

EDERA: Early warning Demonstration of pan-European rainfall-induced impact forecasts

Local Training Workshop with End-Users, Quarteira, 21-22 Nov 2023

Introduction Session

14.00 - 14.30

Workshop Agenda

DAY 1

Introduction Session (14:00 -14:30)

Group introductions (14.30 - 15:45)

- *Participants present a storyline of how you dealt with recent events in your region (using the chosen case studies, if possible). If we have time, a group discussion on what major events have occurred over last 5 years.*

Coffee Break (15.45 - 16:15)

Presentation of EDERA Platform and Products (16:15 – 17:00)

Guided demonstration of the EDERA platform in two events

- *25 May 2023 – Torrential rains, hail and flooding - Cinca & Ésera rivers (Spain).*
- *06 July 2023 – storm and urban flooding in Zaragoza (Spain).*

Closing Session (17:50 – 18:00)

Command Centre visit in Loulé (18:30 – 19:00) & Evening Meal in Quarteira (19:30 – 21:00)

Workshop Agenda

DAY 2

Presentation of Local Case Studies (09:00 – 09:30)

Hands-on analysis of EDERA products (09:30 – 10:30)

- *Participants interpret EDERA products for selected case studies using the co-designed checklist from DAY 1.*

Coffee Break (10:30 – 11:00)

Management of cross-border emergencies (11:00 – 12:00)

Feedback Session (12:00 – 13:00)

- *Evaluate EDERA interpretations using checklist.*
- *Agree the configuration of the EDERA products.*

Lunch (13:00 – 14:00)

Stakeholder participation during EDERA demonstration phase (14:00 – 15:15)

Closing session (15:15 – 15:30)

EDERA: Early warning Demonstration of pan-European rainfall-induced impact forecasts

Project summary

Early warning Demonstration of pan-European rainfall-induced impact forecasts

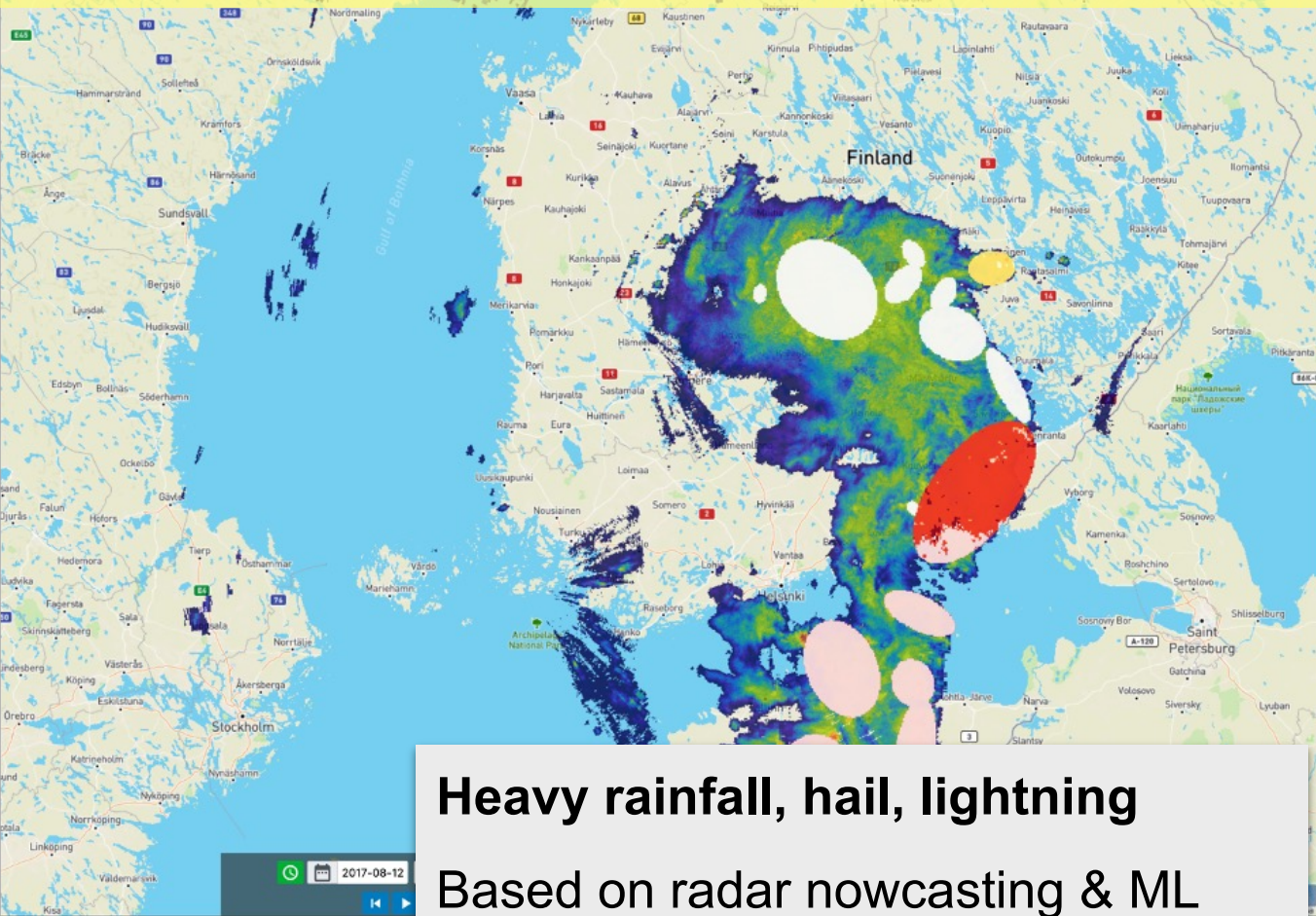
- **Duration:** 01 Feb 2023 - 31 Jan 2025 (24 months)
- **Budget:** 1,173,954.78€ (grant: 997,861.55€)
- **Website:** www.edera-project.eu
- **Partners:**
 - Universitat Politècnica de Catalunya (ES)
 - European Centre for Medium-range Weather Forecasts (INT)
 - Finnish Meteorological Institute (FI)
 - Environment and Water Agency of Andalusia (ES)
 - Directorate-General for Civil Protection and Emergencies (ES)
 - National Authority of Emergency and Civil Protection (PT)

Main objective

Integrating forecasts of the impacts due to storms and heavy rainfall into the operational EWSs of national, regional and local CPAs, fostering sharing information and cooperation of CPAs during cross-border events and coordination between CPAs.

Impact forecasting during storms and heavy rainfall events

Storm impact nowcasting (0-3 h).



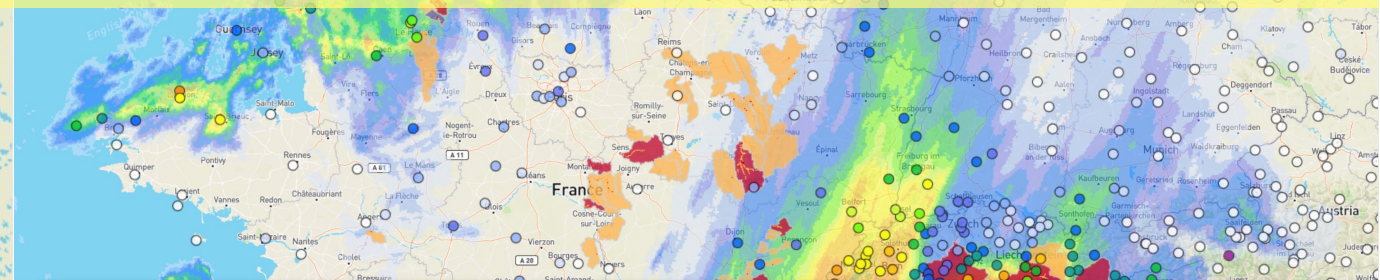
Heavy rainfall, hail, lightning

Based on radar nowcasting & ML

Extended to European scale

European-wide exposure.

Flood impacts (0-120 h).



Flash floods (basins 10 - 2000 km²)

Resolution: 1 h, 1 km - Update: 1 h

Blended
precipitation
forecasts

Flash flood
hazard

Flash flood
impacts

- Using probabilistic nowcasting & NWP.
- Seamless blending in the first 6 hours

- Basin-aggregated precipitation on the drainage network (1 km).
- Hazard assessment by comparison with climatological thresholds.

- By combination of hazard with exposure.

Specific objectives and expected outputs

- **Extend the convective hazard and pluvial flood forecasts over Europe.**
- **Increase the adaptability of the flood impact forecasts to the needs of the end users**, applying a strategy to provide compound impact forecasts, and implement configurable user-defined notifications.
 - *Improved products for flood impact forecasting at European scale*
- **Integrate the flood impact forecasts to the EWS platforms of the end users** for improved preparedness and response management during flood events.
- **Demonstrate the added value of seamless flood impact forecasts through a robust evaluation**, at European scale and in **two pilot sites**, with end-users analysing the added value for CPAs cooperation in cross-border operations and coordination.
 - *Demonstration for a period of 15 months*
 - *Recommendations for coordination and cross-border cooperation between CPAs*
- **Develop comprehensive guidance material** delivered through dedicated training workshops and e-learning materials.
- **Integrate the developments within the CEMS-Floods EFAS system.**
 - *Sustainability of the products*

EDERA demonstration



ES-PT pilot site

National Authority of Emergency and Civil Protection

CIM Região Coimbra

Instituto Português do Mar e da Atmosfera

Agencia Portuguesa do Ambiente



ARISTOTLE-eENHSP
EUMETNET OPERA

Directorate-General for Civil Protection and Emergencies

Environment and Water Agency of Andalusia

Protección Civil de Andalucía

Protección Civil de Puente Genil

Asociación de Operadores de Protección Civil de Andalucía

Agencia Valenciana de Seguridad y Respuesta a las Emergencias

Protección Civil de Cataluña

CH Guadiana

Agencia Estatal de Meteorología

FI+ pilot site

Finnish Meteorological Institute

Helsinki Rescue Department

Kymenlaakso Rescue Services

North Karelia Rescue Department

Finnish Environment Institute

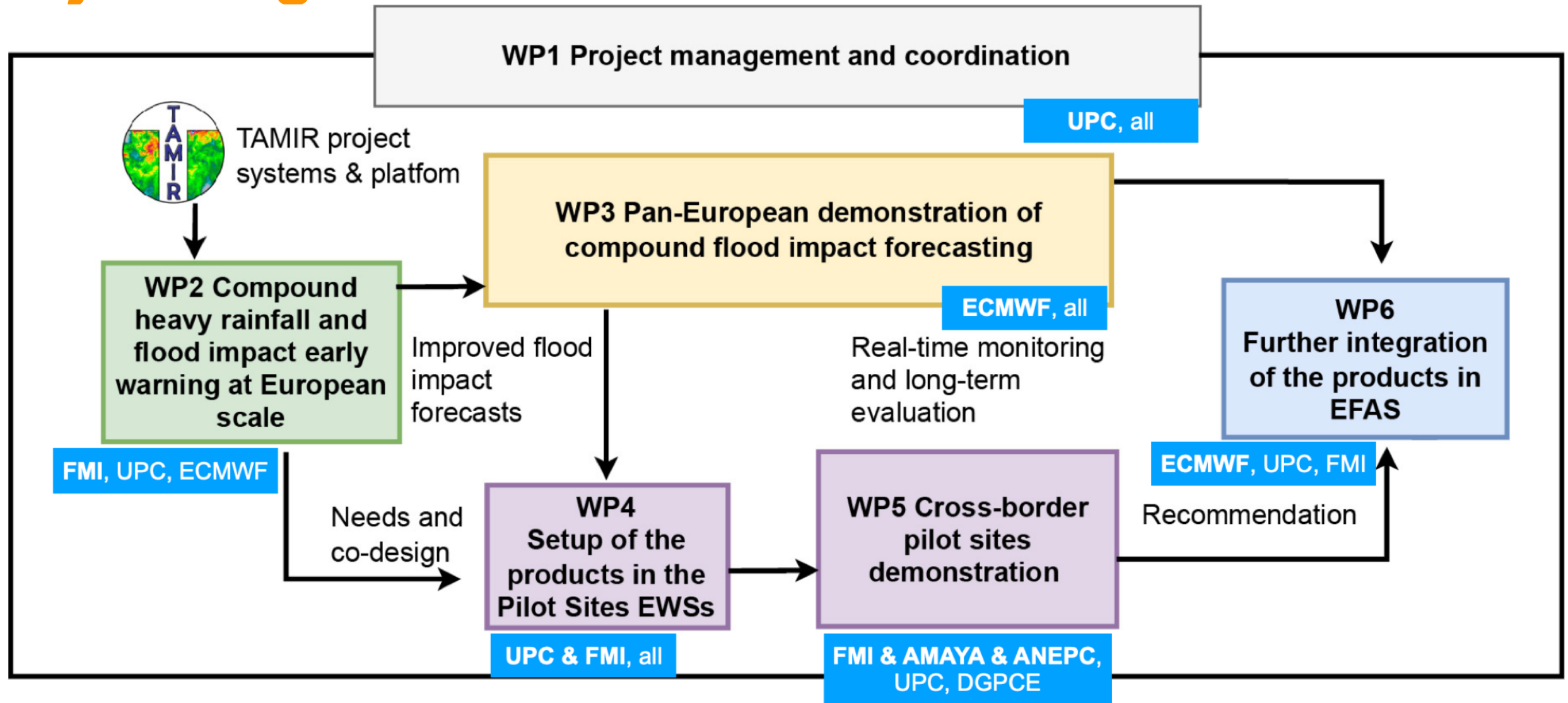


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EDERA demonstration

- August 2023 – October 2024.
- With the participation of end users.
- Access to the products in real time through
 - + EDERA web-based platform.
 - + WMS
- Integration of *local* products/information
- Warnings and notifications adapted to the end user.
- Contribution to the evaluation (feedback about the products, functionalities and results during events).
- Recommendations for coordination and cooperation between CPAs.

Project organisation



Main events

Mar 2023: 1st EDERA meeting (Sevilla, ES)

Nov 2023: Training activities in the Pilot Sites (Helsinki, FI & Loulé, PT)

Apr 2024: International training (Madrid, ES)

Dec 2024: International workshop (Brussels, BE)

Case Studies

DAY 1 – Guided demonstrations

ES-PT pilot site

DAY 1 - Demonstrations

Demonstration events for Spain-Portugal

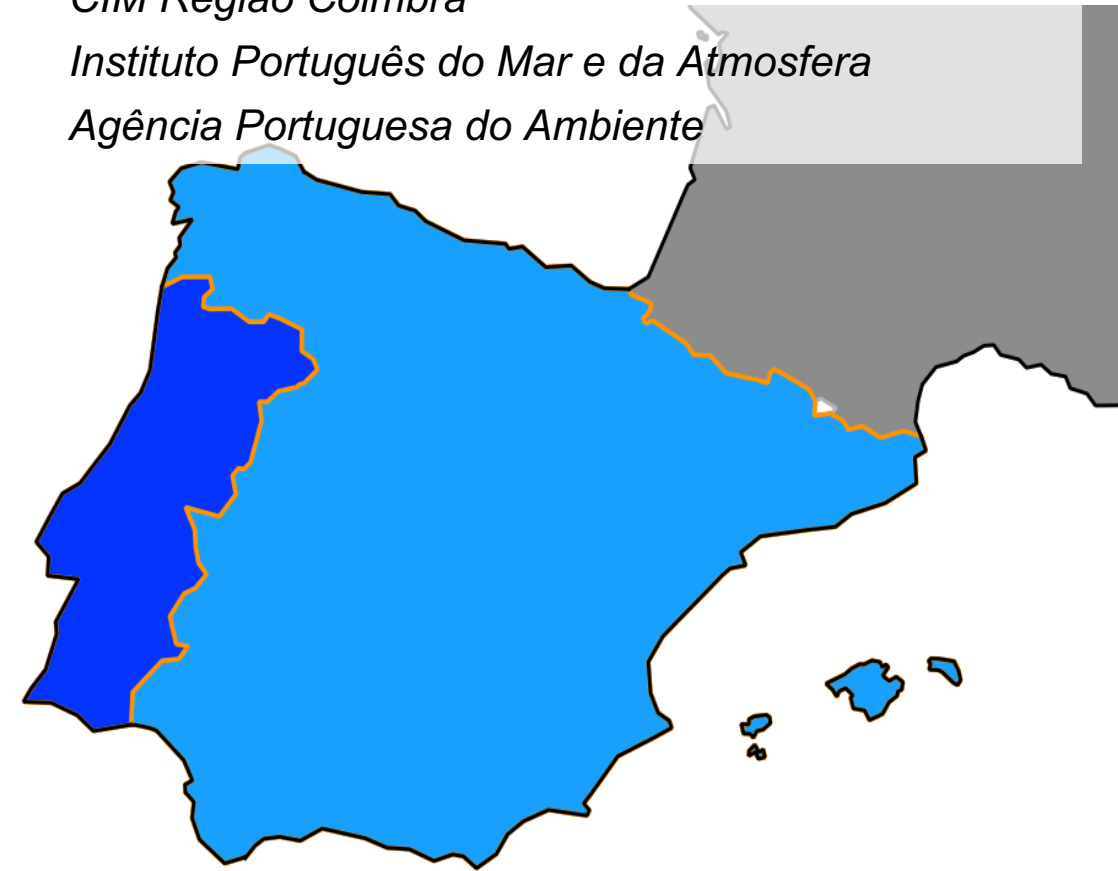
Dates	Affected Area	Description
25/05/2023 ~15:00 – 26/05/2023	Spain <ul style="list-style-type: none">Cinca and Ésera rivers, Huesca	Torrential rains (DANA), hail, flooding. Impacts destroyed roads, highways, municipal infrastructure (2 bridges) and crops.
06/07/2023	Spain <ul style="list-style-type: none">Zaragoza	Series of storms in a short period with torrential rain, hail & flash flooding. Road closures, homes flooded, crops destroyed by hail, public transport disruptions, damage to roads and local infrastructure.

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DAY 2 – Hands-on analysis

Case study events for Spain-Portugal			
Dates	Affected Area	Description	Lead
31/08/2023 to 04/09/2023	Spain <ul style="list-style-type: none"> Valencia, Madrid, Catalonia 	Valencia: Heavy and persistent rain (DANA), wind gusts 80km/h. Power outages, damage to infrastructure, roads, etc. Madrid: Heavy rainfall (DANA). 3 fatalities, road/tunnel closures, public transportation disruptions, damage to infrastructure	Rosa Torres (DGPCE)
22/10/2023	Spain <ul style="list-style-type: none"> Huelva (Ayamonte, Cartaya, Isla Cristina), Cádiz (Moguer) Portugal <ul style="list-style-type: none"> Algarve (Vila Real de Santo António, Faro) 	Storm Bernard, heavy rainfall and strong winds (gusts more than 100km/h). One fatality, localised flooding, fallen trees, road closures.	Abel Gomes (ANEPC)
20/03/2022 - 23/03/2022	Spain <ul style="list-style-type: none"> Huelva, Isla Cristina, Lepe, Cartaya, Málaga, Almería 	Spain: Heavy rain (DANA), storms, coastal warnings, high winds, flooding. Road closures, damage to homes & infrastructure.	Antonio Santiago (AMAYA)
23/09/2021	Spain <ul style="list-style-type: none"> Huelva (Ayamonte, Cartaya, Isla Cristina, Lepe), Extremadura (Zafra, Mérida, Villafranca de los Barros, Almendralejo), Mallorca (Alcúdia, Ferreries) Portugal <ul style="list-style-type: none"> Algarve (Vila Real de Santo António, Altura y Monte Gordo) and Alentejo 	Torrential rains, localised flash flooding. Road closures, school closure, damage to homes and local businesses.	

DAY 2 – Cross-border event analysis

ES-PT pilot site

DAY 2 – Cross-border event analysis

Case study events for cross-border Spain-Portugal

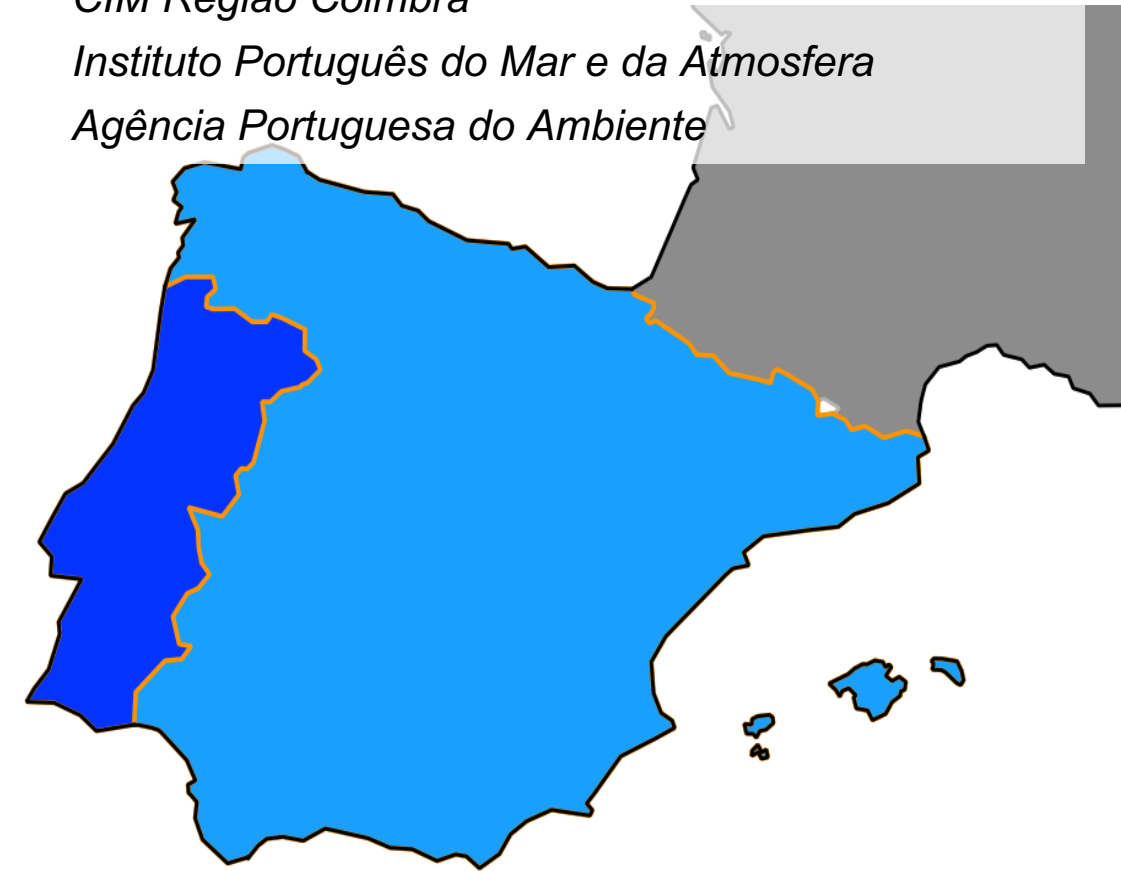
Dates	Affected Area	Description
04/12/2022 to 08/12/2022	Portugal <ul style="list-style-type: none">Loulé, Faro, Lisboa, Setubal Spain <ul style="list-style-type: none">Huelva, Cáceres and Badajoz	Spain & Portugal: Heavy rain showers, strong winds (gusts of up to 70 km/h), frequent and scattered thunderstorms. Localised flooding, damage to local roads and infrastructure, school/business closures.

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Expected Stakeholder Participation

Participation during this workshop

Group introductions

Present storyline of how you dealt with recent events

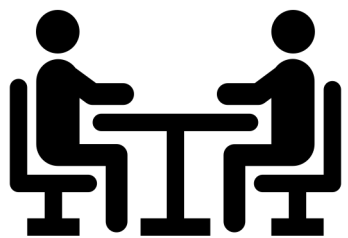


Co-design EDERA checklist

Create a checklist of how/when to use EDERA products with demos

Hands-on session

Analyse EDERA forecasts/products using checklist

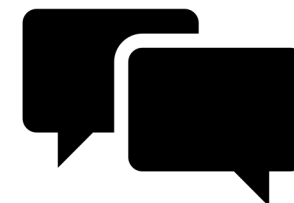


Management of cross-border emergencies

Interpret EDERA forecast for the cross-border event & evaluate in the context of cross-border management

Feedback session

Evaluate hands-on session & checklist
Agree configuration of EDERA products



Participation during EDERA Demonstration Phase

Demonstration Phase (15 months)

Now – October 2024

Stakeholders should routinely check EDERA real-time forecasts and provide feedback on EDERA Products.

- ***Feedback session:*** *to discuss when to check EDERA forecasts and how to deliver feedback to UPC/ECMWF/AMAYA/DGCPE/ANEPC (Spain-Portugal)*
- *Coordinate knowledge transfer to forecast analysts?*

