HAZRUNOFF

PROJECT

*Integration of **sensing** and **modelling** technologies for **early detection** and follow-up of hazmat and flood **hazards** in **transitional and coastal waters***

Funded by
European Union
Civil Protection
and Humanitarian Aid

HAZRUNOFF AT A GLANCE

Programme: **DG ECHO** - Directorate-General for European Civil Protection and Humanitarian Aid Operations

Start date: January 2018
End date: May 2020

Total budget: 643,770.10 €
EU Grant: 482,827.57 € (75%)

HazRunoff Goal:

To increase preparedness and response capacity on floods and pollutant hazards in rivers, transitional and coastal waters, through the development of a situational **awareness and emergency response framework** and associated **tools**, capable of **supporting civil protection units and water pollution authorities.**

HAZRUNOFF PROJECT

Funded by European Union Civil Protection and Humanitarian Aid

PARTNERS AND ADVISORY BOARD

- Instituto Superior Técnico, IST (*Coordinator*)
- Bentley Systems Portugal
- Câmara Municipal de Loures
- Portuguese National Authority for Civil Protection

- Centre de documentation, de recherche et d'expérimentations sur les pollutions accidentelles des eaux, CEDRE
- GIP Loire estuaire

- Centro Tecnológico del Mar - Fundación CETMAR
- Augas de Galicia

- EOMAP GMBH & CO KG
- BfR -German Federal Institute for Risk Assessment

- Public Health England (PHE)
- UK Maritime Coast Guard Agency

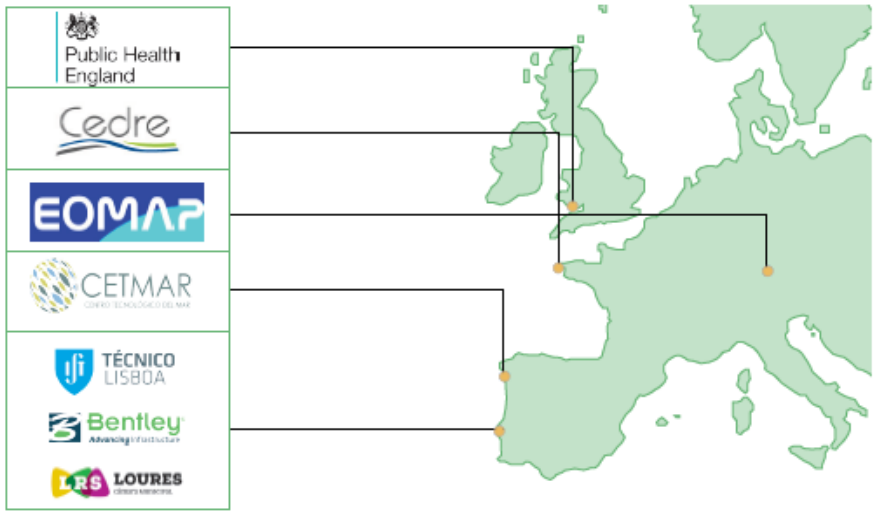
Contact:

-Project coordinator: *Ramiro Neves*

-Technical coordinator: *Lígia Pinto*

Project contact e-mail:

hazrunoff@maretec.org



http://www.hazrunoff.eu/

@hazrunoff

HAZRUNOFF PROJECT

Funded by European Union Civil Protection and Humanitarian Aid

OBJECTIVES & SCOPE

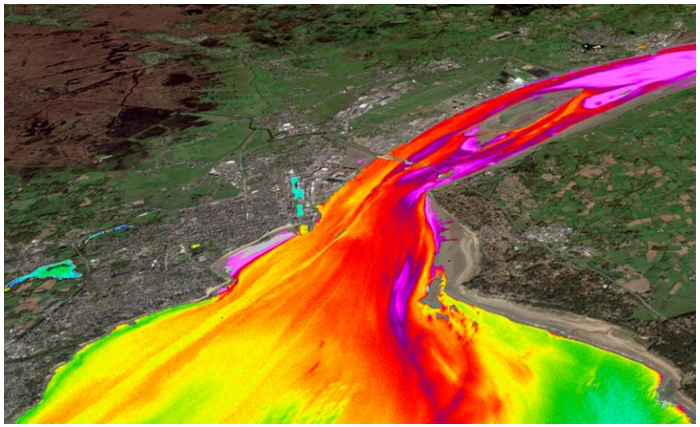
HazRunoff aims to **fill the gaps** around:

- **knowledge & preparedness**,
- **early warning & detection**,
- **early response & follow-up,**

on **flooding and hazmat contamination** in

Inland,

Transitional and coastal waters



Including urban areas.

HAZRUNOFF PROJECT

Funded by European Union Civil Protection and Humanitarian Aid

Natural hazards are mostly associated to Extreme meteorological events!

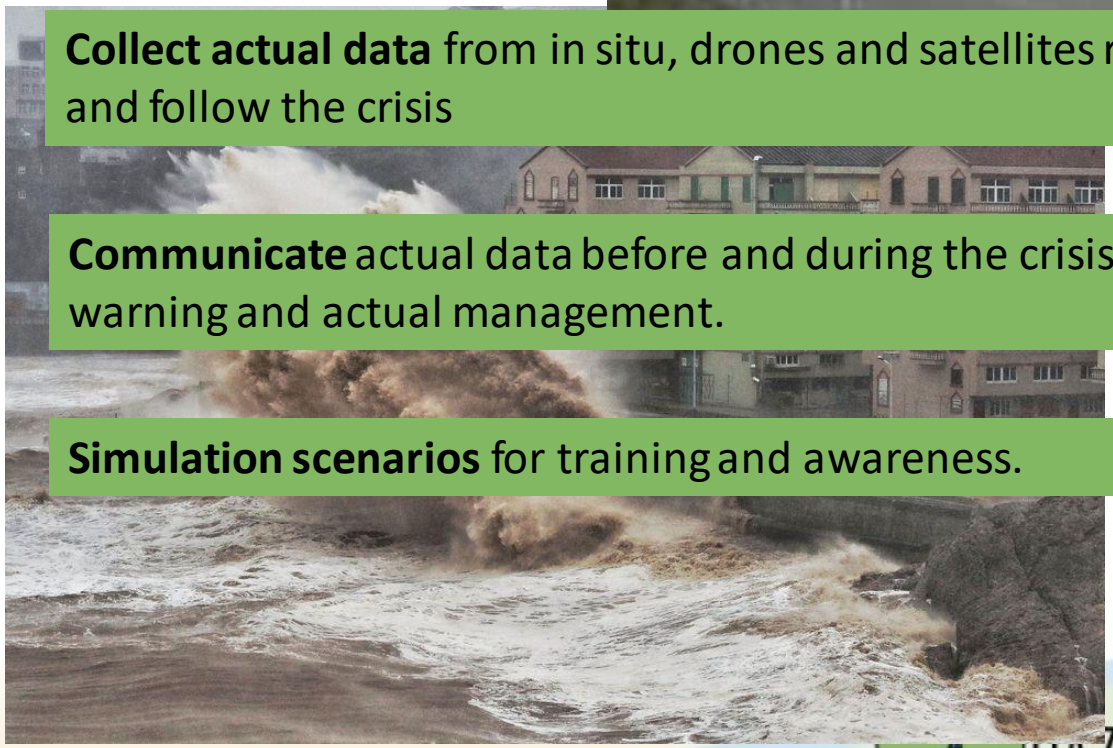
HazRunoff must :

Forecast meteorology, storm surge, river discharge, to deliver alerts and to plan crisis management.

Collect actual data from in situ, drones and satellites remote sensing, to detect and follow the crisis

Communicate actual data before and during the crisis using web services for warning and actual management.

Simulation scenarios for training and awareness.



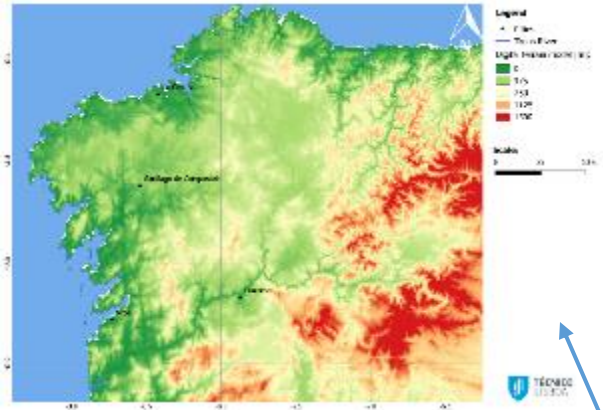
HAZRUNOFF PROJECT

Funded by European Union Civil Protection and Humanitarian Aid

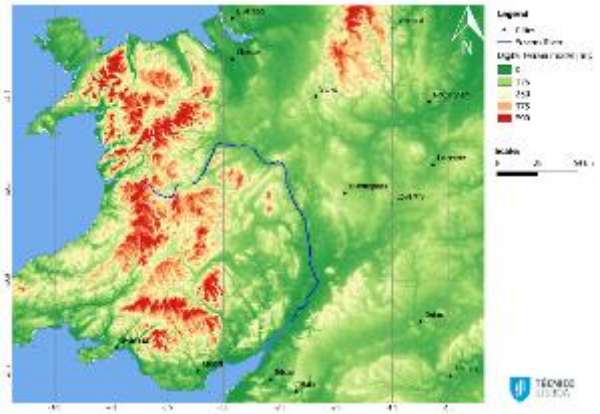
HazRunoff pilot areas

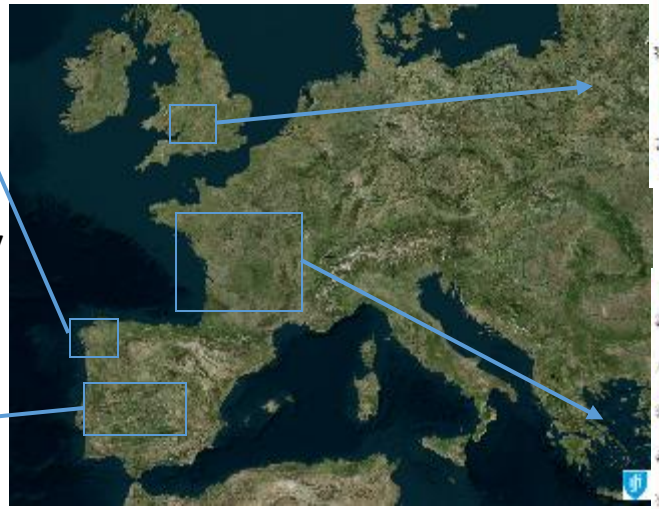
http://www.hazrunoff.eu/case-studies/

Spain – Ulla and Sar Rivers \ Ría Arousa

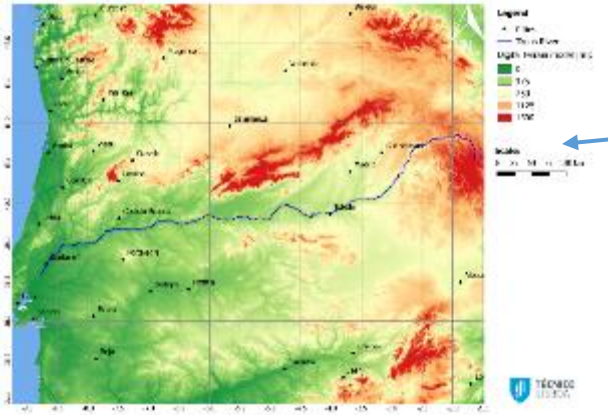


UK - Severn river \ estuary

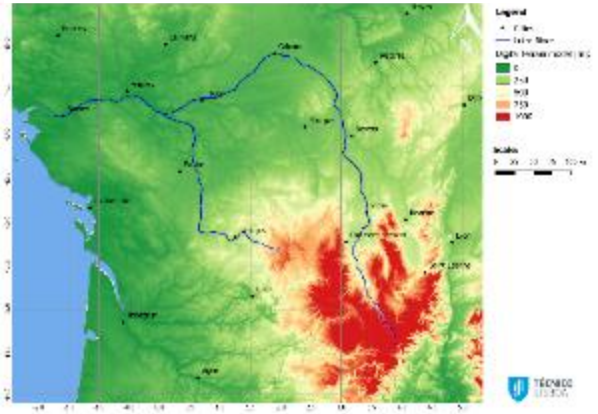




Portugal - Tagus river \ estuary



France - Loire river \ estuary



HAZRUNOFF PROJECT

Funded by European Union Civil Protection and Humanitarian Aid

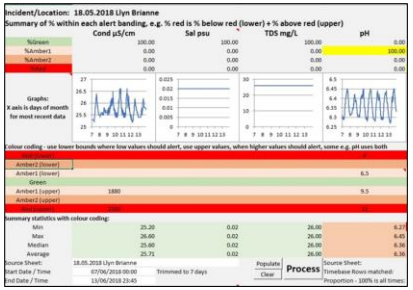
DATA ACQUISITION AND ANALYSIS

Data is always short!! During crisis situations it can be even shorter!!! The solution is combination of data from different sources (and modelling)

From Remote Sensing: Water level, turbidity, oil slick identification and chemical spill detection;

From in-situ measurements: (automatic) River control stations and (manual) Laboratory measurements of chemicals behaviour and fate

Unmanned Aerial Vehicles (UAV): Identification and mapping of floods and water pollution



Gap analysis and assessment of sentinels and indicators: Data assessment & crossing between different sources and modelling forecasts.

Today workshop 14:45 - 15:05 Near Real-Time Satellite Data in Operational Context (ChristianBödinger, EOMAP, Germany)

15:05 - 15:25 EMODnet Physics from data to services (Antonio Novellino, ETT SpA)

HAZRUNOFF PROJECT

Funded by European Union Civil Protection and Humanitarian Aid

SIMULATION AND FORECASTING OF FLOOD AND POLLUTANT TRANSPORT

To simulate and **integrate the water continuum from the watershed up to the estuary** to reproduce measured data and forecast the flood propagation and the pollutants distributions.

Meteorological modelling

Watershed modelling

Estuarine modelling

Urban storm water modelling

Integrated flood modelling

Pollutants and debris dispersion modelling

- Oil and HNS spills
- Radioactivity dispersion in wate bodies
- Air dispersion modelling

Today workshop 14:25 – 14:45 Modeling strategy and pilot cases (Lígia Pinto, IST, Portugal)

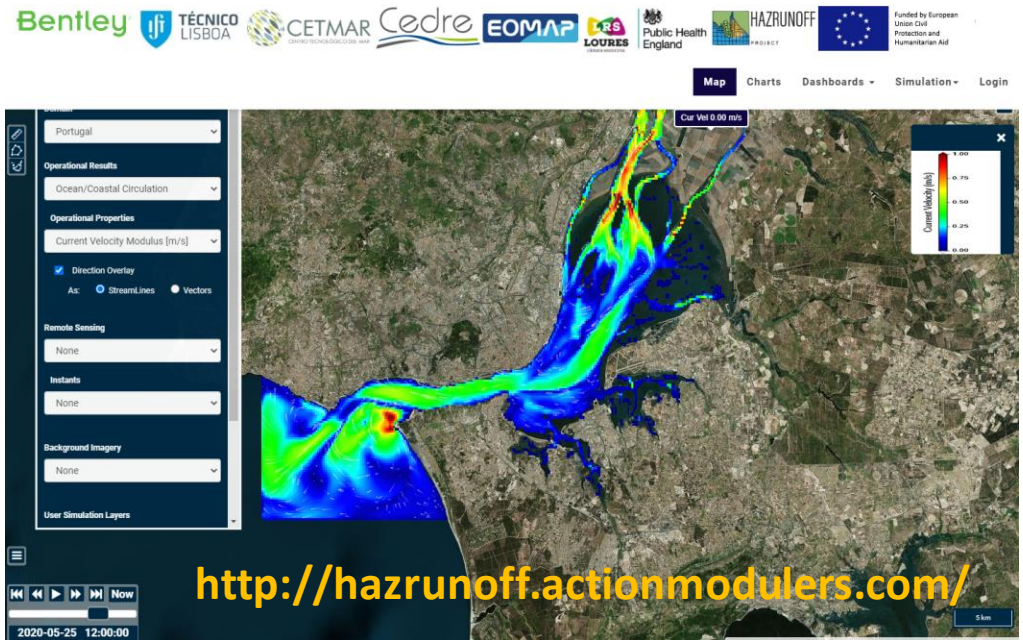
HAZRUNOFF PROJECT

Funded by European Union Civil Protection and Humanitarian Aid

Tools for situational awareness & emergency response

Tools centralize and integrate data from observation and prediction, decision making and communication to support flood and hazmat emergency responders

USER FRIENDLY WEB-BASED TOOLS AND MOBILE INTERFACES



- Early warning system
- On-demand pollutant dispersion simulation
- Realtime dashboards for situational awareness

Today workshop 16:15 - 16:45 Awareness & Response Tools: Using digital twins on water-related hazards (Rodrigo Fernandes, Bentley Systems, Portugal)

HAZRUNOFF PROJECT

Funded by European Union Civil Protection and Humanitarian Aid

Tools for situational awareness & emergency response

Evaluation of social media and internet systems for early incident detection, for communication with citizens and for impact assessment.

-Alerting about aquatic incidents

-Increasing public participation

Crisis communications, warning and informing message around priority pollutants.
Impact assessment in social networks (sentiment analysis) during incident, exercise or historical incidents.

Today workshop 15:55 - 16:15 Social media analytics as an alerting tool for hazmat incidents and flood events (Andrew Kibble, Public Health England, UK)

HAZRUNOFF PROJECT

Funded by European Union Civil Protection and Humanitarian Aid

Response planning and training

Focused on transitional waters, contributing to more efficient preparedness to floods and hazmat response.

- **Risk management**: **Maps and tools to prioritise emergency response actions**
- **Improved response protocols in transitional waters**: based on **past incidents**, on the main **difficulties encountered**, and on the **analysis of equipment** available.
- **Development of training activities**: To help **key staff** in emergency response to HNS and oil incidents, specially adapted to the conditions in transitional waters

Today workshop 15:35 - 15:55 Learning from past incidents; preparing for the future (Florence Poncet, CEDRE, France)

HAZRUNOFF PROJECT

Funded by European Union Civil Protection and Humanitarian Aid

IMPACT OF HAZRUNOFF

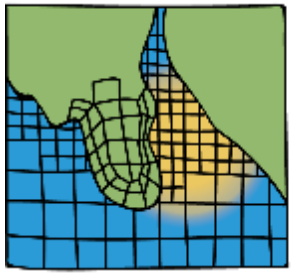
THE PROJECT HAS DELIVERED A SET OF MATERIALS AND TOOLS TO HELP IMPROVE THE PROCESS OF EARLY WARNING, EARLY DETECTION, FOLLOW-UP AND RESPONSE TO FLOODS AND HAZMAT CONTAMINATION IN TRANSITIONAL WATERS. ALL OF THESE TOOLS ARE AVAILABLE ON HAZRUNOFF WEBSITE.

It is hoped that these outcomes will contribute to

1. INCREASED PREPAREDNESS AND KNOWLEDGE ON MULTIPLE TYPES OF FLOODS
2. FASTER DETECTION OF HAZMAT INCIDENTS, BOTH OIL AND CHEMICAL, IN TRANSITIONAL WATERS
3. A MORE EFFICIENT FOLLOW-UP OF POLLUTION INCIDENTS IN TRANSITIONAL WATERS
4. INCREASED AWARENESS ON POTENTIAL MARITIME POLLUTION ORIGINATED IN INLAND AND ESTUARINE WATERS
5. STRONGER AND SAFER CAPACITY FOR IDENTIFICATION AND MONITORING OF CONTAMINATED AREAS
6. IMPROVED CONTINGENCY PLANNING
7. INCREASED AWARENESS AROUND HAZARD IDENTIFICATION AND RISK PERCEPTION
8. IMPROVED KNOWLEDGE OF CHEMICAL PROPERTIES AND BEHAVIOUR OF POLLUTANTS IN TRANSITIONAL WATERS
9. IMPROVED KNOWLEDGE AND AWARENESS AROUND MULTIPLE HAZARDS VIA BESPOKE TRAINING MATERIALS, COURSES AND EXERCISING

HAZRUNOFF PROJECT

Funded by European Union Civil Protection and Humanitarian Aid



HAZRUNOFF

PROJECT

Funded by European Union Civil Protection and Humanitarian Aid

http://www.hazrunoff.eu/

@hazrunoff