

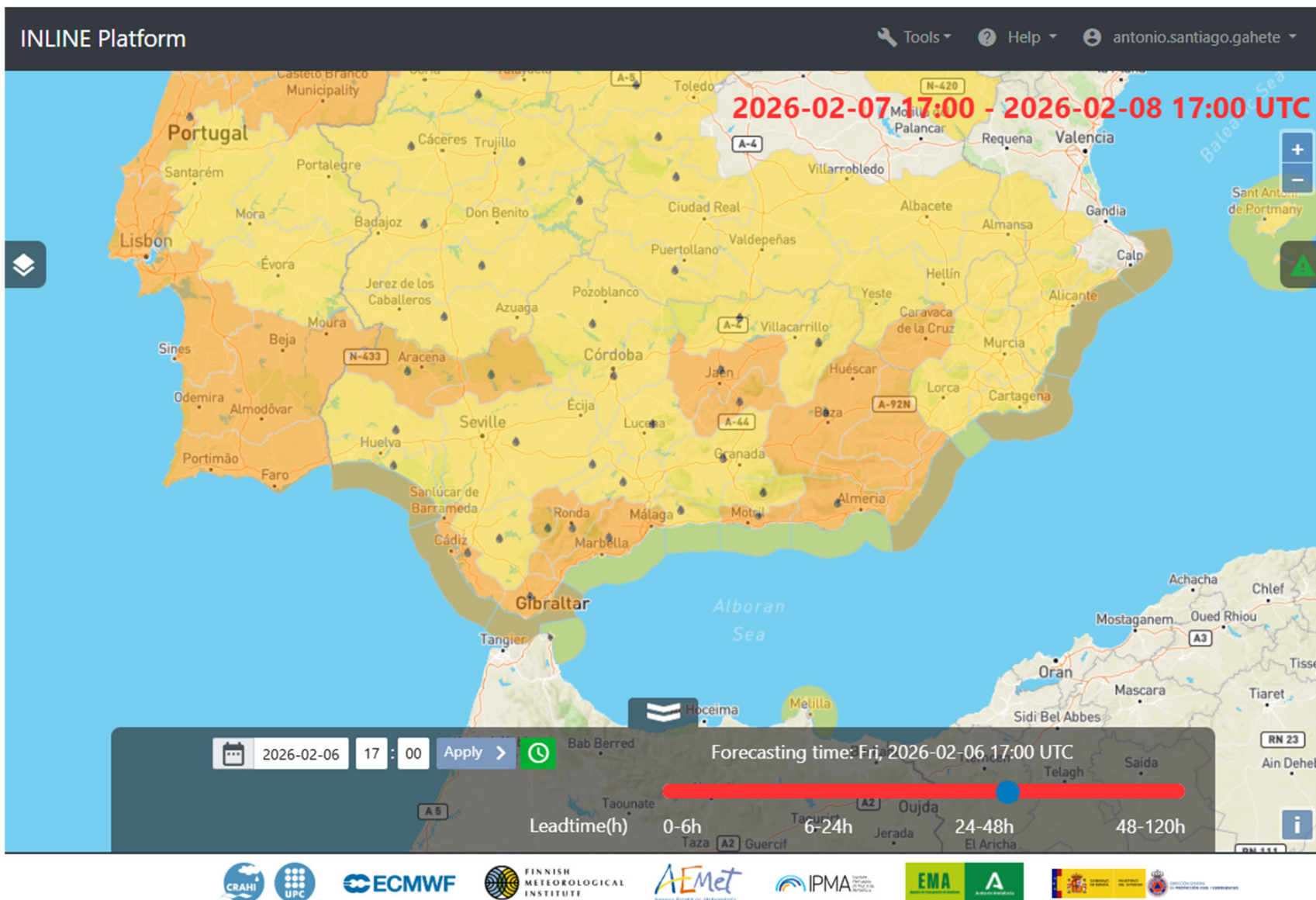
Analysis of storm + flood events during the first months of the **INLINE** demonstration with end users. Andalusia.

Antonio Santiago (EMA)

INLINE Ispra Meeting - 24 February 2026

Junta de Andalucía





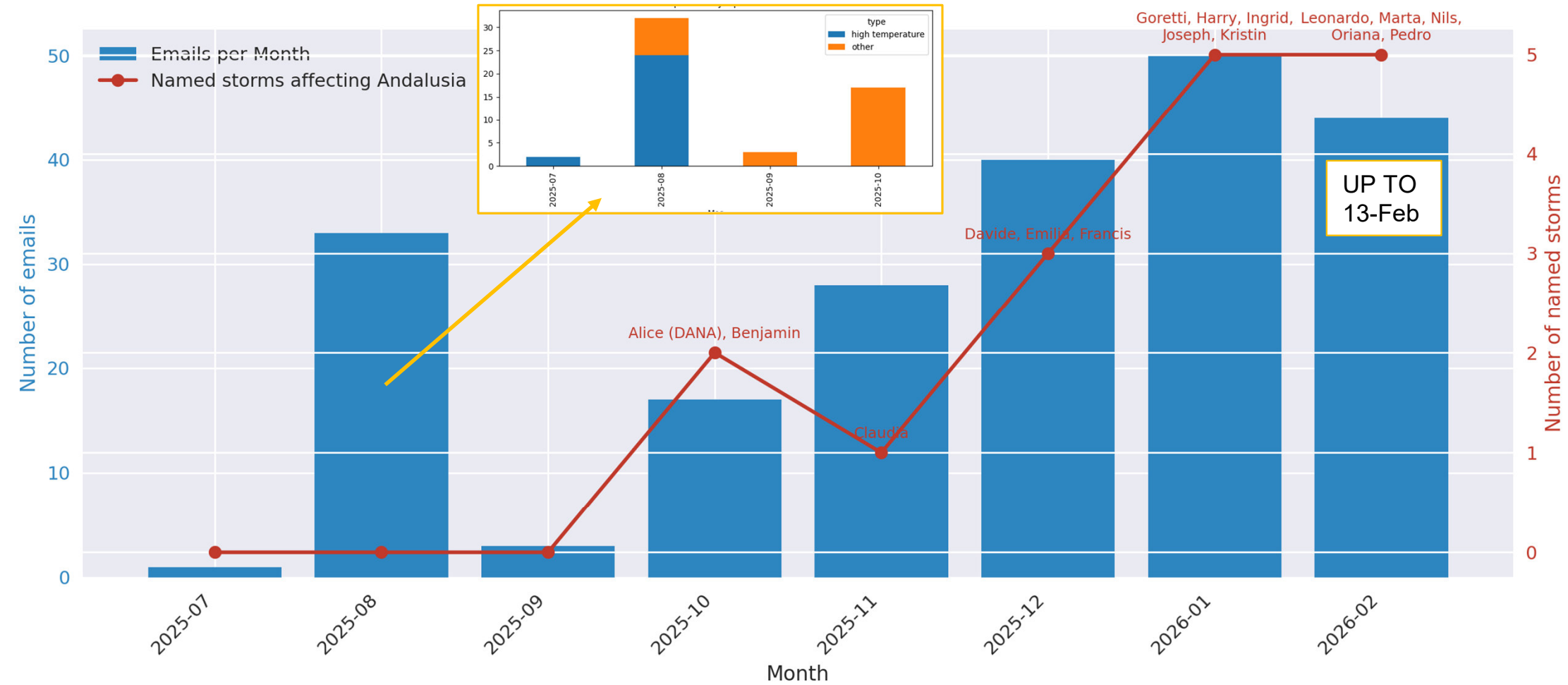
ANDALUSIA AREA
OF INTEREST
(NEIGHBOURS)

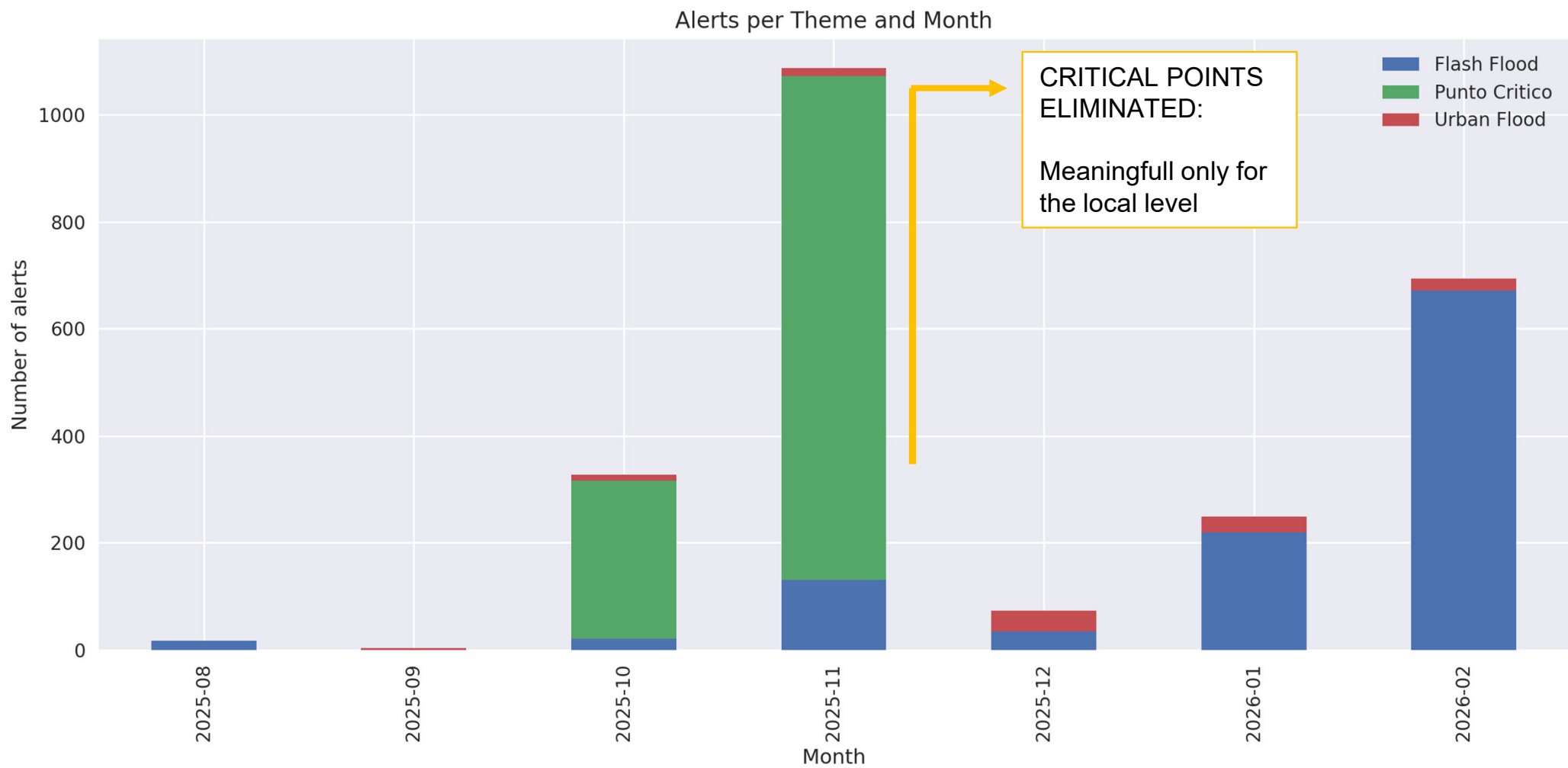
NOTIFICATIONS
BASED UPON
AEMET
METEOALERTA
AREAS

ADMINISTRATIVE
MEANING

ALSO OPERATIVE
MEANING

Emails per Month vs Named Storms Affecting Andalusia (AEMET)



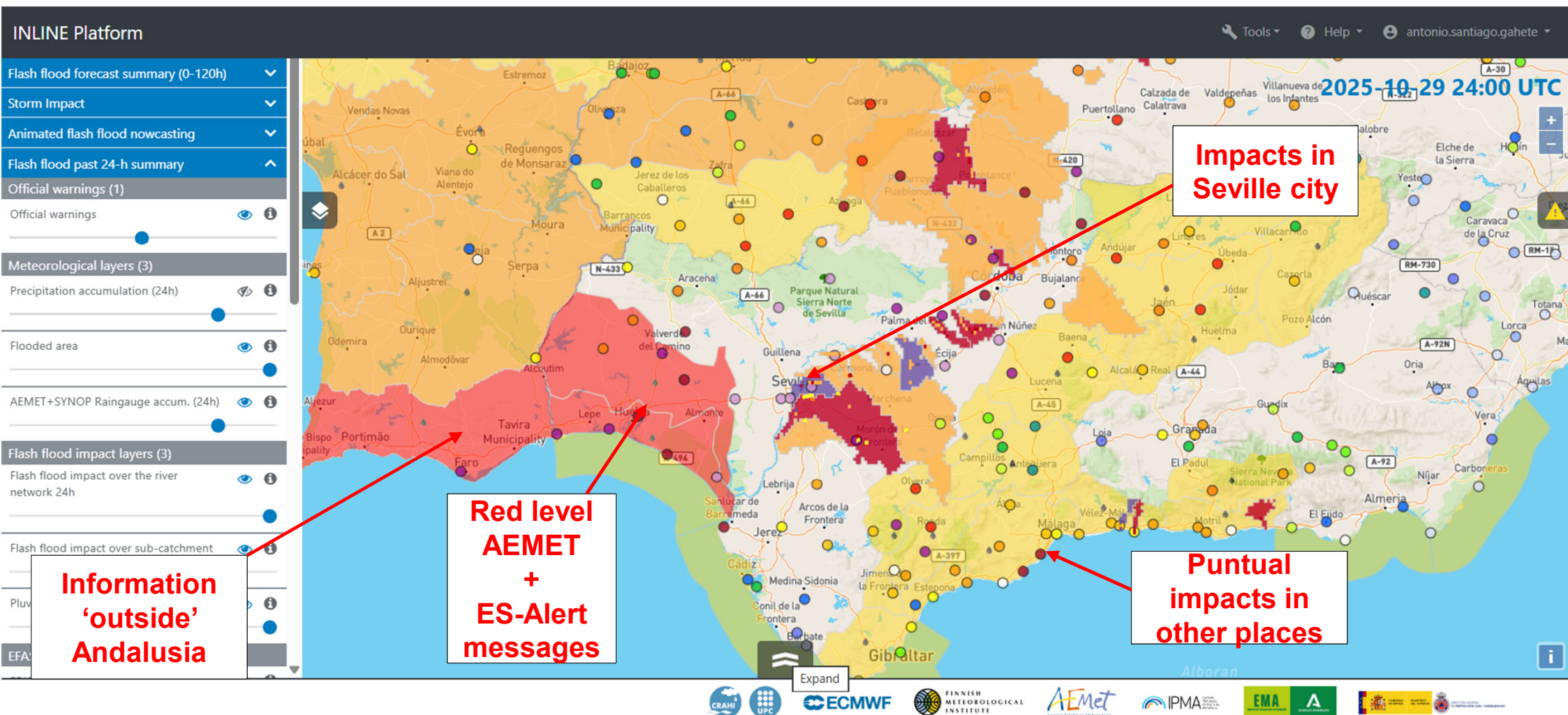


Highlights of the period:

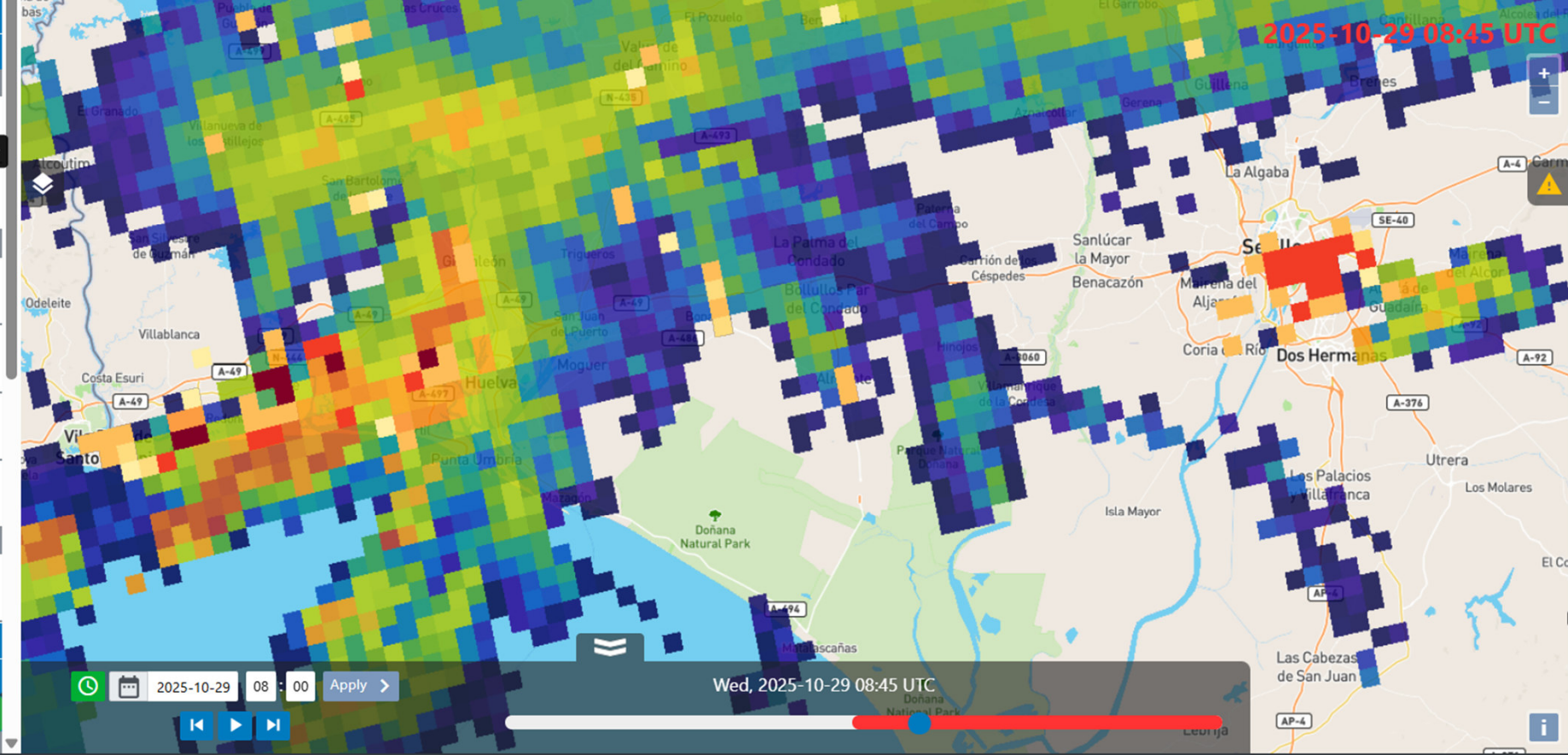
The impact in Andalusia during October–November 2025 (storm on 29 October with orange/red warnings and incidents), November 2025 (Claudia) and December 2025 (red warnings in Almería), as well as the exceptional sequence of January–February 2026 (very wet month and Leonardo with red alert, followed by Marta, Nils, Oriana, Pedro).

During this final event, AEMET recorded rainfall levels three times higher than normal in southern Spain. This caused the soil to become saturated and led to rapid flooding in the Guadalquivir, Guadalete-Barbate, Tinto-Odiel-Piedras and Béticas river systems. There were also floods and overflowing rivers, and thousands of people were evacuated in the provinces of Cádiz, Málaga, Jaén, Córdoba and Granada.

29-October-2025



- Flash flood forecast summary (0-120h) ▾
- Storm Impact ▴
- Meteorological layers (2)
- Radar reflectivity OPERA  
- Show/Hide layer
- Hourly precipitation - radar nowcasting  
- Storm impact layers (4)
- Wind Hazard  
- Precipitation Hazard  
- Wind Risk  
- Precipitation Risk  
- Flash flood impact layers (1)
- Pluvial flood hazard in urban areas  
- Animated flash flood nowcasting ▾
- Flash flood past 24-h summary ▾
- Static layers ▾
- Exposure (1) ▾



INLINE Platform

Tools ? Help antonio.santiago.gahete

Flash flood forecast summary (0-120h)

Storm Impact

Meteorological layers (2)

Radar reflectivity OPERA

Show/Hide layer

Hourly precipitation - radar nowcasting

Storm impact layers (4)

Wind Hazard

Precipitation Hazard

Wind Risk

Precipitation Risk

Flash flood impact layers (1)

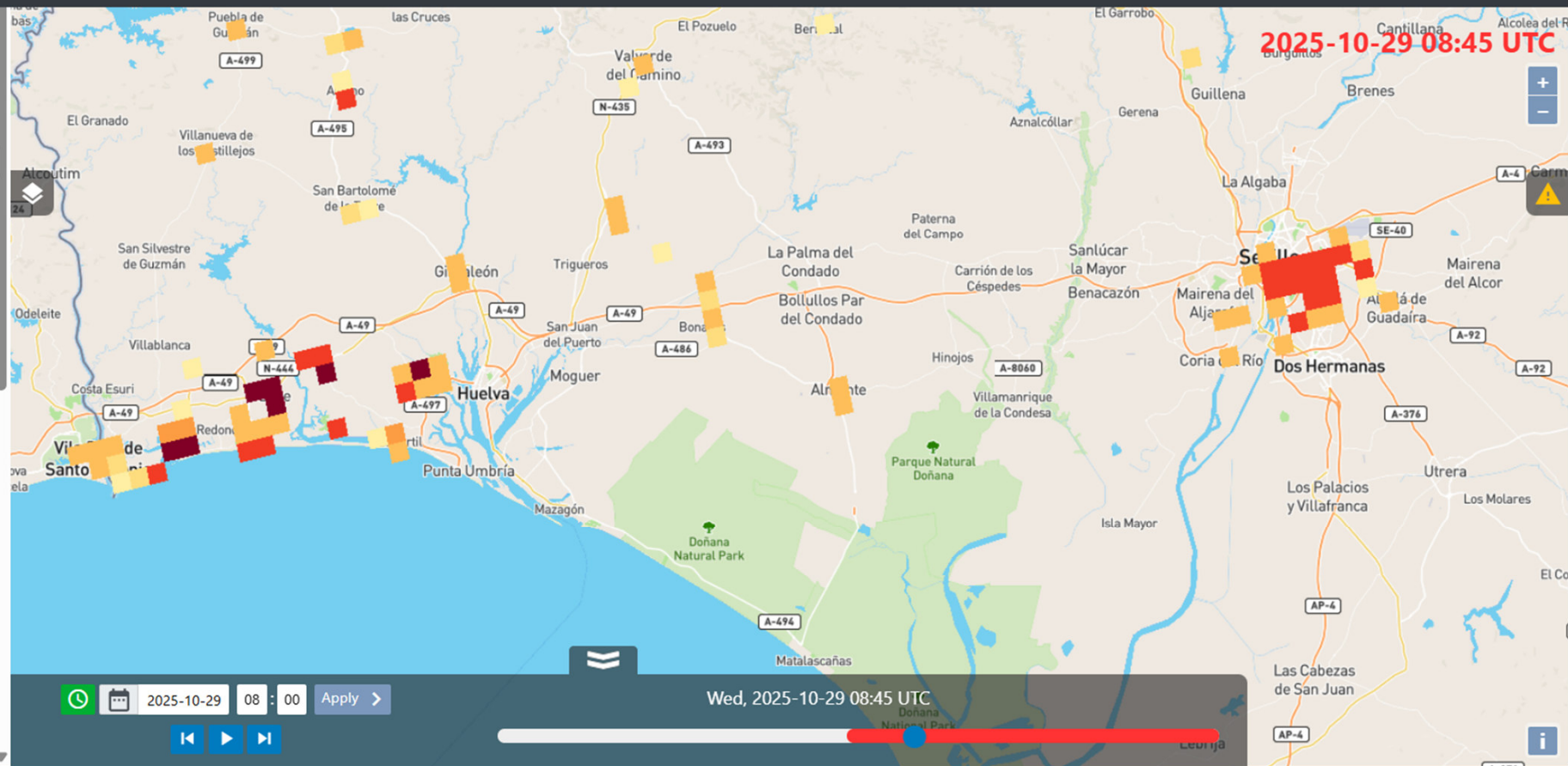
Pluvial flood hazard in urban areas

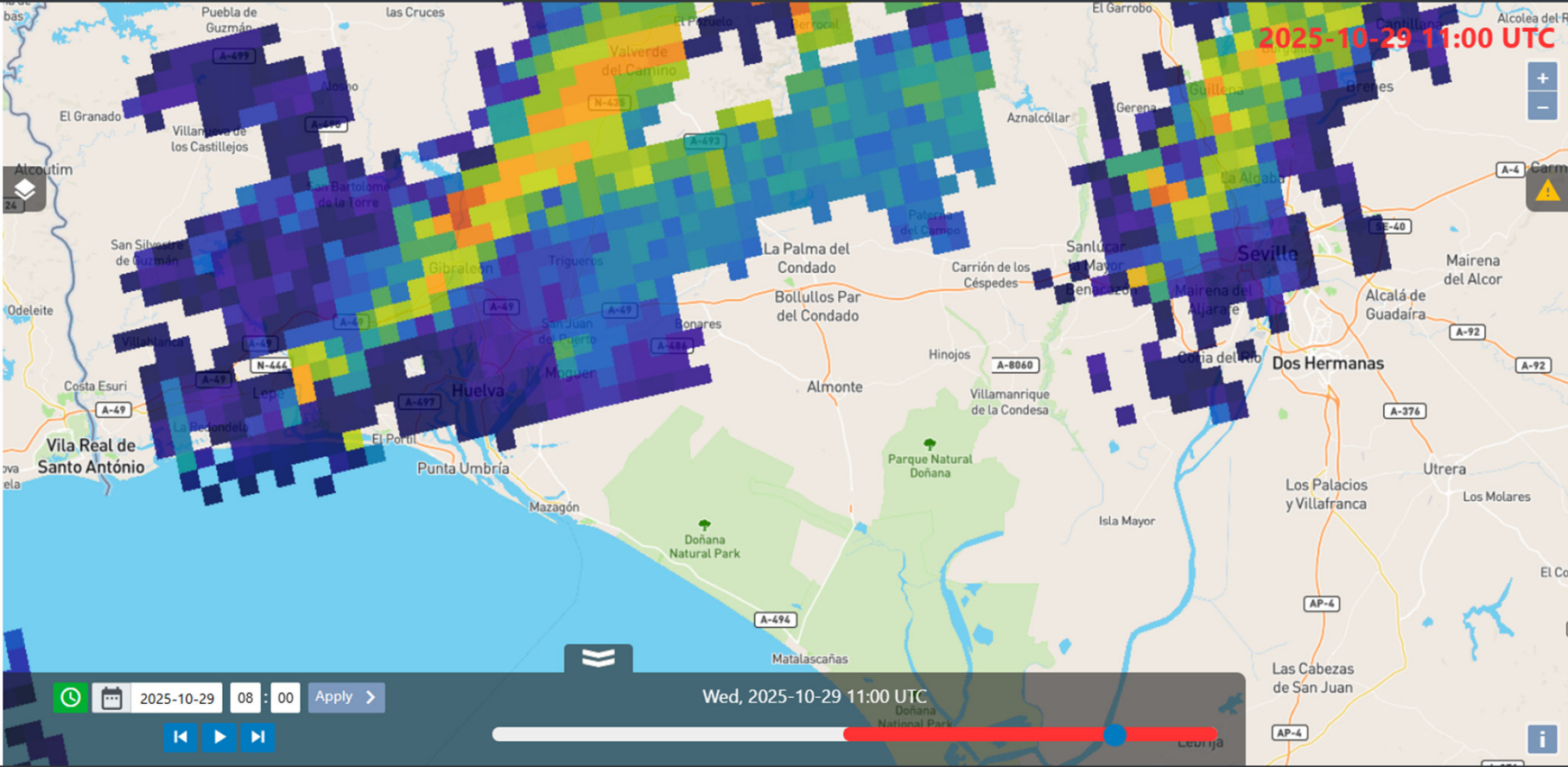
Animated flash flood nowcasting

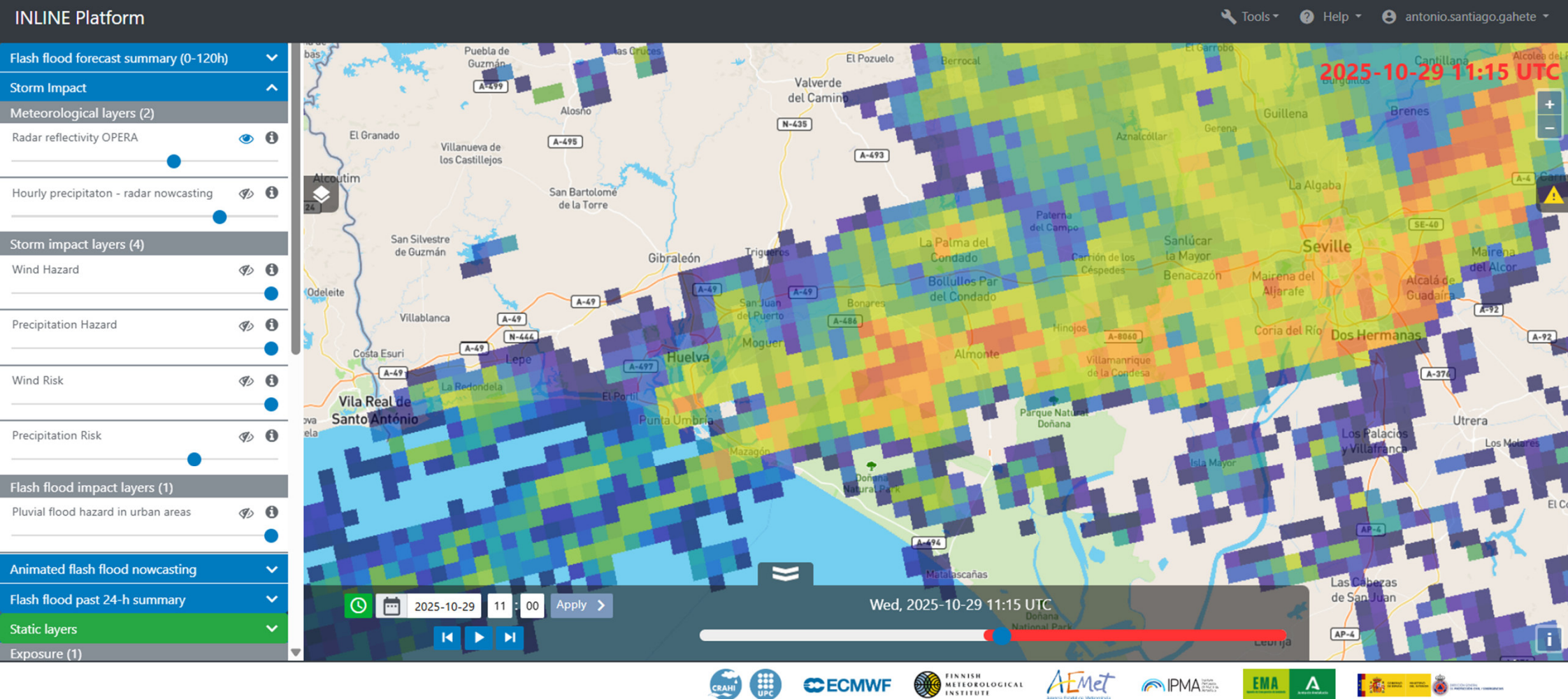
Flash flood past 24-h summary

Static layers

Exposure (1)

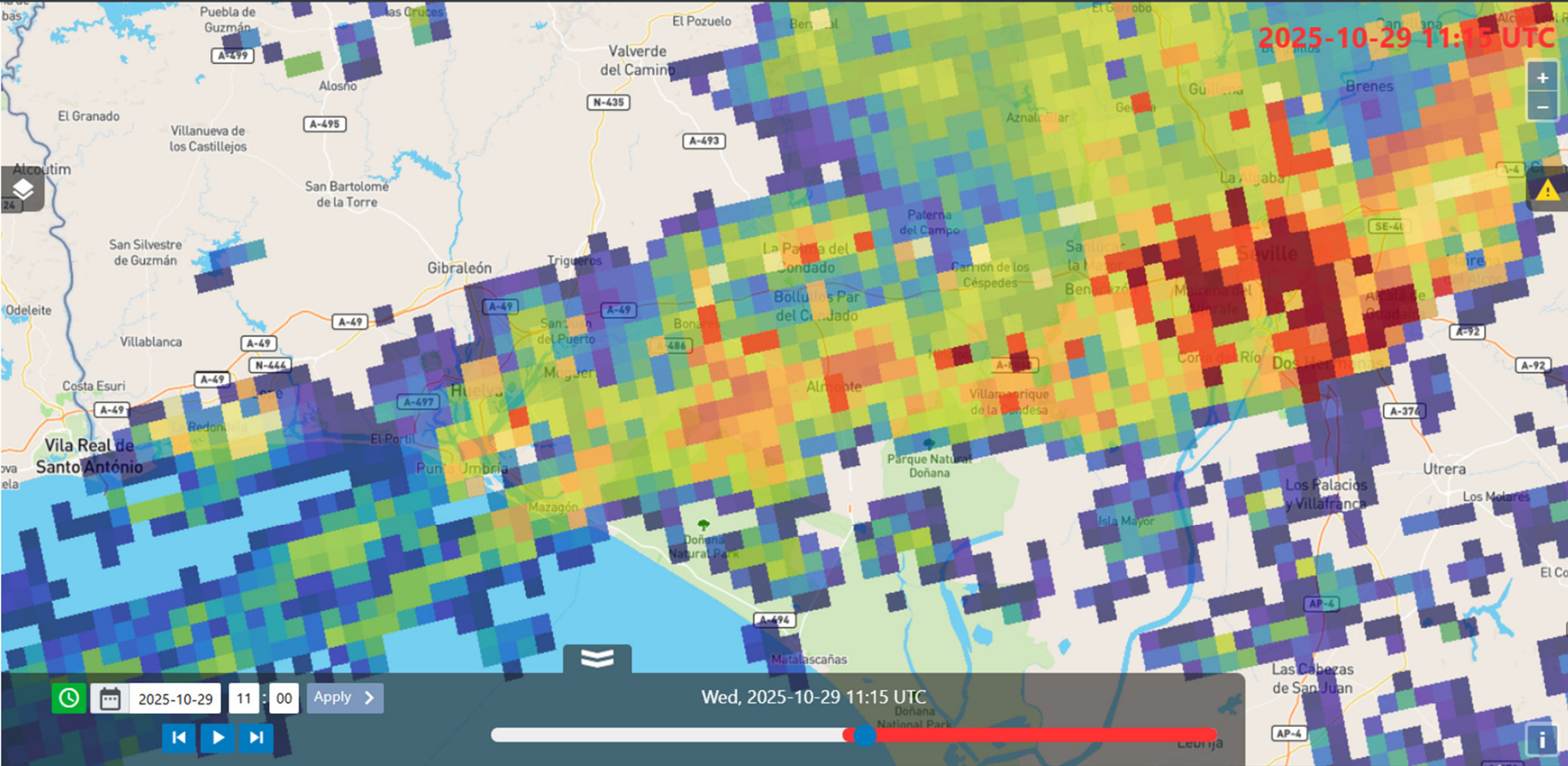






INLINE Platform

- Flash flood forecast summary (0-120h)
- Storm Impact
- Meteorological layers (2)
 - Radar reflectivity OPERA
 - Hourly precipitation - radar nowcasting
- Storm impact layers (4)
 - Wind Hazard
 - Precipitation Hazard
 - Wind Risk
 - Precipitation Risk
- Flash flood impact
 - Flash flood impact Opacity
 - Pluvial flood hazard in urban areas
- Animated flash flood nowcasting
- Flash flood past 24-h summary
- Static layers
- Exposure (1)



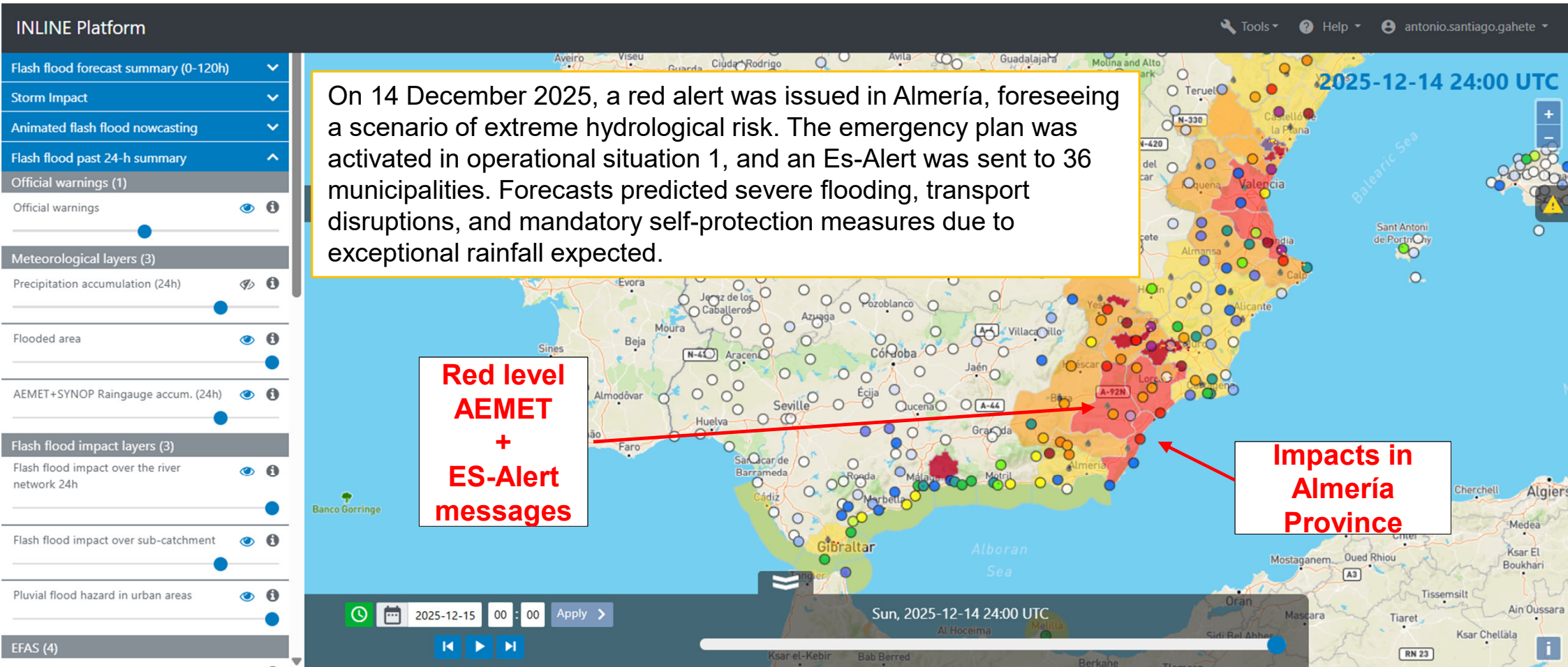


Junta de Andalucía

A brief summary of the 29 October 2025 episode in Andalusia:

An active Atlantic weather system brought heavy rainfall to Andalusia, resulting in over a thousand incidents, primarily in Seville and Huelva, where AEMET issued orange and red warnings. The rainfall caused urban flooding and flooding of homes and businesses, as well as pools of water on roads in Seville. Both there and also in Cádiz and Huelva, fallen branches and damage to street furniture were reported. The Flood Emergency Plan was raised to level 1 and Es-Alert alerts recommending that people avoid travelling were sent out in Huelva province. The storm also affected transport, with commuter trains suspended in Seville and rail services cut to Cádiz, Huelva, Málaga and Córdoba, as well as traffic problems and the occasional closure of educational centres.

14-December-2025



Tools ? Help antonio.santiago.gahete

2025-12-14 13:00 UTC



—14 de diciembre

Alerta de Protección Civil

Activado el aviso rojo. Ante esta situación: extienda prudencia, evite desplazamientos innecesarios. No cruce zonas inundables y respete los cortes de tráfico. No realice actividades en cauces y sus proximidades. Si está en una zona inundable, busque zonas altas o suba a un piso superior. Consulte las recomendaciones del 112. Riesgo extraordinario por lluvias, ver: <https://hijotras.es/5rwh>

En caso de emergencia llame al 112.
Red de Alerta Nacional - EMA - Emergencias 112

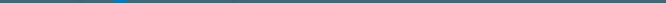



ES-ALERT

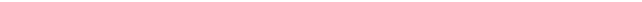




Sun, 2025-12-14 13:00 UTC



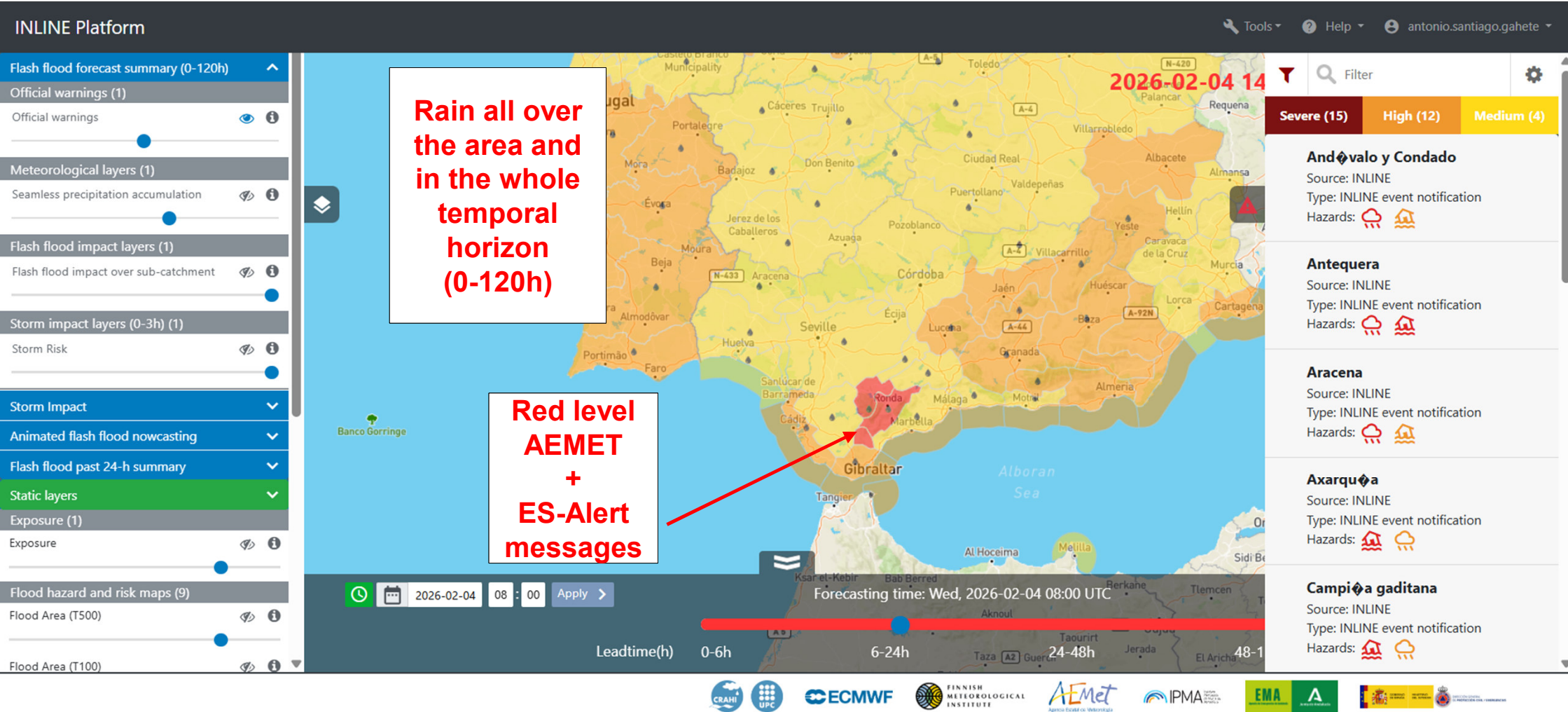
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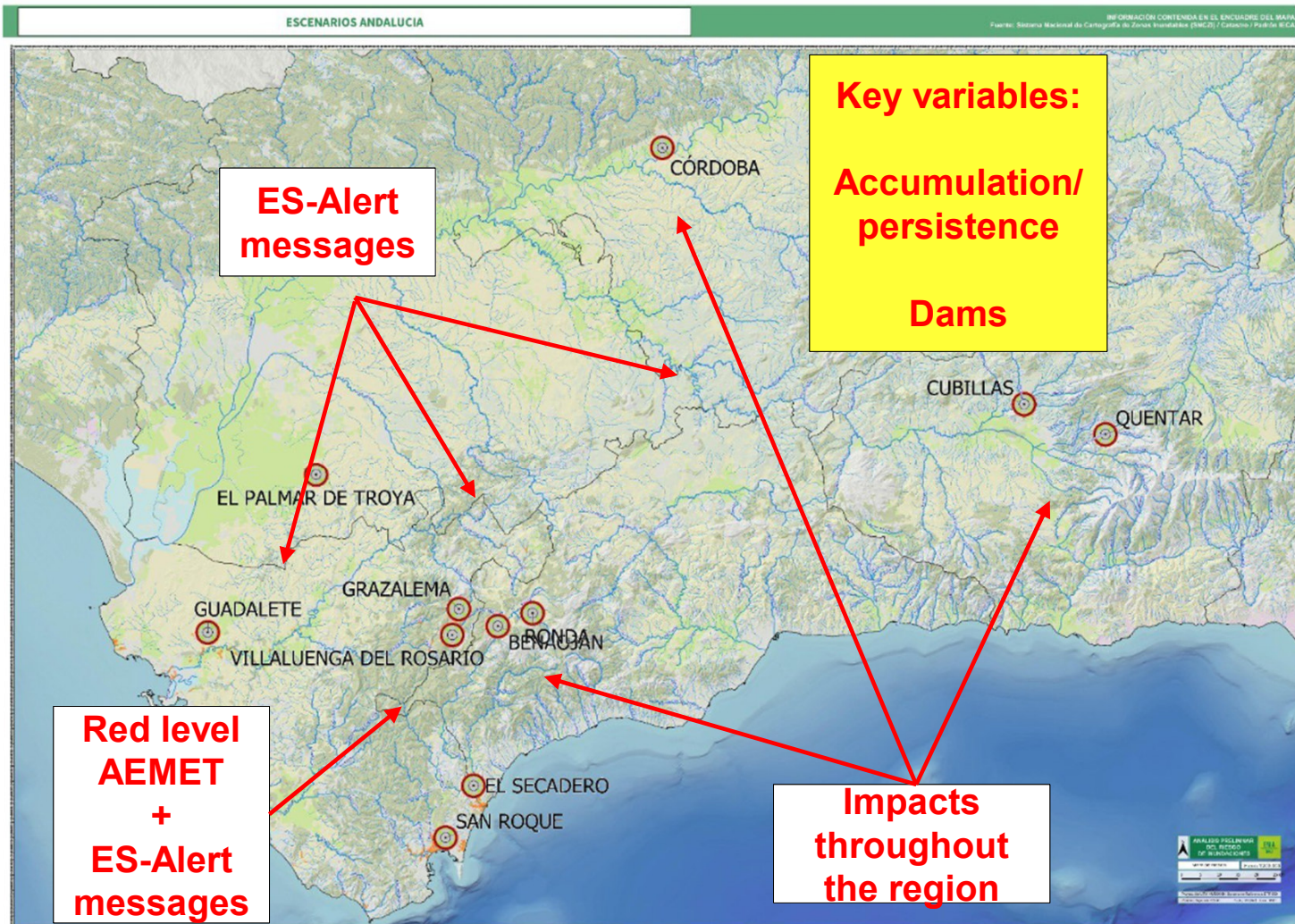


Impact summary Almería – 15 December 2025

On 15 December 2025, some areas of the province of Almería experienced significant impacts from the extreme rainfall associated with Storm Emilia. Emergency services responded to over thirty incidents, primarily flooded roads and blocked secondary routes, which severely disrupted mobility. In Pulpí, three roads were cut off when ramblas overflowed. In Huércal-Overa, three people were rescued unharmed from a vehicle that had become trapped due to the sudden rise in the level of the Rambla San Francisco. Several access routes in Lubrín were also affected by flooding.

Late January – 6 February 2026 — Storm train (Goretti, Harry, Ingrid, Joseph, Kristin, Leonardo)





In late January and early February 2026, Andalusia was hit by a persistent train of Atlantic storms that generated continuous heavy rainfall, repeated frontal passages, and rapid hydrological deterioration across the region. The succession of systems —culminating with Storm Leonardo and followed by Marta, Nils, Oriana and Pedro— produced widespread and sustained saturation of soils, swollen rivers and recurrent flooding. The severity and persistence of the rainfall **EXPECTED** led regional authorities to escalate the Andalusian Flood Emergency Plan (PERI) to Operative Status 2 **IN ADVANCE**, a level reserved for emergencies that exceed regional response capacity and require additional (national) resources, reflecting the exceptional scale and complexity of the event.

Embalses al día

Andalucía

Fecha

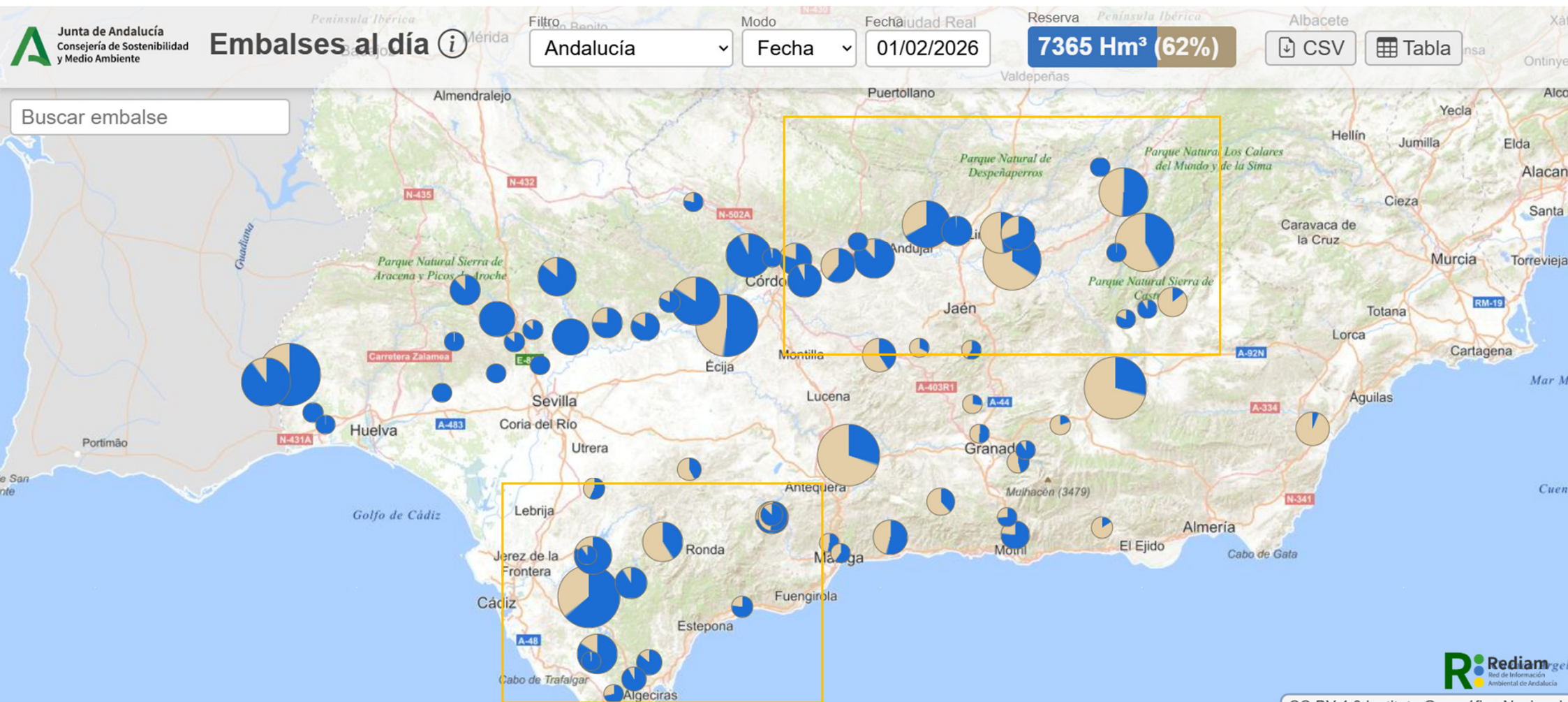
01/02/2026

7365 Hm³ (62%)

CSV

Tabla

Buscar embalse



Embalses al día

Andalucía

Fecha

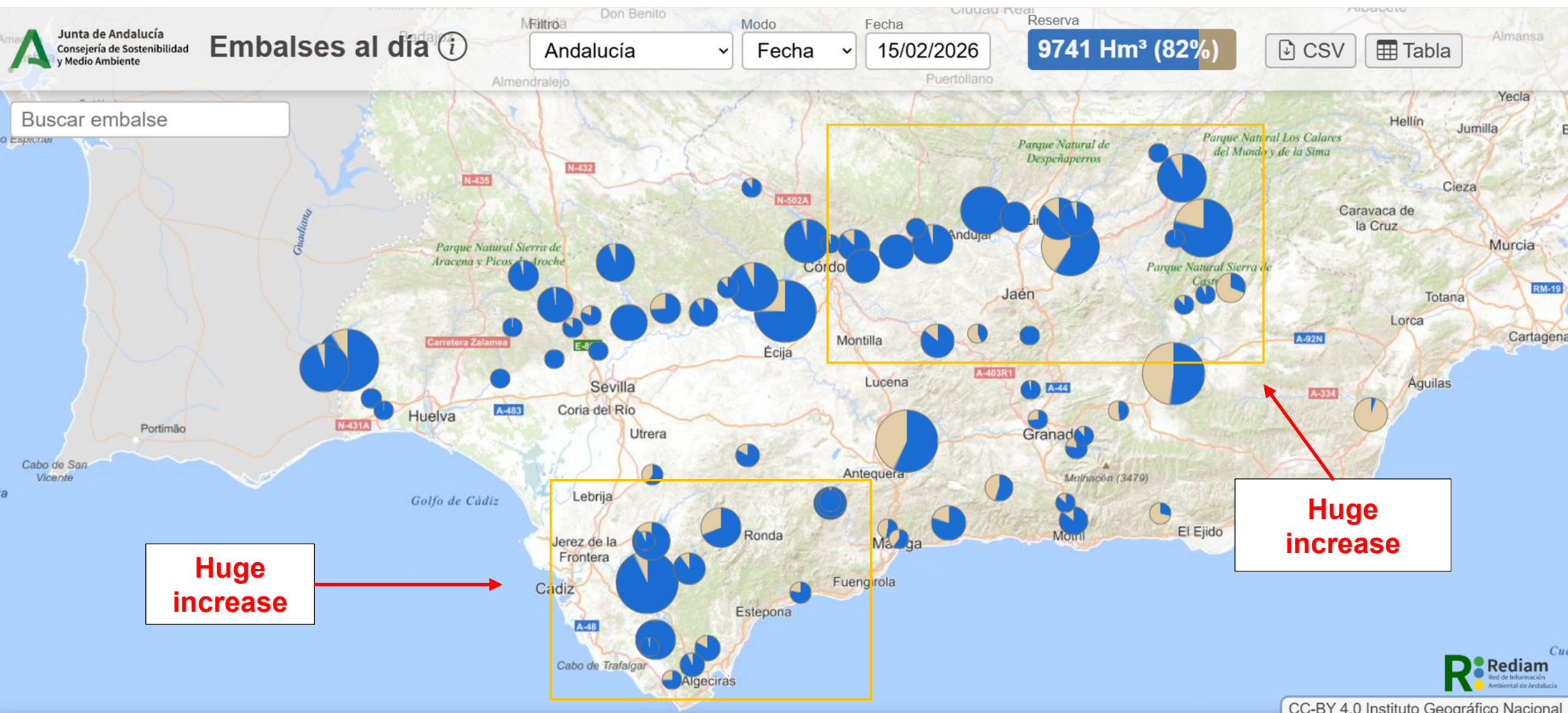
15/02/2026

9741 Hm³ (82%)

CSV

Tabla

Buscar embalse



Huge
increase

Huge
increase

Flood Probability < 48h

Rapid Impact Assessment

Static layers

Exposure (1)

Exposure

Flood hazard and risk maps (9)

Flood Area (T500)

Flood Area (T100)

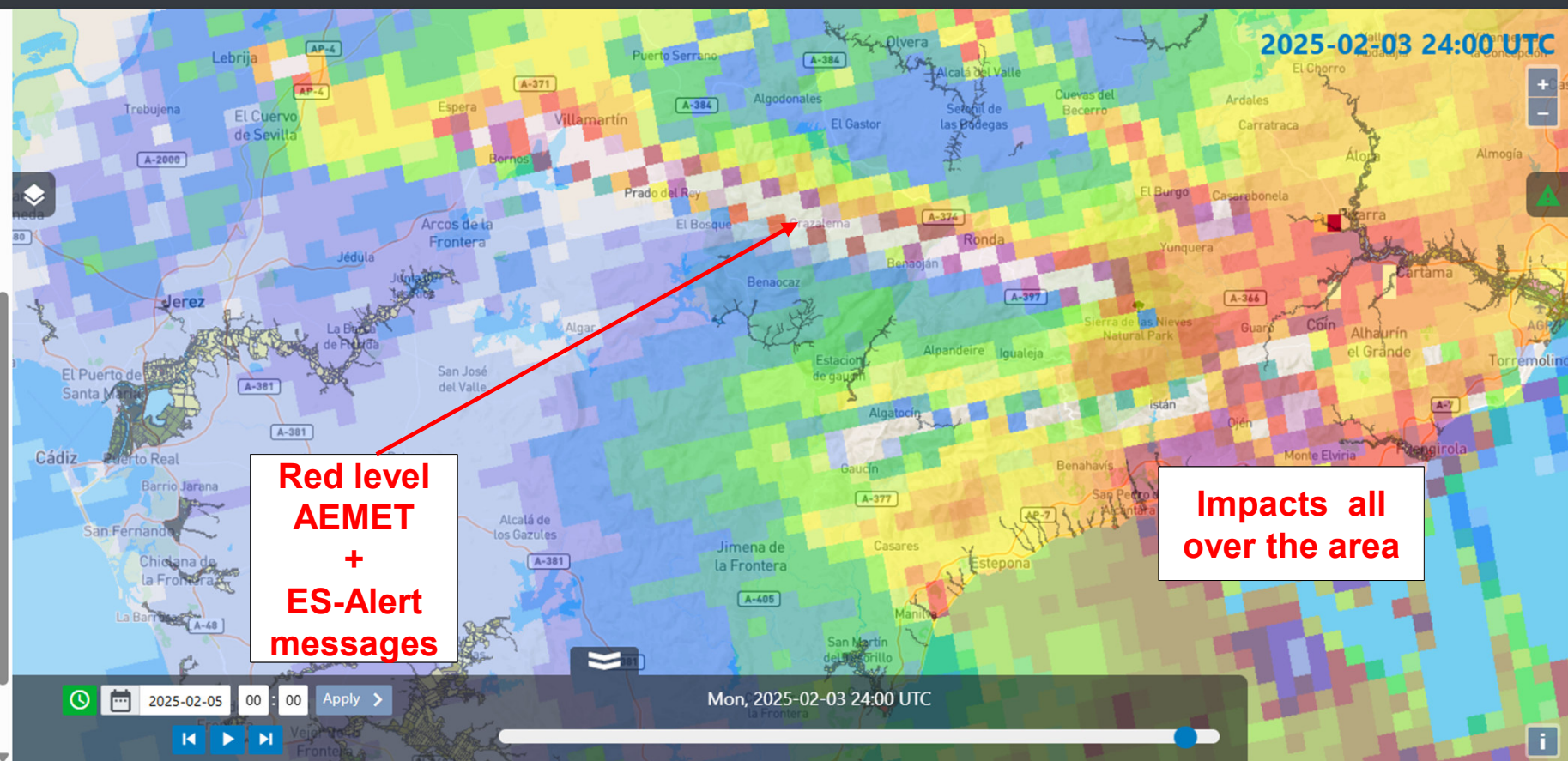
Flood Area (T010)

MRIF RECON (T500)

MRIF RECON (T100)

MRIF RECON (T010)

MRIF RPTOSMA (T500)



[INLINE] - Notifications update



inline@crahi.upc.edu

Para ANTONIO SANTIAGO GAHETE

03/02/2026

Si hay problemas con el modo en que se muestra este mensaje, haga clic aquí para verlo en un explorador web.

Detailed list of currently active notifications.

Notification ID	Type	Source	Area	Level	Start time	End time
27963195	Flood	Edora product notification (Flash Flood)	Sol y Guadalquivir	3	2026-02-03 22:00 UTC	2026-02-03 22:30 UTC
27963339	Flood	Edora product notification (Flash flood impact)	Sol y Guadalquivir	2	2026-02-04 02:00 UTC	2026-02-04 07:00 UTC
27963342	Flood	Edora product notification (Flash flood impact)	Subsistencia condensa	2	2026-02-04 03:00 UTC	2026-02-04 07:00 UTC
27963343	Flood	Edora product notification (Flash flood impact)	Huelva y Aljaraque	3	2026-02-04 03:00 UTC	2026-02-04 07:00 UTC
27963344	Flood	Edora product notification (Flash flood impact)	Costa granadina	2	2026-02-04 03:00 UTC	2026-02-04 07:00 UTC
27963345	Flood	Edora product notification (Flash flood impact)	Aznarque	3	2026-02-04 03:00 UTC	2026-02-04 07:00 UTC
27963346	Flood	Edora product notification (Flash flood impact)	Granadina	2	2026-02-04 03:00 UTC	2026-02-04 07:00 UTC
27963347	Flood	Edora product notification (Flash flood impact)	Cuenca del Genil	3	2026-02-04 04:00 UTC	2026-02-04 07:00 UTC
27963348	Flood	Edora product notification (Flash flood impact)	Poniente y América Capital	3	2026-02-04 04:00 UTC	2026-02-04 07:00 UTC
27963349	Flood	Edora product notification (Flash flood impact)	Guadix y Baza	2	2026-02-04 05:00 UTC	2026-02-04 07:00 UTC
27962604	Flood	Edora product notification (Flash flood impact)	Costa granadina	3	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962605	Flood	Edora product notification (Flash flood impact)	Cazorla y Segura	2	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962606	Flood	Edora product notification (Flash flood impact)	Valle del Guadalquivir de Júcar	2	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962607	Flood	Edora product notification (Flash flood impact)	Capital y Montañas de Júcar	2	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962608	Flood	Edora product notification (Flash flood impact)	Amiquera	2	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962609	Flood	Edora product notification (Flash flood impact)	Valle del Almanzora y Los Villos	2	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962610	Flood	Edora product notification (Flash flood impact)	Sol y Guadalquivir	2	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962611	Flood	Edora product notification (Flash flood impact)	Aznarque	2	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962612	Flood	Edora product notification (Flash flood impact)	Campaña sevillana	2	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962613	Flood	Edora product notification (Flash flood impact)	Serra sur de Sevilla	3	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962614	Flood	Edora product notification (Flash flood impact)	Florida	2	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962615	Flood	Edora product notification (Flash flood impact)	Nacimiento y Campo de Tabernas	2	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962616	Flood	Edora product notification (Flash flood impact)	Poniente y América Capital	3	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962617	Flood	Edora product notification (Flash flood impact)	Granadina	2	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962618	Flood	Edora product notification (Flash flood impact)	Campaña gaditana	3	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962619	Flood	Edora product notification (Flash flood impact)	Estrecho	3	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962620	Flood	Edora product notification (Flash flood impact)	Subsistencia condensa	3	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962621	Flood	Edora product notification (Flash flood impact)	Cuenca del Genil	3	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962622	Flood	Edora product notification (Flash flood impact)	Guadix y Baza	3	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC
27962623	Flood	Edora product notification (Flash flood impact)	Huelva y Aljaraque	3	2026-02-04 12:00 UTC	2026-02-06 00:00 UTC

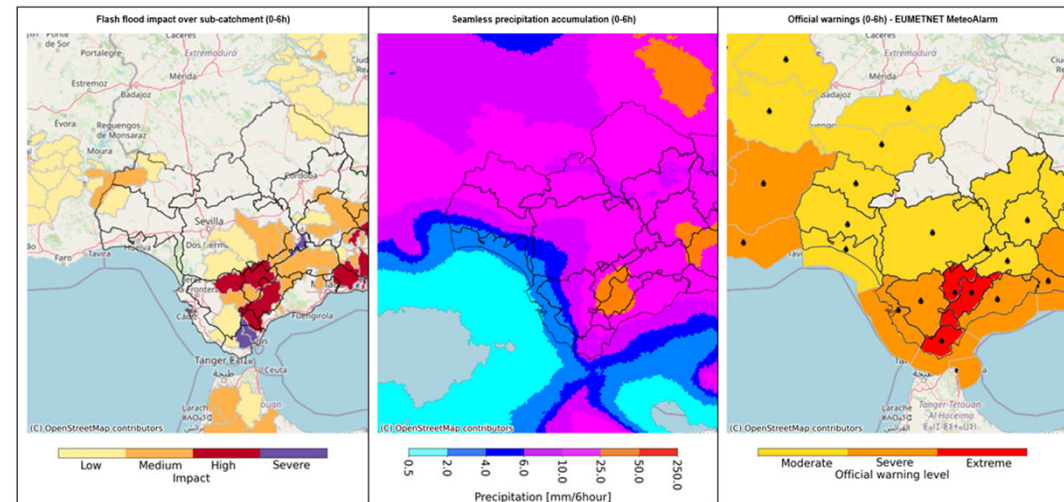
EFAS notifications:

Forecast Date	River	Basin	Country
2026-02-03 00:00	Genil	Guadalquivir	Spain
2026-02-02 12:00	Barbate	Barbate	Spain
2026-02-02 12:00	Guadalquivir	Guadalquivir	Spain
2026-02-02 12:00	Andarax	Andarax	Spain
2026-02-02 12:00	Vélez	Córcel	Spain
2026-02-02 12:00	Fardos	Guadalquivir	Spain
2026-02-02 12:00	Genil	Guadalquivir	Spain
2026-01-31 12:00	Cacín	Guadalquivir	Spain
2026-01-29 00:00	Riviera de Huelva	Guadalquivir	Spain



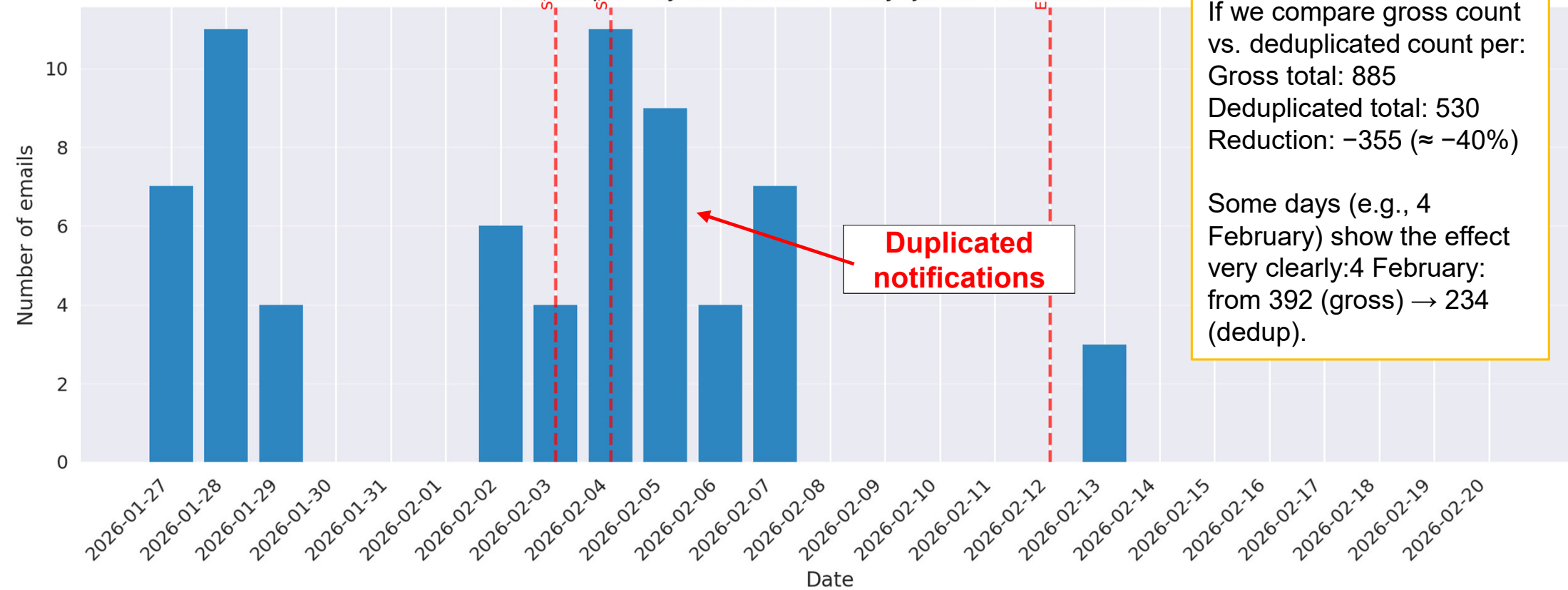
Notifications Update (forecasting time: 2026-02-04 at 10:00 UTC)

This email provides you with the latest INLINE notifications related to your area. For more information you can access our [platform](#).



AI Generated

Emails per Day with Event Overlay (Jan 27-Feb 20, 2026)

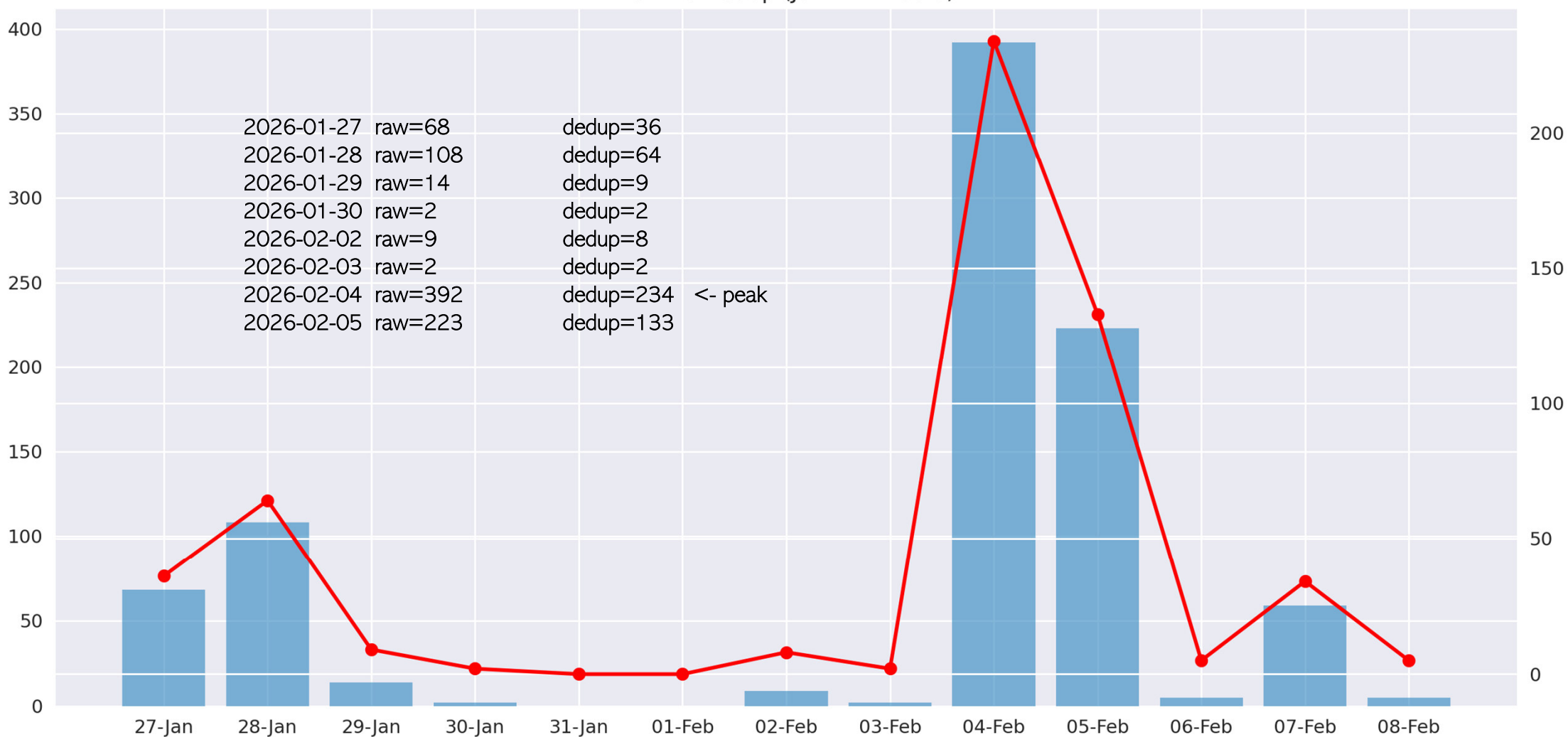


Reviewing notifications of the period:

If we compare gross count vs. deduplicated count per:
 Gross total: 885
 Deduplicated total: 530
 Reduction: -355 ($\approx -40\%$)

Some days (e.g., 4 February) show the effect very clearly:
 4 February:
 from 392 (gross) $\rightarrow$ 234 (dedup).

Raw vs Dedup (Jan 27 - Feb 8)



AI Generated

INLINE Platform

Flash flood past 24-h summary

Official warnings (1)

Official warnings

Meteorological layers (3)

Precipitation accumulation (24h)

Flooded area

AEMET+SYNOP Raingauge accum. (24h)

Flash flood impact layers (3)

Flash flood impact over the river network 24h

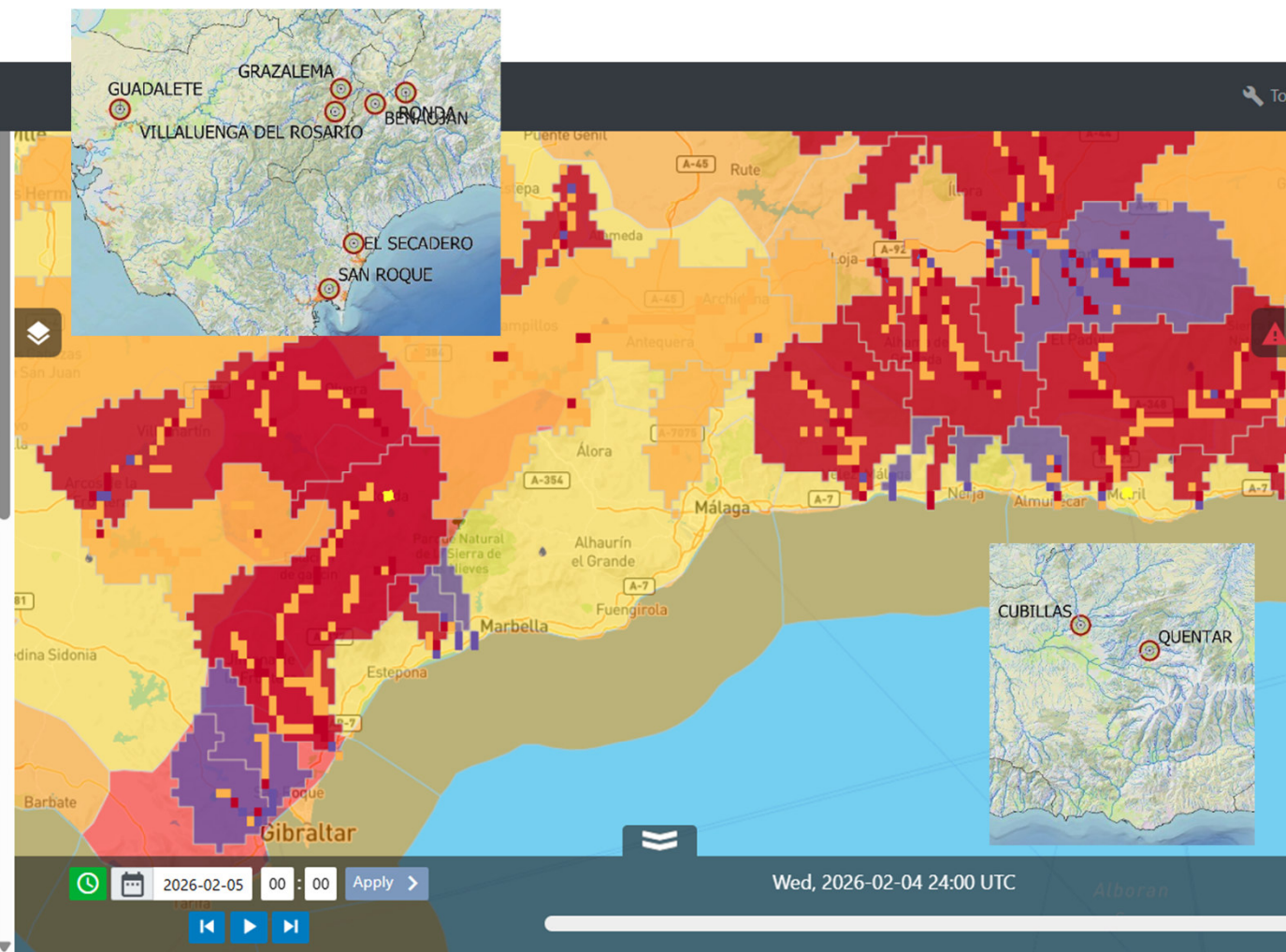
Flash flood impact over sub-catchment

Pluvial flood hazard in urban areas

EFAS (4)

ERIC Points

ERIC Affected Areas



Tools ? Help antonio.santiago.gahete

Filter

Severe (15) High (12) Medium (4)

Andalucía y Condado

Source: INLINE

Type: INLINE event notification

Hazards:  

Antequera

Source: INLINE

Type: INLINE event notification

Hazards:  

Aracena

Source: INLINE

Type: INLINE event notification

Hazards:  

Axarquena

Source: INLINE

Type: INLINE event notification

Hazards:  

Campidana gaditana

Source: INLINE

Type: INLINE event notification

Hazards:  



- Almost 12.000 incidents in total (112 incidents)
- Over 11.000 people evacuated
- More than 150 roads blocked
- 1 casualty

Short impact summary – Late January & February 2026 (Andalusia)

The series of storms that swept across Andalusia in late January and early February 2026 caused widespread flooding, severe transport disruption, and significant impacts on people and infrastructure. During Storm Leonardo, the most damaging event, emergency services recorded thousands of incidents, including evacuations, flooded homes, cut roads, and areas temporarily isolated. The persistent rainfall also led to dangerous river rises, reservoir spillway operations, and extensive inundations across Cádiz, Málaga, Córdoba, Jaén and Granada, prompting sustained emergency activity and prolonged alerts by the regional authorities.



Conclusions for the INLINE Project up to now:

- Probably excessive number of notifications. Explore alternatives.
- Revisit past events to check availability for certain layers. Provide feedback.

Next steps:

- Check new capabilities.
- Full integration into legacy systems still pending.
- Explore new options to provide feedback on impacts. Full text contents for notifications.
- Explore basins as new delimitation for areas of interest.