattern detection, risk prediction, and real time alerts.



**Display** data clearly (GIS maps, 3D, AR overlays).



**Share** data securely, on a need-to-know basis, i.e., provide the right info to the right actor at the right command level.

IS must **integrate seamlessly** with C2 (practices, processes and doctrine) to support the **planning–execution–assessment** cycle.

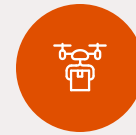


# The OVERWATCH approach



## Earth Observation

Sentinel-1/2 data for burned-area and severity mapping.



## Drones

provide tactical comms bubble and/or carry specific payloads, e.g., to capture live imagery.



## Artificial Intelligence

real-time data classification, hotspot and impact detection.



## Augmented Reality

immersive view of operational areas.

Overwatch aims to provide a **common digital ecosystem** for responders and commanders to **share one operational picture**.









## Summary of needs

<b>Communication</b>	Secure, redundant channels	Mobile emergency networks
<b>Information</b>	Reliable, harmonised data	Integrated dashboards & AI
<b>Situational Awareness</b>	Real-time geospatial view	AR, drones, EO data
<b>Training</b>	User-oriented practice	Simulations and field exercises
<b>Interoperability</b>	Common terminology & systems	EU platforms (MS, EFFIS, ERCC, Overwatch)



## Recommendations

- Invest in interoperability: both technical and doctrinal.
- Harmonise terminology, procedures, and data formats.
- Enhance digital skills for emergency personnel and field operators.
- Promote open, scalable platforms integrating AI, AR, EO, and C2 functions.
- Adopt and adapt EU best practices through cross-sector joint training.

"Wisdom consists in knowing how to use resources to one's advantage." – *Sun Tzu*

The responder of today needs:

Interoperable, reliable  
technology

Fast, contextual  
information

Human coordination  
amplified by technology

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The future of disaster response will likely be  
**collaborative, digital, and knowledge-driven.**





# Thanks!



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