Addressing climate change preparedness from a smart water perspective

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SIKDD 2022

Desperate for water: European drought crisis in pictures

Updated: 11/08/2022

By **Natalia Liubchenkova**

euronews.

Europe is being hit by a climate-driven drought crisis, with 63% of land in the European Union and the United Kingdom being affected, the European Drought Observatory reports.

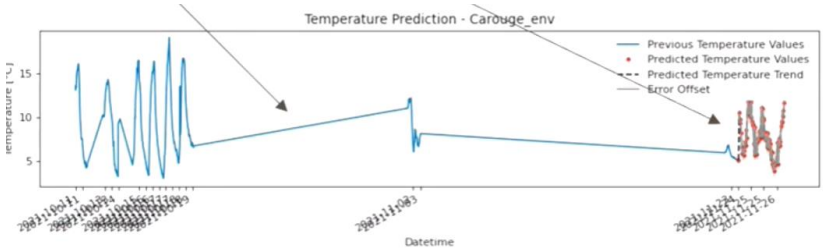
NAIADES

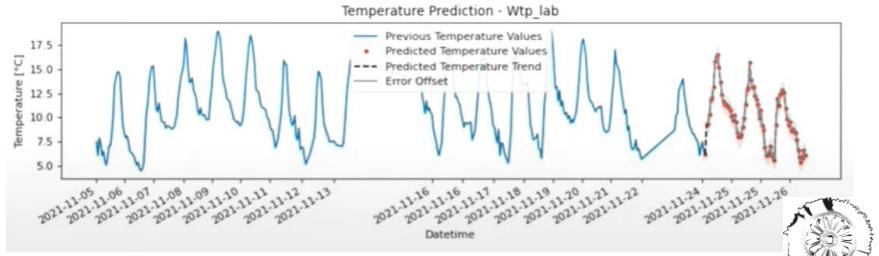
Ville de Carouge, Switzerland

Alicante, Spain

Brăila, Romania

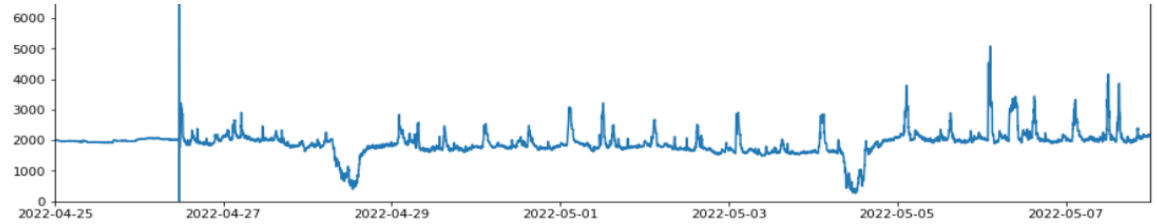
Local-specific Weather



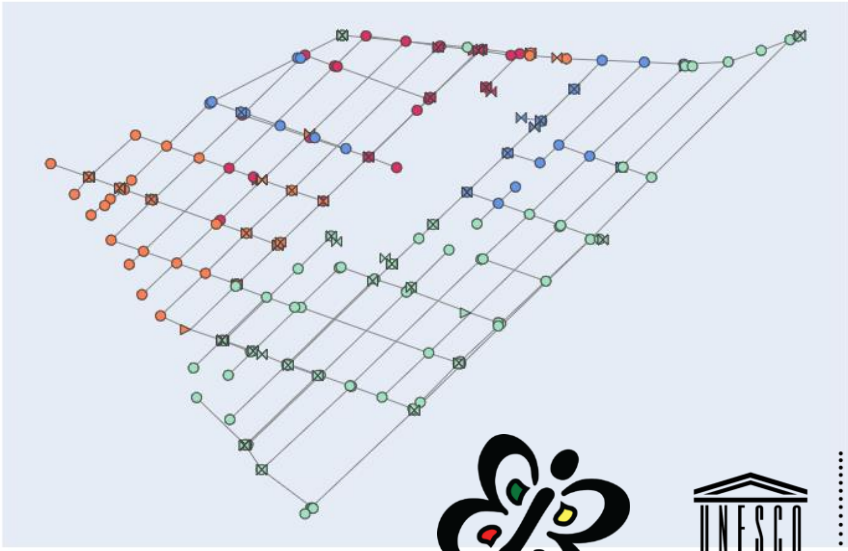


CERTH
CENTRE FOR RESEARCH & TECHNOLOGY HELLAS

Anomaly meta signal



Approximate leakage detection



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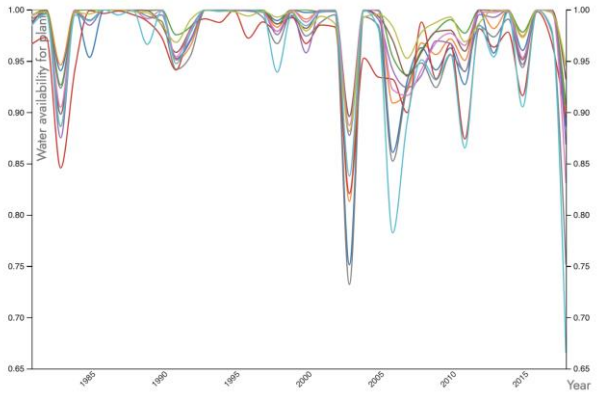
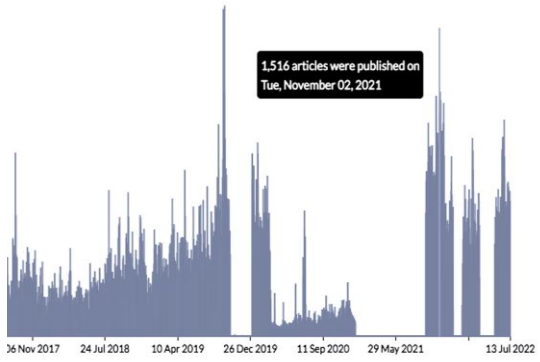
THE CHALLENGES OF A SMART WATER OBSERVATORY

Extreme Water Events

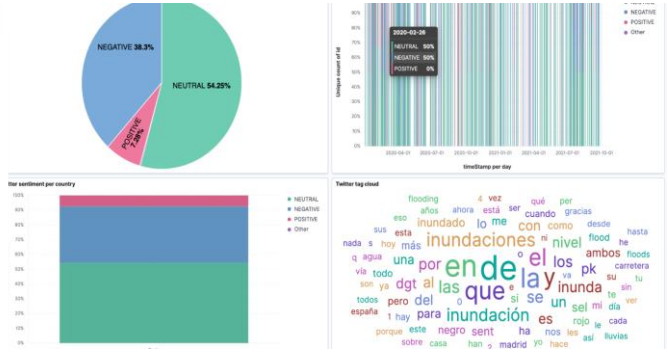
Indicators



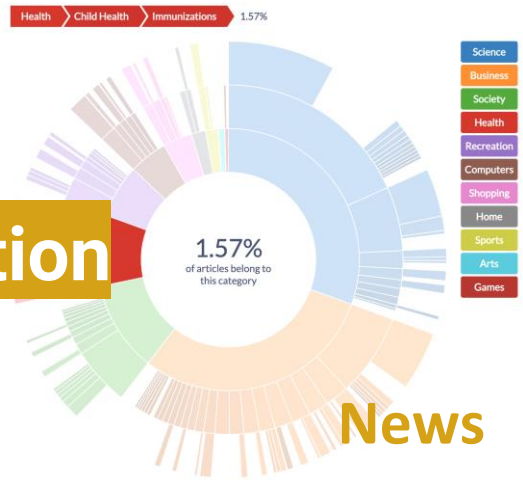
News



Social Media



Water Contamination



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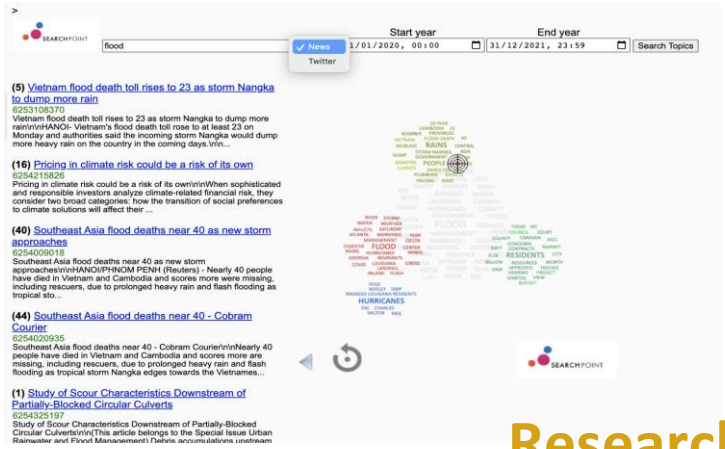


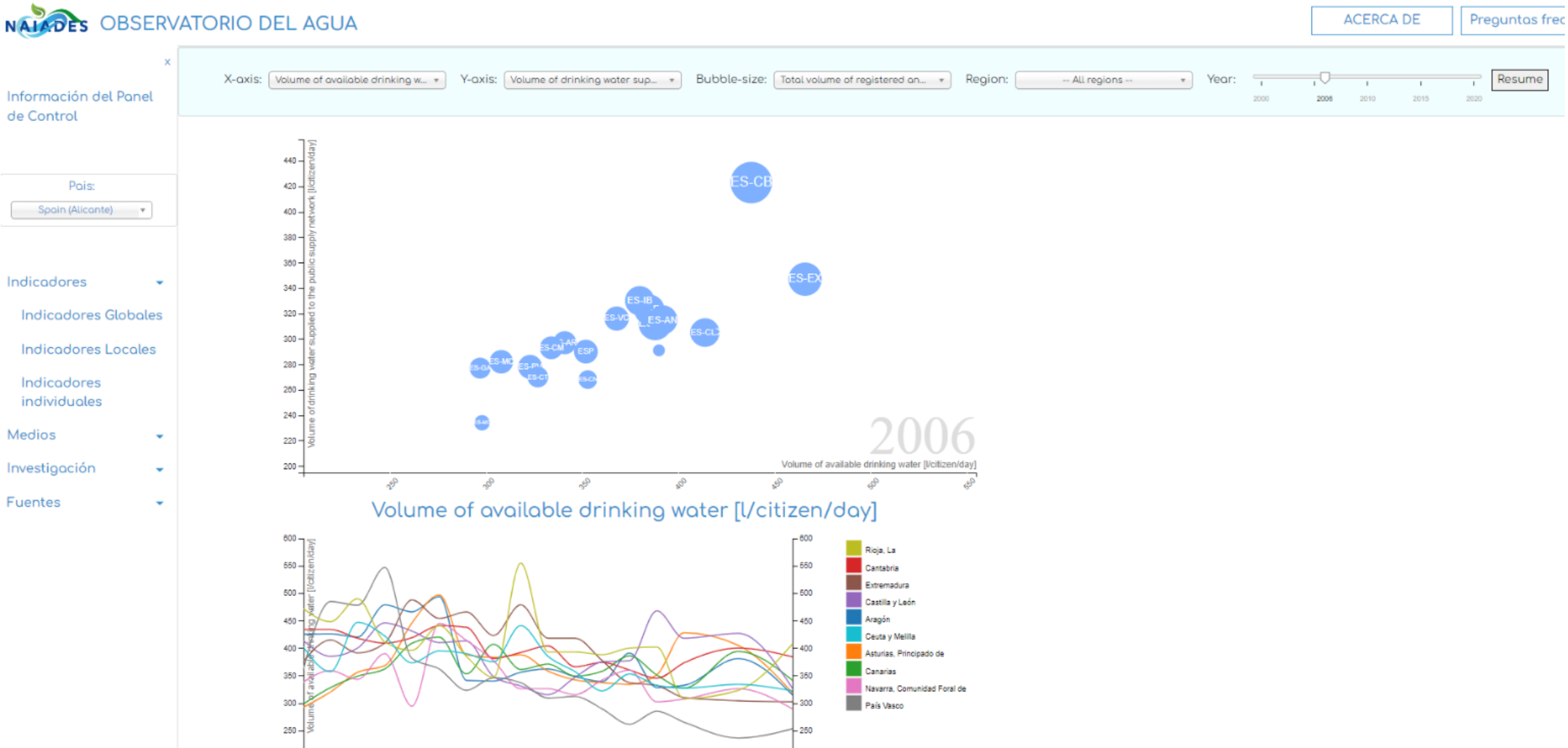
Research

Indicators

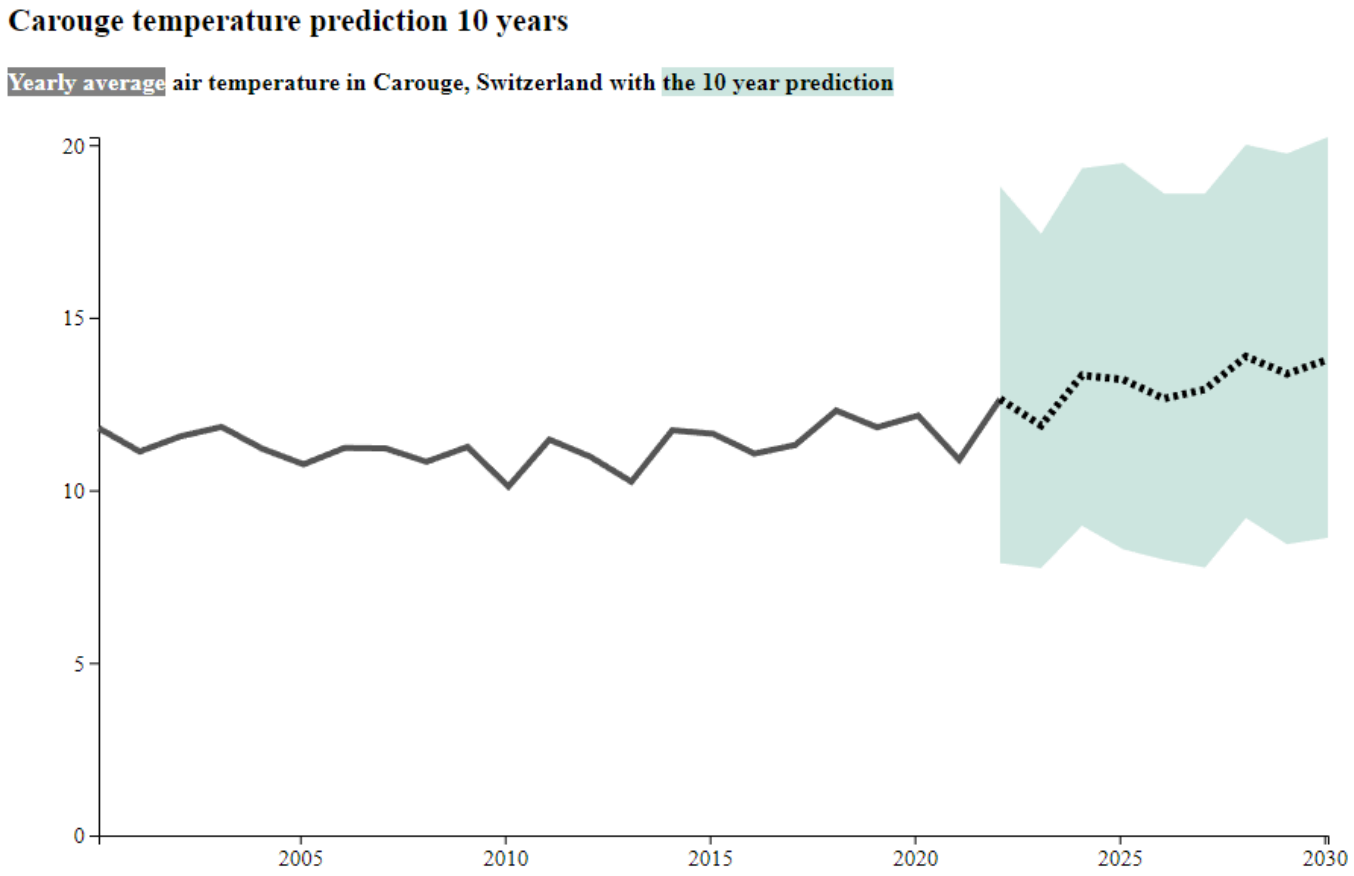
AIM: For users to extract important insights in the relation to the water sector from heterogeneous data sources

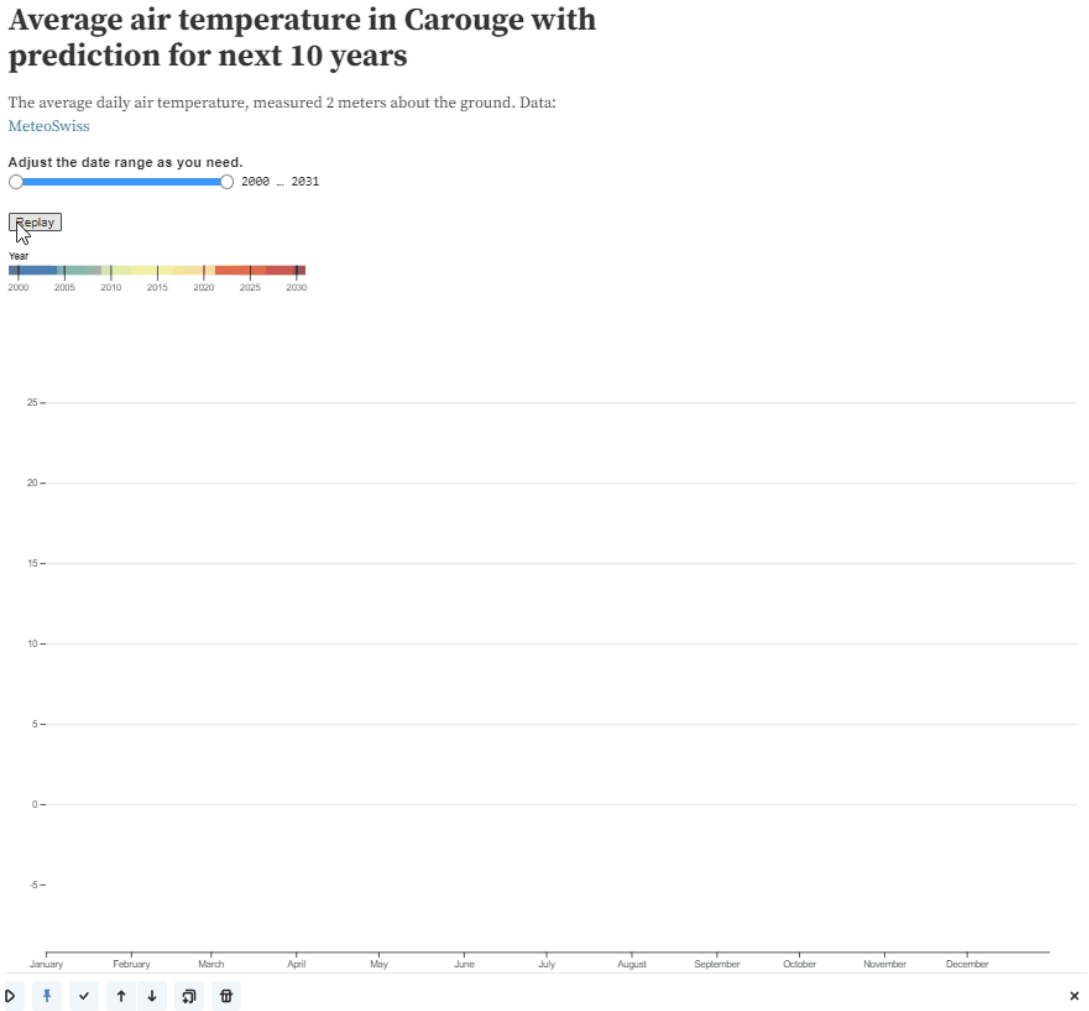
NAIADES

Relevant information at the local level



Climate change preparedness at the local level





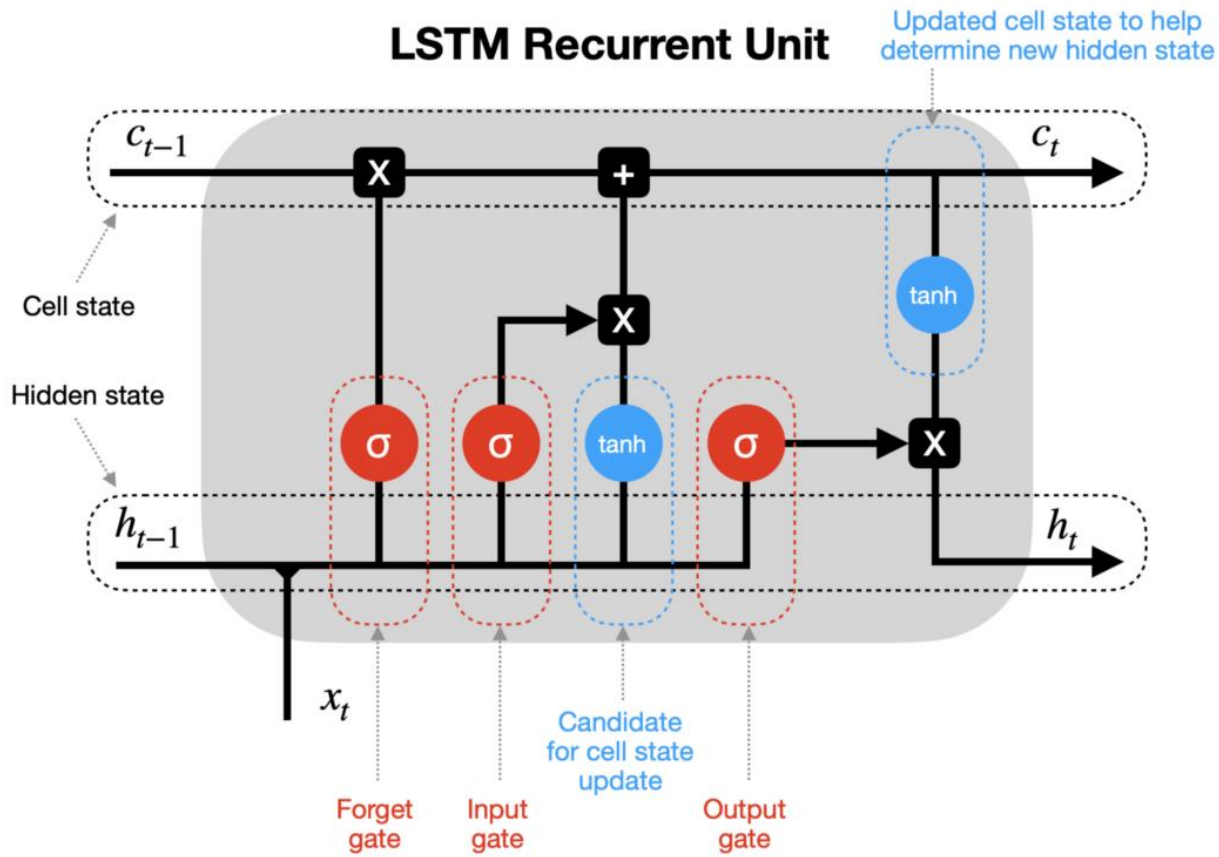
Forecasting Technique: Trend Projection

1. Trend Analysis: Trend Analysis is used to extract the the movement of a time series and it helps understand how we can adjust our forecasting based on this pattern.

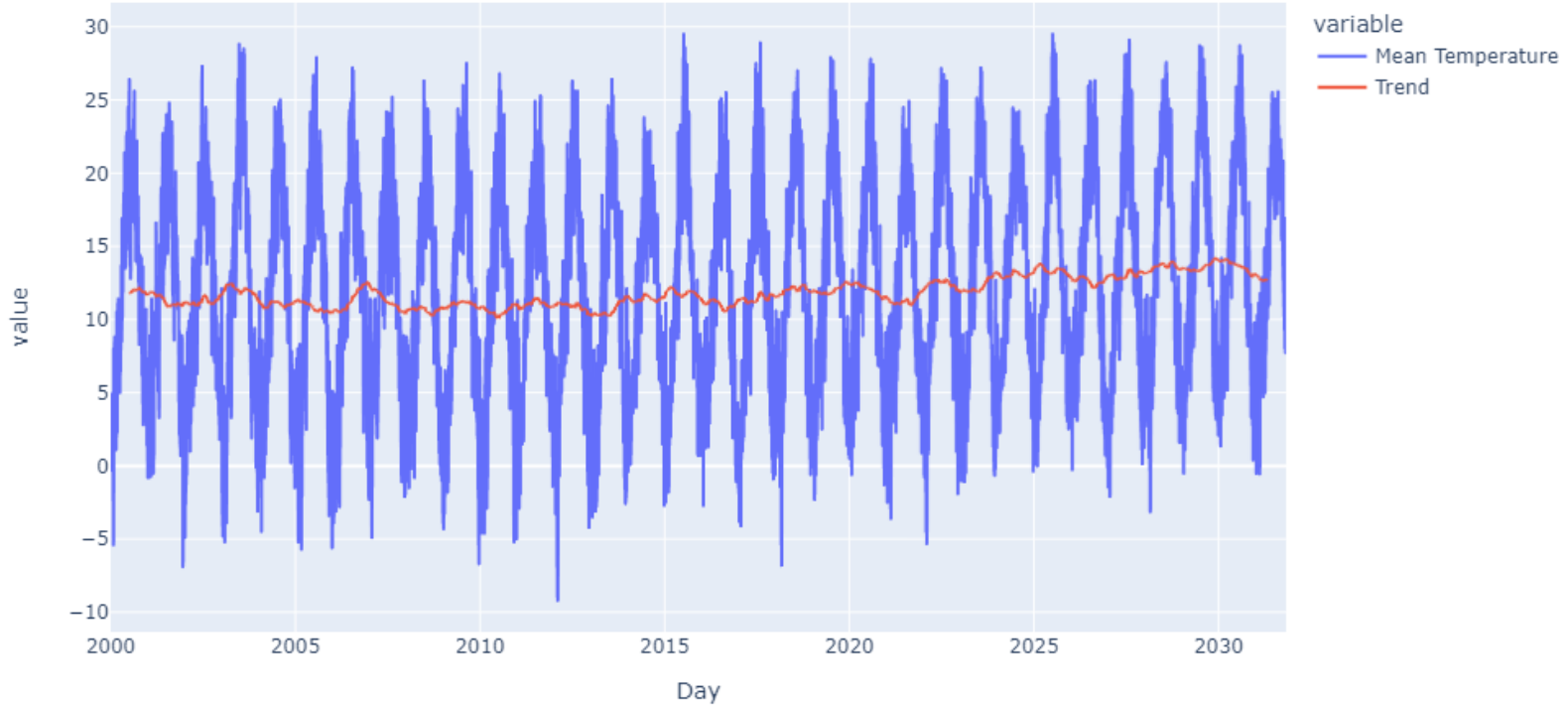
1. Direct Forecasting: Best when doing a long-term forecasting since Recursive Forecasting’s error increases as each point forecast is made.

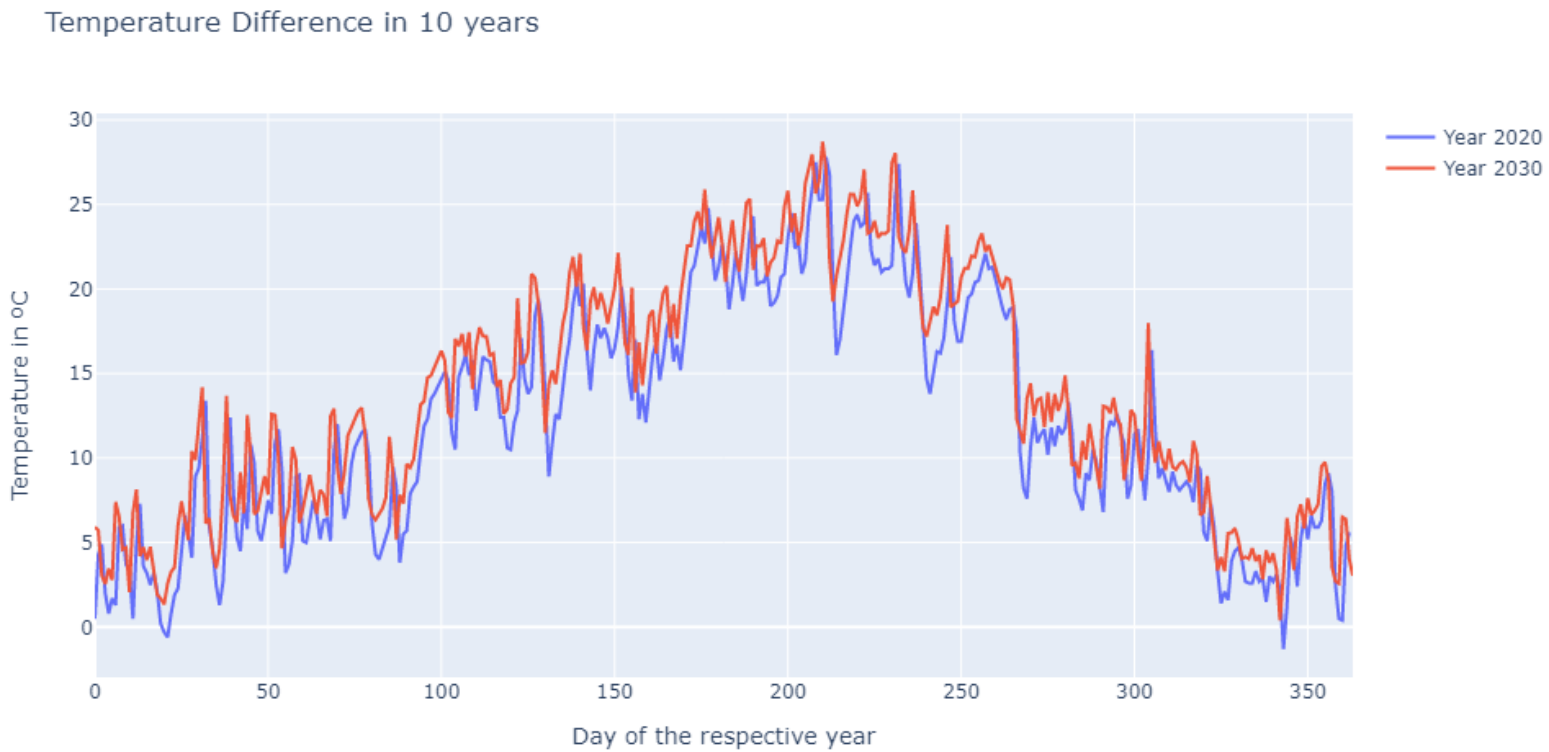
1. Adjustment Term: After doing points 1. and 2. we adjust the Direct Forecasting based on the Trend Analysis we did before.

LONG SHORT-TERM MEMORY NEURAL NETWORKS



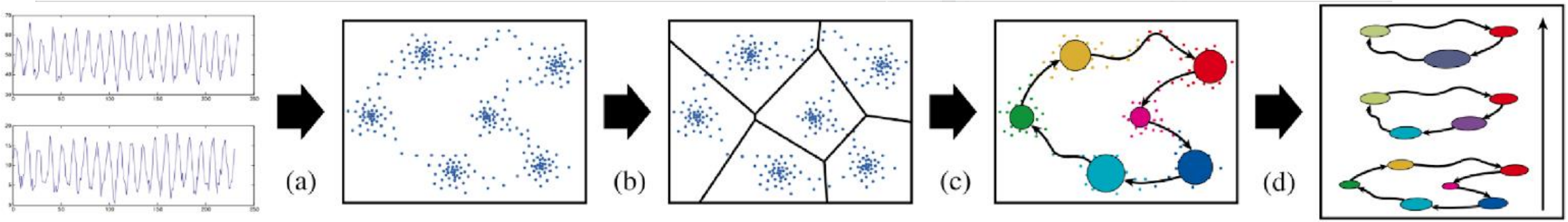
Temperature Forecasting




Temperature Difference in 10 years
Temperature in °C
Day of the respective year
Year 2020
Year 2030
0
5
10
15
20
25
30
0
50
100
150
200
250
300
350

Observing periodicity through typical states

Jože Peternelj
Janez Brank
Jan Šturm



Luka Stopar

Future work

- From latest discussions with use-case partners: consider include the legal and regulatory landscape, or the web scrapping of relevant online forums (e.g. IWA discussion forum)

- Scale the system at European level through automated access to weather data (ECMWF) and water levels (JRC)

- Improve long-term predictive algorithms

- Develop interactive data visualisation modules allowing to further understand the change in seasons at a local level

- Further exploration of the potential of streamstory on describing subseasons that help us understand the impact of climate change through water

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IRCAI SDG 6 Observatory

ALL SDGs

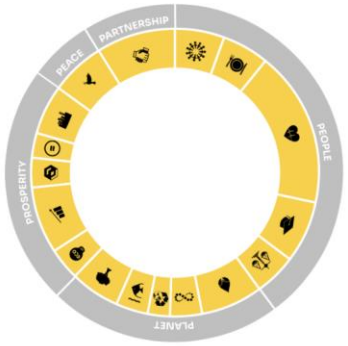
Ensure availability and sustainable management of water and sanitation for all

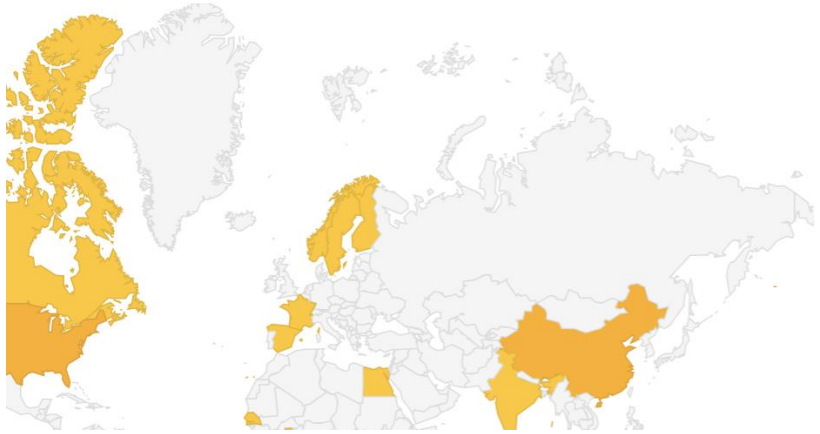
PUBLIC VIEW

POLICY-MAKERS VIEW

LIVE REPORT

HIGHLIGHTS





127.393

Publications in the period

127.393

Publications in the period

12%

Compound annual growth rate in the period

13 CLIMATE ACTION

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Klemen Kenda
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Thank you!

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