

Climate Dialogues in Southeast Europe: Innovation, Impact, Inclusion

Monday, 29th September
15:25 - 16:30

Moderator



Vladimir Djurdjevic
University of Belgrade, Serbia

Panellists



Gorjan Jovanovski
EarthCare.ia, North
Macedonia



Vassiliki Kotroni
National Observatory of
Athens, Greece



Ibolya Torok
Babes-Bolyai University,
Romania



Biljana Basarin
University of Novi Sad,
Serbia



hylosense
a smarter approach to weather

Gorjan Jovanovski - CEO

gorjan@hylosense.com





hylosense





hylosense

18 °C

22 °C

24 °C

26 °C

Greenfield

Waiwen

Neston

Willaston

Ellesmere Port

WHITBY

Holywell

10km

Bagillt

Burton

Capenhurst

Pentre Halkyn

Flint

19 °C

24 °C

25 °C

10km

Lixwm

Halkyn

Connah's Quay

Shotwick

Saughall

Moston

Nannerch

Shotton

UPTON

Northop

Northop Hall

BLACON

Rhydymwyn

Soughton

24 °C

Ewloe

25 °C

CHESTER

26 °C

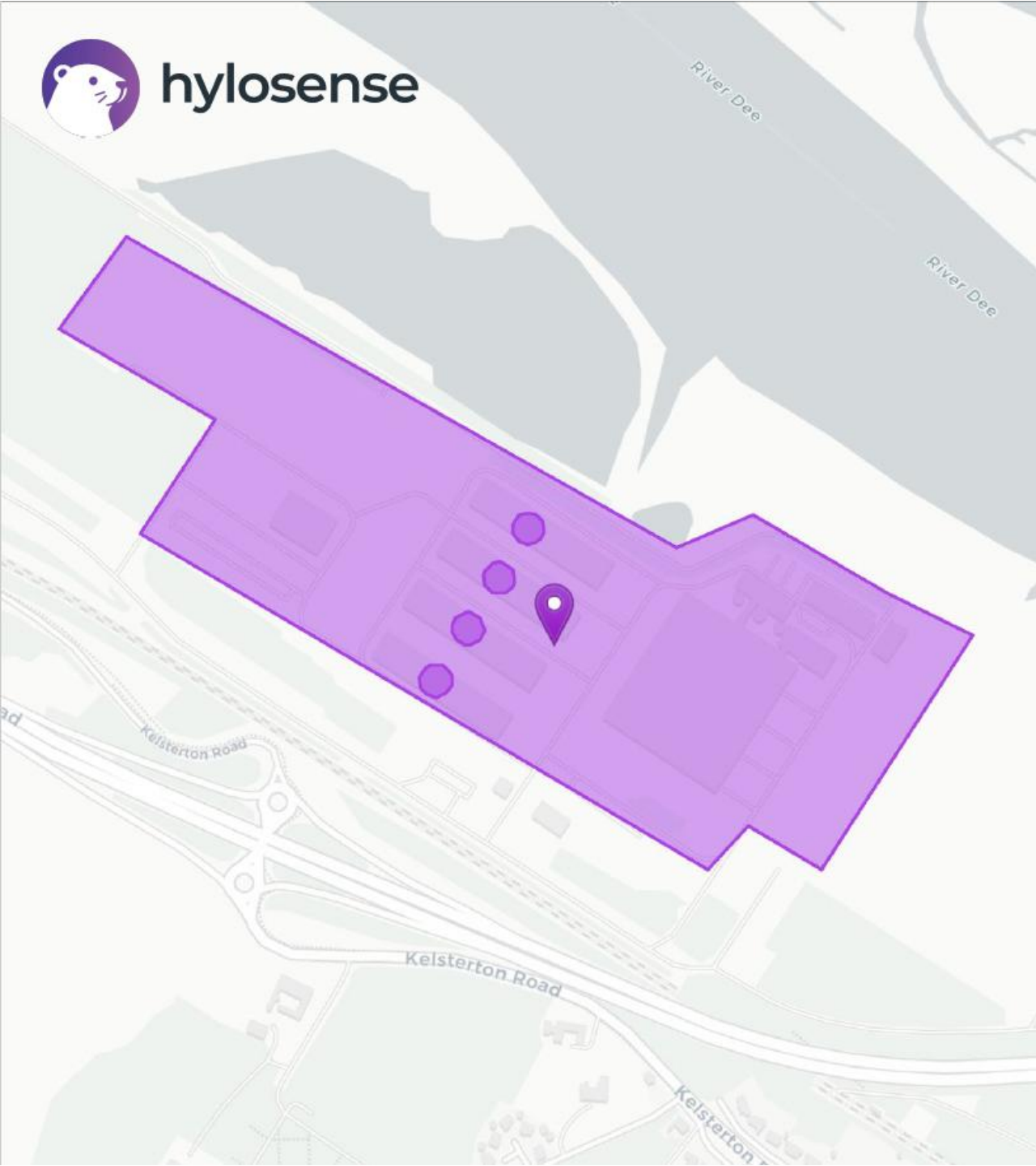
Cilcain

New Brighton

Pentre

Mancot

SALTNEY FERRY



hylosense

0.61 °C

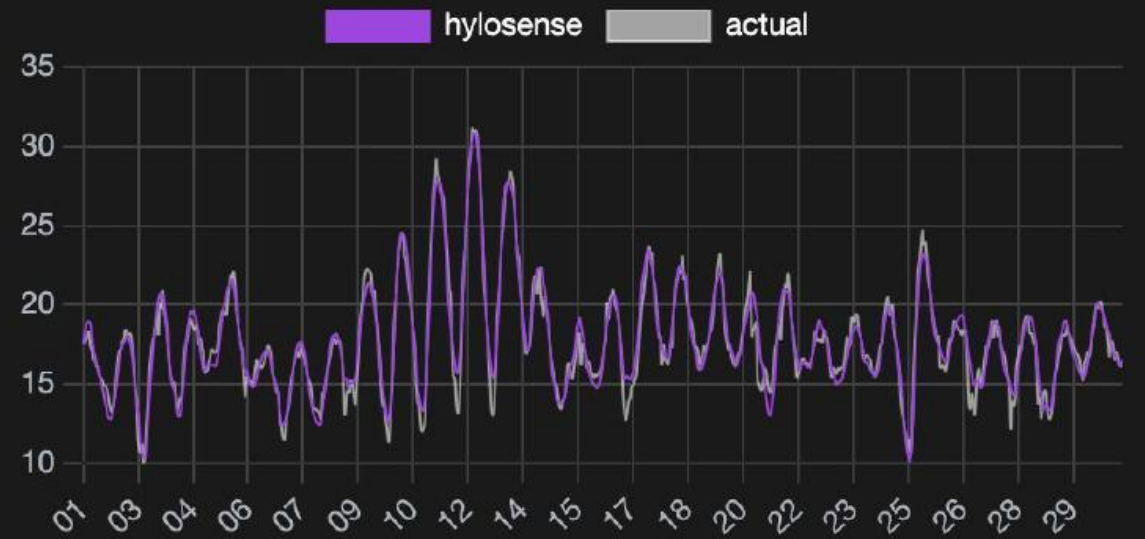
offset in forecast

Previous Competitor

2.06 °C

offset in forecast

July 2025





This makes our models give up to
50% Better Accuracy



Less Fines



More Profit



Grid Stability

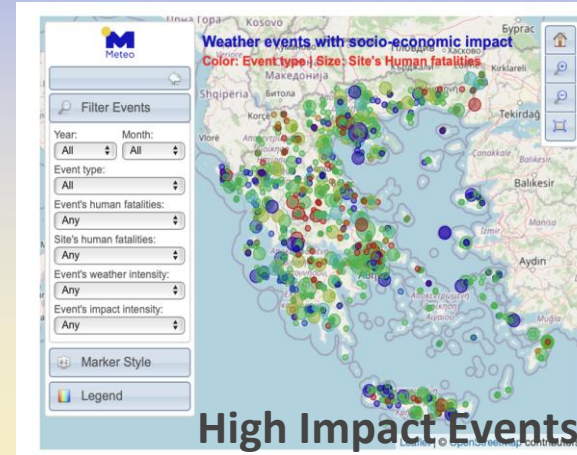
Climate Services at the National Observatory of Athens: Bridging Research and Practice

Dr. Vassiliki Kotroni & the METEO Unit
National Observatory of Athens

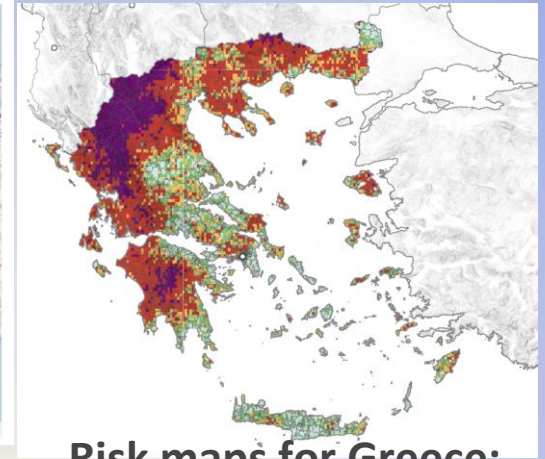
Major Axes

DISASTER RISK KNOWLEDGE of Hydrometeorological and Climate Risks:

- Documentation, monitoring, and analysis of the socio-economic **impacts of extreme and severe weather events**.
- Analysis of **Risk and Vulnerability** to Natural Disasters Related to Hydrometeorological and Climate Phenomena



High Impact Events
Database 2000-now



Risk maps for Greece:
Hail

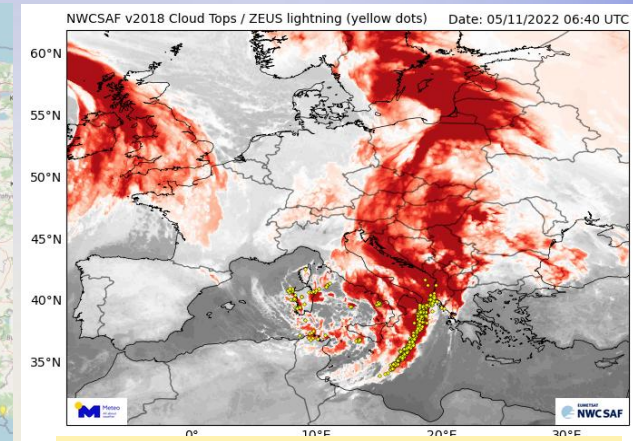
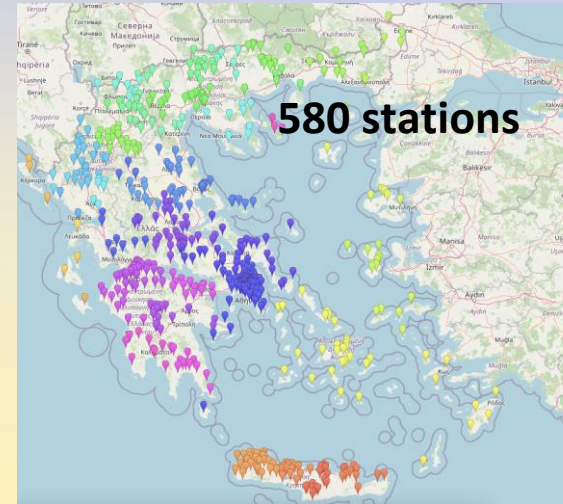
Major Axes

DISASTER RISK KNOWLEDGE of Hydrometeorological and Climate Risks:

- Documentation, monitoring, and analysis of the socio-economic impacts of extreme and severe weather events.
- Analysis of Risk and Vulnerability to Natural Disasters Related to Hydrometeorological and Climate Phenomena

DETECTION, OBSERVATIONS, MONITORING, ANALYSIS & FORECASTING OF HAZARDS

- OBS: **densest weather station** network in Greece (580), lightning detection network, satellite-based monitoring.
- NWP: **multi model** approach from short-term to seasonal scales with tailor made forecasts: eg lightning, hail and fire weather and fire spread forecasts



METEOSAT & Lightning



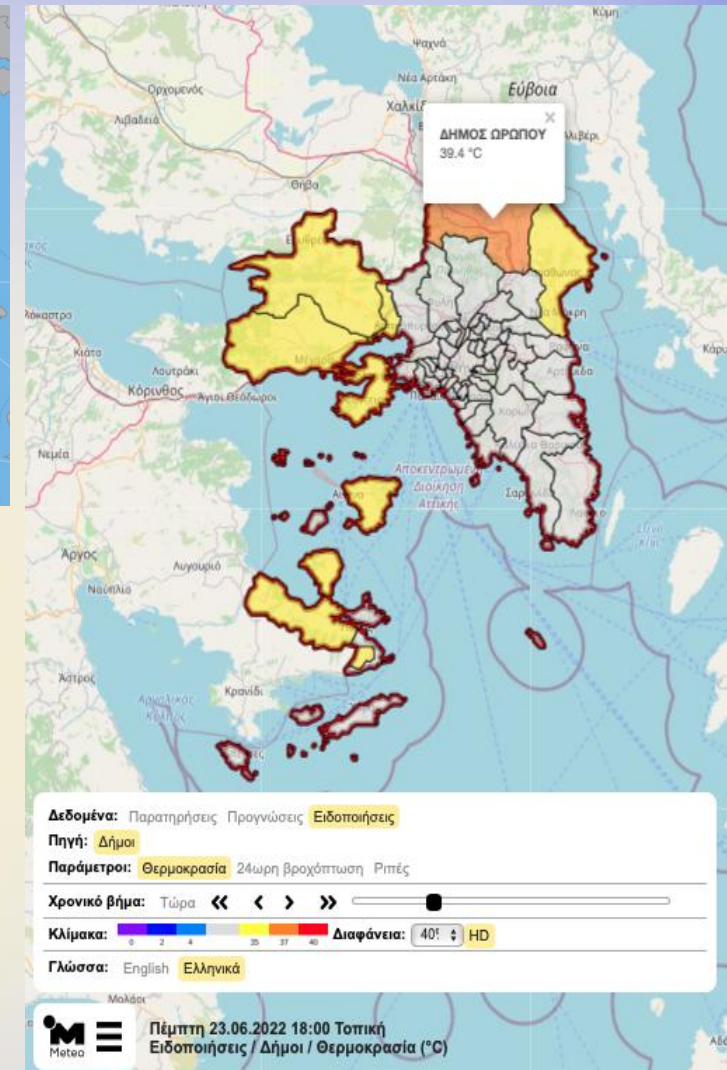
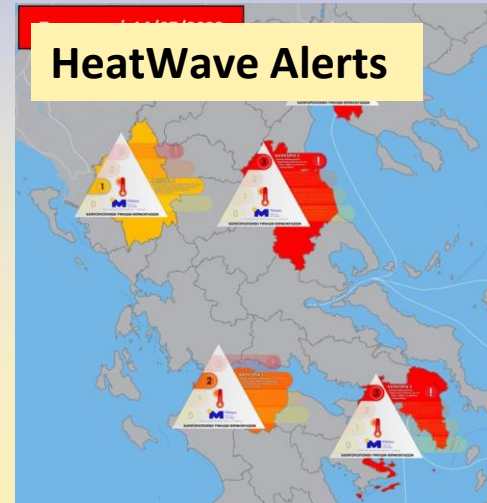
Major Axes

DISASTER RISK KNOWLEDGE of Hydrometeorological and Climate Risks:

- Documentation, monitoring, and analysis of the socio-economic impacts of extreme and severe weather events.
- Analysis of Risk and Vulnerability to Natural Disasters Related to Hydrometeorological and Climate Phenomena

DETECTION, OBSERVATIONS, MONITORING, ANALYSIS & FORECASTING OF HAZARDS

- OBS: **densest weather station** network in Greece (580), lightning detection network, satellite-based monitoring.
- NWP: **multi model** approach from short-term to seasonal scales with tailor made forecasts: eg lightning, hail and fire weather and fire spread forecasts
- **Smart Alerts & Early warning system development**



Major Axes

DISASTER RISK KNOWLEDGE of Hydrometeorological and Climate Risks:

- Documentation, monitoring, and analysis of the socio-economic impacts of extreme and severe weather events.
- Analysis of Risk and Vulnerability to Natural Disasters Related to Hydrometeorological and Climate Phenomena

DETECTION, OBSERVATIONS, MONITORING, ANALYSIS & FORECASTING OF HAZARDS

- OBS: densest weather station network in Greece (580), lightning detection network, satellite-based monitoring.
- NWP: multi model approach from short-term to seasonal scales with tailor made forecasts: eg lightning, hail and fire weather and fire spread forecasts
- Smart Alerts & Early warning system development

WARNING DISSEMINATION & COMMUNICATION

www.meteo.gr, with more than **350.000** daily visitors on average, contributing immensely to the dissemination of the research outcomes, prime source for weather related info for Greek media.

The image shows a screenshot of the Meteo.gr website. At the top, there are logos for 'Meteo' (Όλα για τον καιρό) and 'DS7 CROSSBACK' (DS AUTOMOBILES Anche Plug-In Hybrid). Below the logos, there are navigation menus for 'ΕΛΛΑΔΑ', 'ΑΤΤΙΚΗ', 'ΘΕΣΣΑΛΟΝΙΚΗ', 'ΚΑΤΗΓΟΡΙΕΣ', 'ΘΑΛΑΣΣΕΣ', and 'ΚΑΙΡΟΣ ΤΩΡΑ'. The main content area displays weather forecasts for 'ΑΘΗΝΑ - ΚΕΝΤΡΟ'. It includes a temperature scale, a forecast table for 'ΤΕΤΑΡΤΗ 22 ΙΟΥΝΙΟΥ' and 'ΠΕΜΠΤΗ 23 ΙΟΥΝΙΟΥ', and a news article titled 'Καύσωνας: Heat Alert SMS από τον Δήμο Αθηναίων μέσω του meteo'. The article text reads: 'Heat Alert μέσω SMS από τον Δήμο Αθηναίων για προειδοποίηση και προστασία από καύσωνες.' Below the article is a photo of people at a public event.

ΠΡΟΓΝΩΣΗ	ΓΥΡΗ	ΣΚΟΝΗ	ΡΥΠΟΙ	ΓΡΑΦΗΜΑΤΑ	ΣΤΑΘΜΟΙ [4]	ΕΙΚΟΝΙΔΙΑ
ΤΕΤΑΡΤΗ 22 ΙΟΥΝΙΟΥ Ανατολή: 06:02 - Δύση 20:51						
18:00	34°C	29% υγρ.	2 Μπφ Ν 9 Km/h	↑	ΚΑΘΑΡΟΣ	☀
21:00	30°C	38% υγρ.	ΑΠΝΟΙΑ	↓	ΚΑΘΑΡΟΣ	🌙
00:00	29°C	43% υγρ.	2 Μπφ ΒΔ 9 Km/h	↘	ΚΑΘΑΡΟΣ	🌙
ΠΕΜΠΤΗ 23 ΙΟΥΝΙΟΥ Ανατολή: 06:02 - Δύση 20:51						
		49% υγρ.	2 Μπφ Β 9 Km/h	↓	ΚΑΘΑΡΟΣ	🌙
		% υγρ.	3 Μπφ Β 16 Km/h	↓	ΚΑΘΑΡΟΣ	🌙
		% υγρ.	2 Μπφ Β 9 Km/h	↓	ΚΑΘΑΡΟΣ	☀
		% υγρ.	1 Μπφ Ν 3 Km/h	↑	ΑΡΑΙΗ ΣΥΝΝΕΦΙΑ	☁
		% υγρ.	3 Μπφ Ν 16 Km/h	↑	ΚΑΘΑΡΟΣ	☀
		% υγρ.	2 Μπφ Ν 9 Km/h	↑	ΚΑΘΑΡΟΣ	☀
		% υγρ.	2 Μπφ ΝΔ 9 Km/h	↗	ΑΡΑΙΗ ΣΥΝΝΕΦΙΑ	☁

Approach to Climate Services

Guided by three principles strongly aligned with this Festival's themes:

- **innovation** through advanced modeling and data integration;
- **impact** by delivering tailored services to decision-makers; and
- **inclusion** by engaging end-users and communities from the start of the process



ClearClimate
ENHANCING CLIMATE INFORMATION SERVICES

Engaging approaches and services for meaningful climate actions - ClearClimate

Call: HORIZON-MSCA-2022-SE-01

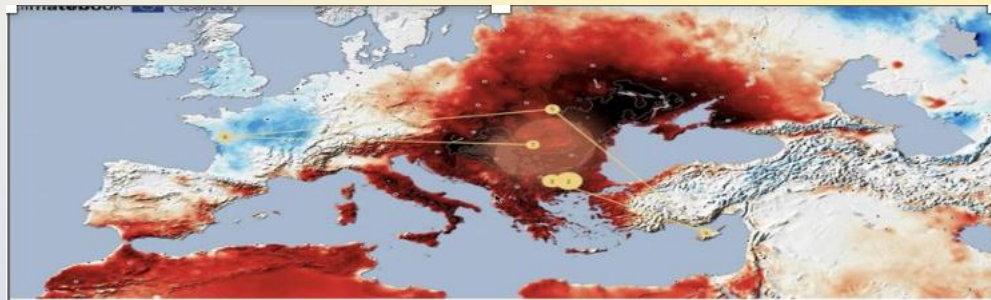
Topic: HORIZON-MSCA-2022-SE-01-01

Type of action: HORIZON-TMA-MSCA-SE

Duration: 01/11/2023 - 31/10/2027 (48 months)

The aim of **ClearClimate** is to create an **International and Intersectoral and Interdisciplinary network** to facilitate the exchange of staff to **progress developments in Climate Information Services (CIS)** in the area where those services do not exist or are very limited – **South East Europe**.

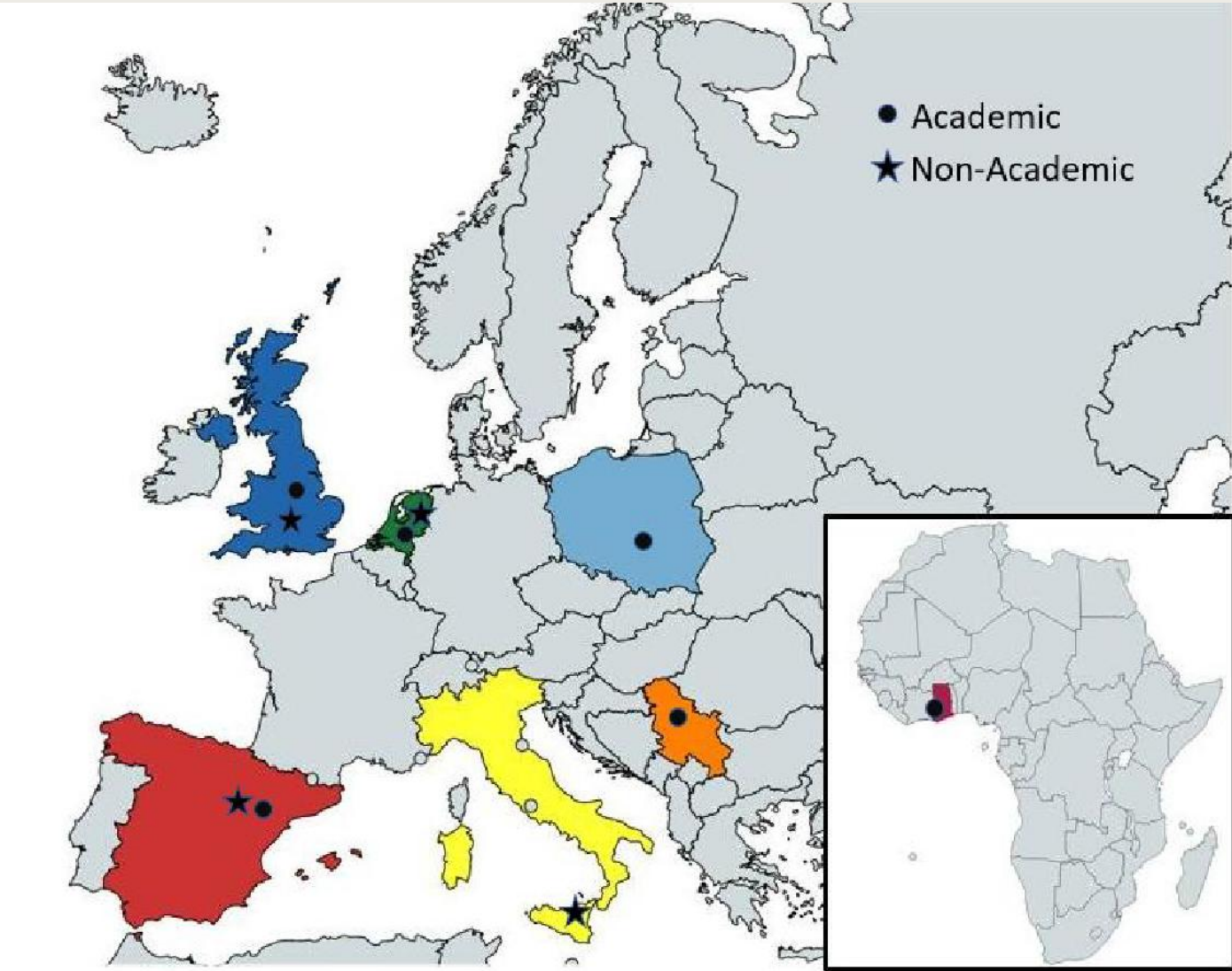
The focus of the project is to **develop staff and beneficiary/partner skills** in the areas of **human centred design** and **neuroscience** coupled with improved computational techniques for the research in **climate change and climate extremes** which in turn will offer more appropriate and efficacious CIS.



Zbog poplava vanredna situacija u 52 lokalne samouprave u Srbiji, evakuisano 295 ljudi

Beta
17.06.2023. 09:23

4 komentara f t p s



6 Academic partners
 4 Industrial partners
 3 partners from third countries – Ghana and



GLOBAL CLIMATE HIGHLIGHTS 2024

Copernicus: 2024 is the first year to exceed 1.5°C above pre-industrial level



Update: Storm Boris batters Romania, causing severe floods and seven deaths



Extreme weather and climate change in 2024 "wreaked havoc" on the water cycle

2024 was the first year to breach the critical threshold of 1.5°C since the industrial revolution. The extreme events intensified by the effects of climate change are found to be "wreaking havoc" on the water cycle.



Valencia was hit by intense rainfall during storm Dana, resulting in extreme flooding in 2024. Image by Fernando, Adobe Stock

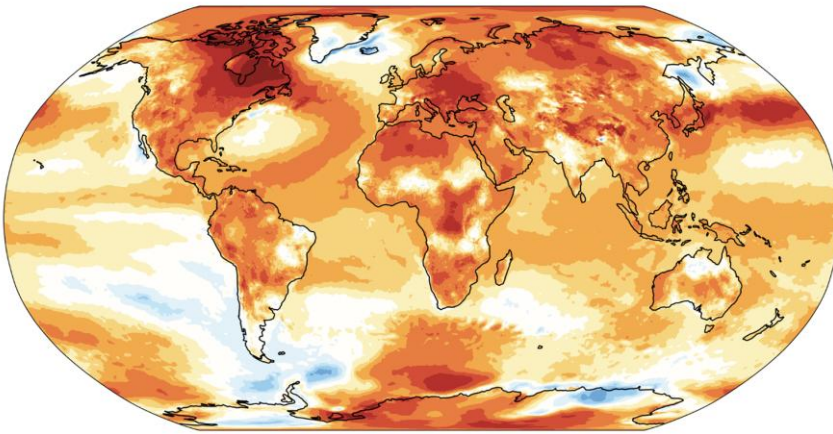
<https://www.bbc.com/news/articles/c5yjjqv8>

<https://climate.copernicus.eu/c3s-seasonal-lookback-summer-2024>

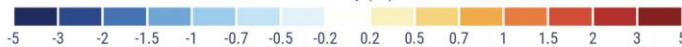
<https://www.yourweather.co.uk/news/science/extreme-weather-and-climate-change-in-2024-wreaked-havoc-on-the-water-cycle.html>

Surface air temperature anomalies in 2024

Data: ERA5 • Reference period: 1991–2020 • Credit: C3S/ECMWF

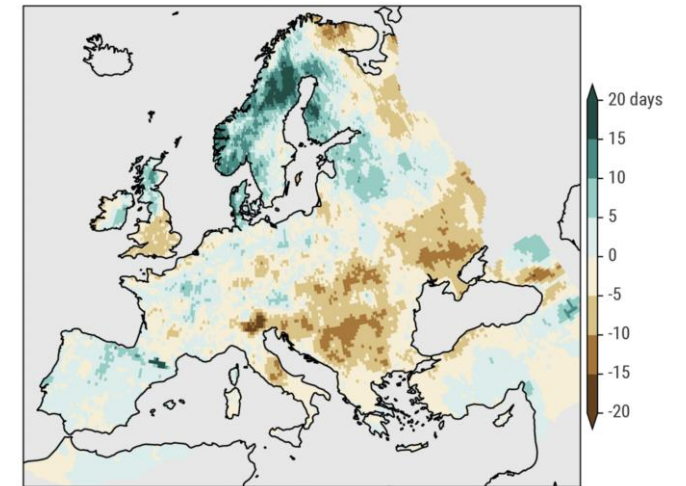


Anomaly (°C)



Anomaly in the number of "wet days" for summer 2024

Data: E-OBS • Reference period: 1991–2020 • Credit: C3S/KNMI



20 days

15

10

5

0

-5

-10

-15

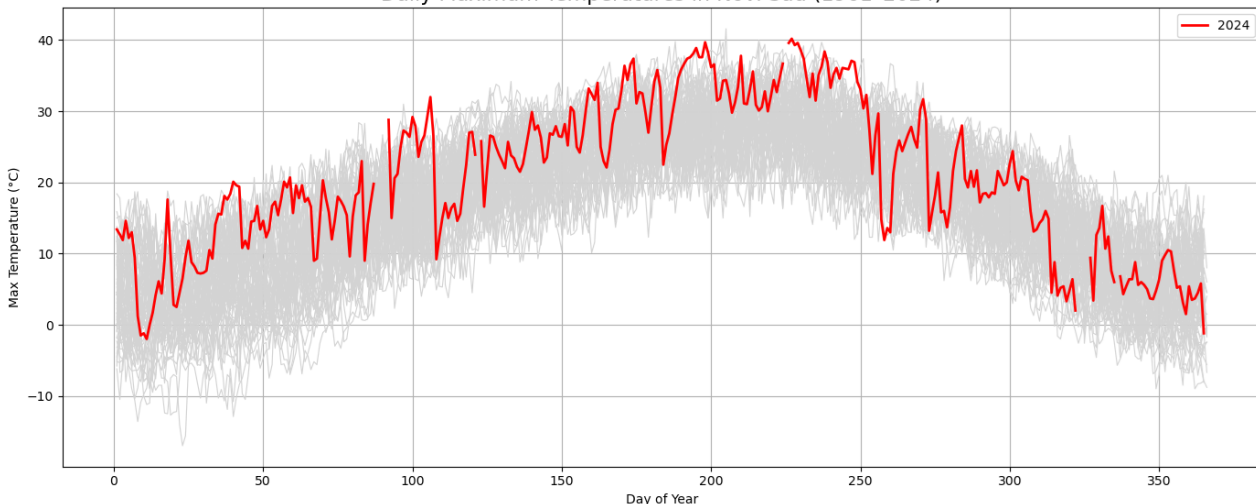
-20



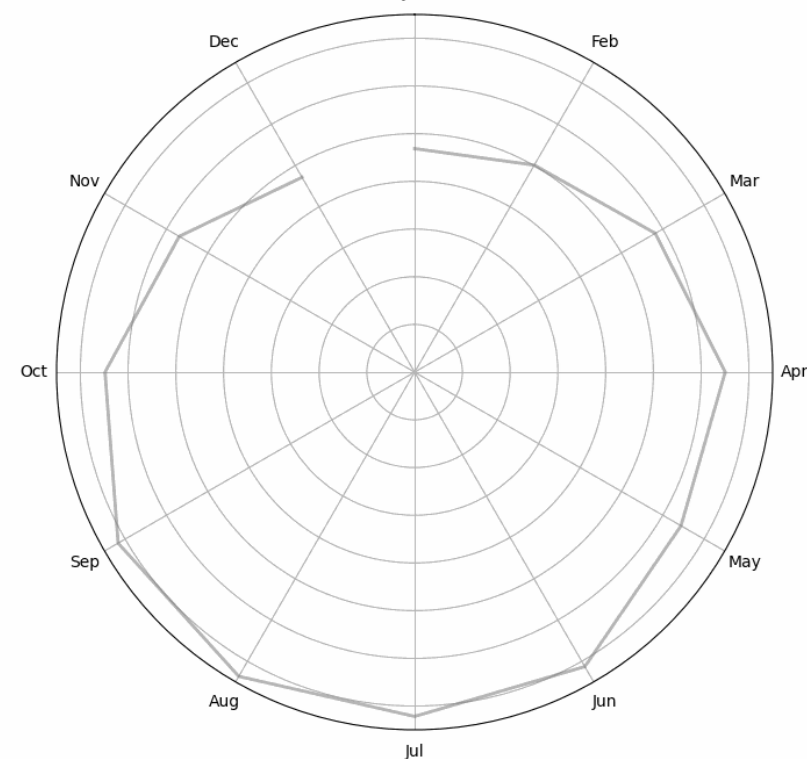
Experts say the summer of 2024 in the Balkans was the hottest since measurements started more than 130

Countdown to COP28: temperature growth in Serbia is 60% above global average

Daily Maximum Temperatures in Novi Sad (1961-2024)



Climate Spiral: Monthly Avg Temperatures in Serbia



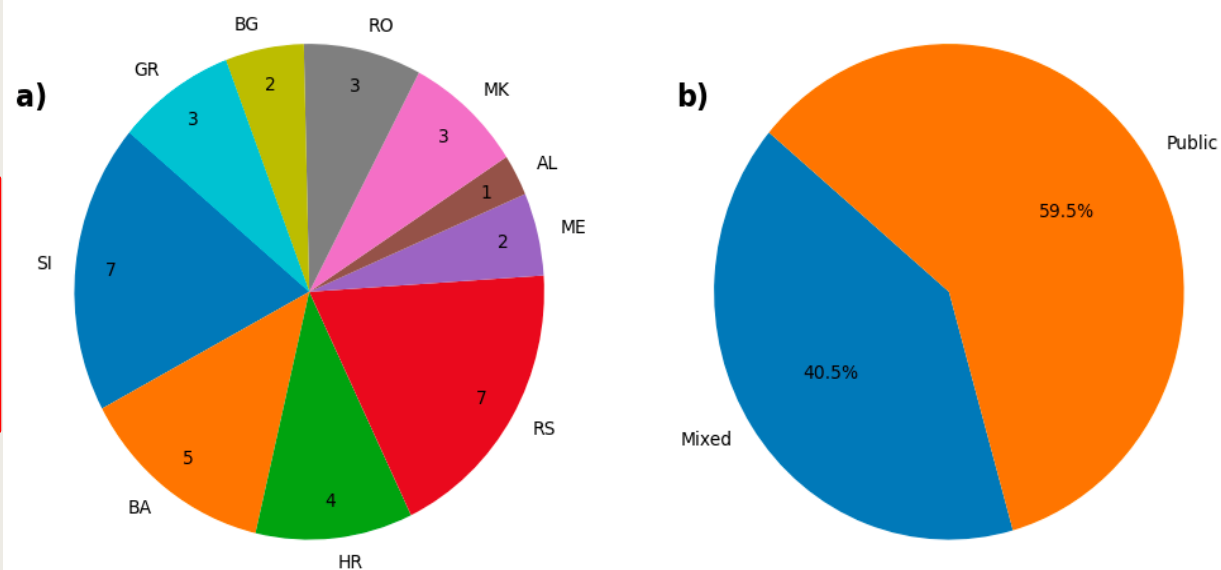
<https://apnews.com/article/balkans-heat-hottest-summer-drought-89c8c38593e41507f2ac4f9398fc667>
<https://www.france24.com/en/live-news/20241216-bosnia-hits-hottest-year-on-record-in-2024-meteorologists>

Current state of the Climate Services in SEE

Evaluating Weather and Climate Information Services for Heat and Drought adaptation in Southeast Europe: gaps, opportunities and design principles

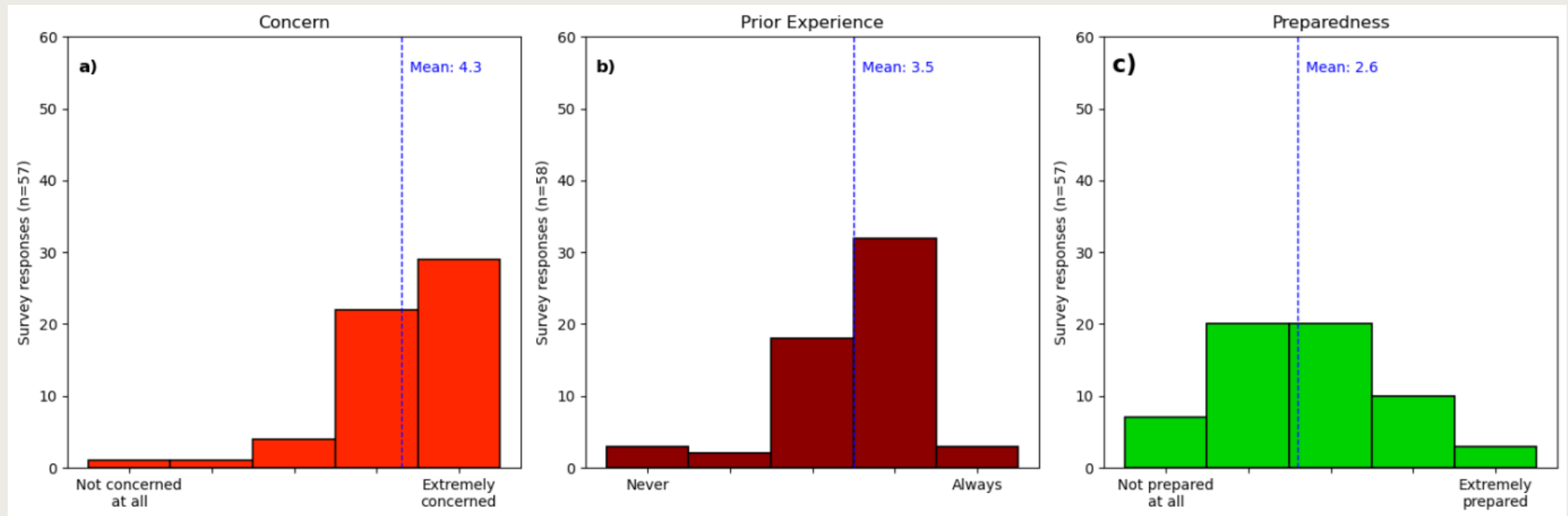
Spyridon Paparrizos¹, Dragan Milošević², Zorica Podraččanin³, Tim Friso Lodewijk¹, Raffaele Vignola¹, Samuel J. Sutanto¹, Maria del Pozo Garcia¹, Wouter J. Smolenaars¹, Miroslav Vujičić⁴, Gordana Kranjac-Berisavljević⁵, Biljana Basarin⁴

The results highlight a key challenge in WCIS user engagement, stemming from gaps in their design and communication. Many services in SEE contain top-down approaches with limited user involvement and inadequate educational support.



The number of (a) Weather and Climate Information Service providers, and (b) their provision status in southeast Europe

Figure indicates that respondents feel “very much” to “extremely concerned” about occurring heat and drought extremes affecting their respective regions and communities. Many respondents also have prior experience on extreme drought and heatwave events. Although they have a high concern and experience in extreme droughts and heatwaves, only a few of them are prepared and extremely prepared. Most respondents indicated that they personally have a very low level of perceived preparedness (average= 2.6).



Behavioral Insights in Climate Communication

- **Surveys vs. Reality**

People *say* they understand climate visuals, but eye-tracking shows they miss keys and focus only on medians.

- **Climate Anxiety**

No link between self-reported anxiety and gaze patterns.

- **Takeaway**

What people *report* ≠ how they *engage*.

Surveys should be **complemented with behavioral methods.**

EYE TRACKING & CLIMATE CHANGE

1



Climate Change Communication from Eye-Tracking Research Perspective. A Systematic Review.

Iga Stasiak, Izabela Krejtz, Zofia Julia Maciąg, Biljana Basarin, Miroslav Vujcic, Uglješa Stankov, and Krzysztof Krejtz
Institute of Psychology
SWPS University
University of Novi Sad
Faculty of Sciences
Department of Geography
Tourism and Hotel Management

Gulhan, D., Bahrami, B., & Deroy, O. (2025). Studying attention to IPCC climate change maps with mobile eye-tracking. *PLoS one*, 20(1), e0316909.

Mulder, K. J., Williams, L., Lickiss, M., Black, A., Charlton-Perez, A., McCloy, R., & McSorley, E. (2023). Understanding representations of uncertainty, an eye-tracking study—Part 1: The effect of anchoring. *Geoscience Communication*, 6(3), 97-110.

Web Accessibility of Climate Information Platforms in Southeast Europe: A Comparative Study

[Brescia-Zapata et al., 2025](#)



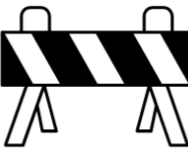
Country	Name	Website
Slovenia	National Meteorological Service of Slovenia	https://meteo.arso.gov.si/met/en/
Serbia	Republic Hydrometeorological Service of Serbia	https://www.hidmet.gov.rs/index_eng.php
Bulgaria	National Institute of Meteorology and Hydrology	https://www.meteo.bg/en
Greece	Hellenic National Meteorological Service	http://emy.gr/emy/en
Croatia	Croatian Meteorological and Hydrological Service	https://meteo.hr/index_en.php

Web accessibility in climate information platforms, focusing on five national meteorological websites in South East Europe: Slovenia, Croatia, Serbia, Bulgaria, and Greece.

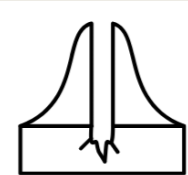
Current state of digital accessibility in Southeast Europe



Legislation such as the **EU's Web Accessibility Directive** and **European Accessibility Act** is driving change.



However, **persistent barriers remain** with challenges across the region.

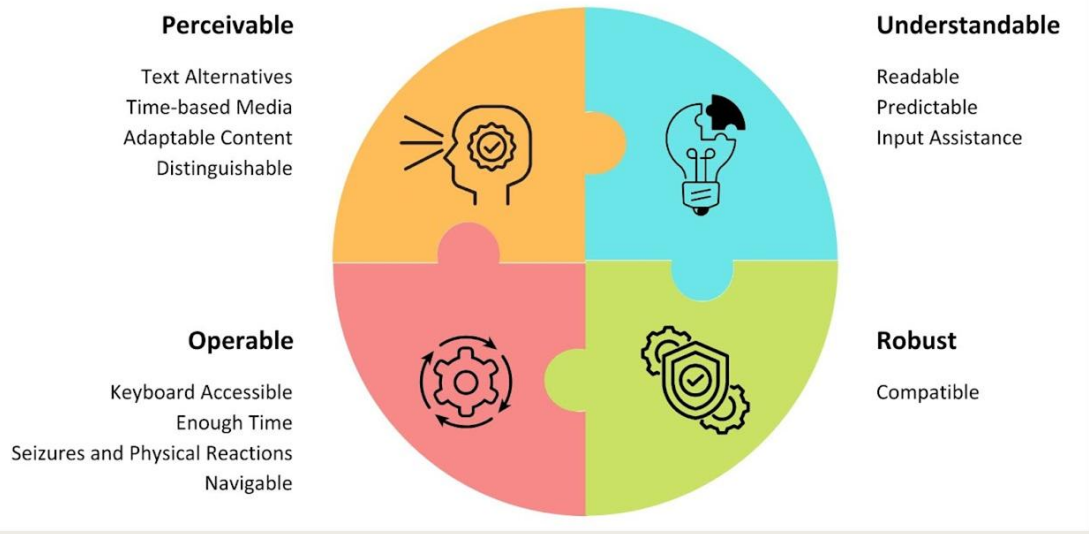


Ongoing gaps in specialised areas such as **digital accessibility**.

Web Content Accessibility Guidelines (WCAG)

Key principles and criteria (POUR principle):

1. assessing perceivability,
2. operability,
3. understandability and
4. robustness.



WAVE Web Accessibility Evaluation Tool, developed by WebAIM, is used to support the identification of common accessibility issues. WAVE is a widely adopted, browser-based tool that provides visual and automated feedback on a website's compliance with key aspects of the WCAG 2.1, focusing primarily on Level A and AA success criteria. I

COUNTRY	MAJOR ERRORS	CONTRAST ISSUES	MINOR ERRORS	KEY ACCESSIBILITY ISSUES	STRENGTHS
Serbia	4	12	45	Missing/inconsistent alt text, no semantic headings, low contrast, outdated tables	Alternative text and image maps
Bulgaria	13	37	12	Missing alt text, invalid language settings, poor contrast, skipped headings	Strong semantic structure with headings, landmarks, lists
Greece	1	38	Few	Low contrast, redundant/empty alt text, minor labeling problems	Clear structure, consistent alt text, extensive ARIA use
Croatia	34	1	26	Missing alt text, inaccessible PDFs, redundant/empty links, language inconsistencies	Rich semantic layout with structural elements and ARIA attributes

Summary of findings

- **Low Accessibility Compliance**
- **Key Issues:** The most common problems are with **perceptibility** (missing alt text, poor contrast), **operability** (lack of semantic structure, difficult keyboard navigation), and **robustness** (invalid code).
- No accessibility statement or feedback mechanism (which goes against the Web Accessibility Directive).
- **Impact:** This lack of accessibility can exclude users who rely on assistive technologies, which compromises public access to critical climate information.
- **Prioritise accessibility** in climate communication by including it in the design phase, providing training for developers, and conducting regular accessibility audits.
- **Address a Public Need:** Improving accessibility is crucial for providing equitable access to climate information, especially in regions highly vulnerable to extreme weather events.
- **Go Beyond Compliance:** Accessibility isn't just a matter of following rules; it's essential for social equity and public safety, ensuring all users can access vital information.

Climateurope2

Key Messages on standardisation on climate services
Climateurope2 second synthesis report



Scan to reach the full report

<p>1 Greater focus on inclusivity and decision contexts in climate services would drive more effective, equitable, and robust climate action</p> <p>WP #A HOLISTIC VISION</p>	<p>4 Process-focused standards are necessary to ensure comprehensive design and delivery of climate services</p> <p>WP #PROCEDURAL STANDARDS</p>	<p>7 Climate services providers, users and the research community should collaborate to shape the next generation of climate services</p> <p>WP2 and #PARTNERSHIPS</p>
<p>2 The complexity of climate services asks for a suite of diverse types of standards</p> <p>WP3 and SUITE OF STANDARDS</p>	<p>5 The standardisation of climate services needs to capture minimum thresholds of performance across all components, for both providers and users</p> <p>WP2, 3, 4, and SUITE STANDARDS</p>	<p>8 The European Commission is in a position to lead the effort to build suitable governance mechanisms for climate services</p> <p>WP #EUROPEAN COMMISSION</p>
<p>3 There is a need for technical standards that address the integration of climatic and non-climatic data, information and knowledge</p> <p>WP #TECHNICAL STANDARDS</p>	<p>6 Formal climate service standards go hand-in-hand with flexible and accessible best practice guidance for adequate and equitable climate services</p> <p>WP3 and BEST PRACTICE GUIDANCE</p>	<p>9 The contributions and cooperation of WMO and ECMWF are central for strengthening climate services governance</p> <p>WP #WMO and COPERNICUS-ECMWF</p>

Funded by the European Union
This project has received funding from the European Union's Horizon Europe research and innovation programme under grant agreement No 101056933.

Icons for X, in, YouTube, Twitter, and a 'Tras' button.

The connection between ClearClimate and Climateurope2 Recommendations for CIS standardisation

The objectives of the ClearClimate are relevant and pertinent

<https://climateurope2.eu/guidelines-standards/key-messages>



Thank you for your attention

STRENGTHENING THE RESEARCH CAPACITIES FOR EXTREME WEATHER EVENTS IN ROMANIA



Török Ibolya, PhD Associate Professor
Babeş-Bolyai University
Faculty of Geography
Cluj-Napoca, Romania

Babeş-Bolyai University, Cluj-Napoca

- Oldest in the region (est. 1581)
- Largest in Romania (>50,000 students)
- 20+ faculties: sciences, humanities, arts, theology
- Community of scholars, diverse fields
- What Makes BBU Unique?
 - Multicultural & multilingual: Transylvanian heritage + global outlook



Excellence Recognized

- QS Rankings
- Times Higher Education
- Leading comprehensive university in Romania



Tradition Meets Innovation

- Research-intensive
- Strong international collaborations
- Serving society, addressing local & global challenges
- Cultural diversity enriches education



The Faculty of Geography

- Dynamic & multidisciplinary hub
- Focus areas:
 - Physical & Human Geography
 - Environmental Studies
 - Spatial Planning
 - Geoinformatics
 - Linking society & environment



HE-SCEWERO project (2024-2027)

- Coordinated by **BBU** (Romania) with partners in Italy, Belgium, Germany & Romania (SME Indeco Soft)
- **Main Objectives**
 - Develop scientific expertise on extreme weather & societal impacts
 - Focus on heat, drought, floods, compound events
 - Use AI & multidisciplinary data analysis



UNIVERSITATEA
BABEȘ-BOLYAI



Universiteit
Antwerpen



Key Innovation

- Creation of **validated thresholds** for heat-related health risks
- Improvement of **Romania's Early Warning System**
- AI-based platform for **precise & timely alerts**

Research Approach

- **Knowledge transfer** from European partners
- Small-scale **joint research project**
- Integration of **meteorological, hydrological, health & perception data**

Stakeholder Involvement

- Active participation of **national authorities & emergency institutions**
- Alignment of scientific outcomes with **operational needs**
- Ensures practical **integration into policy & response systems**

Project Implementation

- Duration: **3 years**
- Organized in **work packages**:
 - Training & scientific exchanges
 - Applied research
 - Dissemination & outreach

→ transforming scientific advances into operational improvements in Romania's resilience to extreme weather

Expected Impact

- Stronger **research capacity** in Romania
- More **resilient Early Warning System**
- Enhanced **societal preparedness** against extreme weather

From Science to Action

- **science-based, AI-enhanced tools & thresholds** to strengthen Romania's Early Warning System
- **Direct authority involvement** & tested interoperability for real-world uptake
- **Structured program** of training, research & operational integration
- **Goal: more accurate alerts, stronger readiness, greater resilience**

SCEWERO – Strategies for Integration into Operations

- **Stakeholder Involvement**

- Continuous collaboration with National Meteorological Administration, Emergency Inspectorate & Digital Innovation Hub
- Advisory Board ensures alignment with **operational standards & emergency needs**

- **Co-Design & Validation**

- AI-based thresholds for **heat-health impacts** co-developed & tested with authorities
- Ensures solutions are **scientifically robust & practically usable**

- **Interoperability by Design**

- Platform & mobile app use **open standards (OGC, APIs, open-source tools like Weka)**
- Built to fit **seamlessly into existing infrastructures**

Knowledge transfer & Capacity Building

- Training for researchers, staff & PhD students in **advanced data analysis, AI apps & science communication**
- Workshops, staff exchanges & summer schools create a **shared knowledge base**

Dissemination & Exploitation

- Results shared via **scientific outputs, policy workshops, local authority training & Smart City outreach**
- Ensures **uptake across multiple levels** (national → municipal)

Open Science & Sustainability

- **Open-access datasets, algorithms & software**
- Long-term data hosting & visibility (≥ 10 years) for **continued integration & reuse**

→ Ensures research translates into operational enhancement of Romania's early-warning system