ARSO METEO
Slovenian Environment Agency

DMCSEE
Drought Management Centre for Southeastern Europe

Better prepared for drought – experiences from Danube region

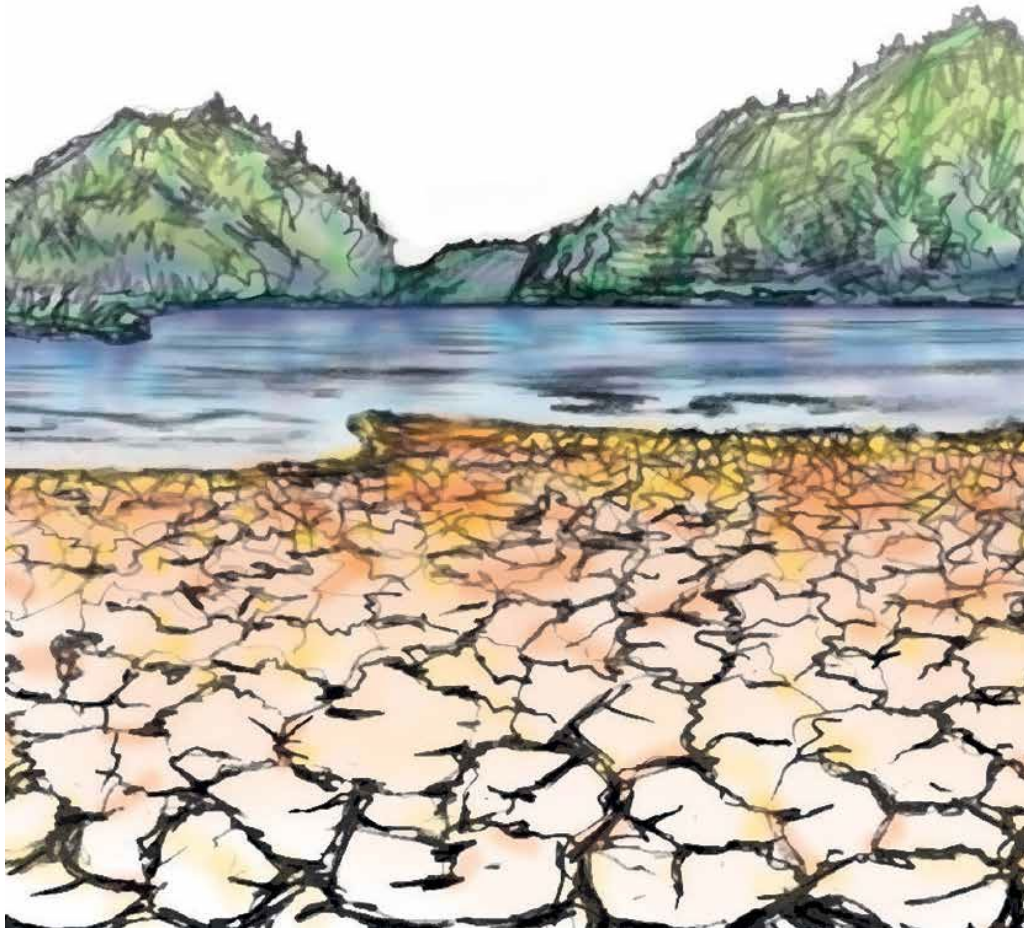
Andreja Sušnik

Conference: „Climate change and the European water dimension - Enhancing resilience“, November 4-5, 2020, Online

- Drought phenomenon and its changes in Europe
- Drought management in the Danube region
- New tools for better preparedness
- Take away messages

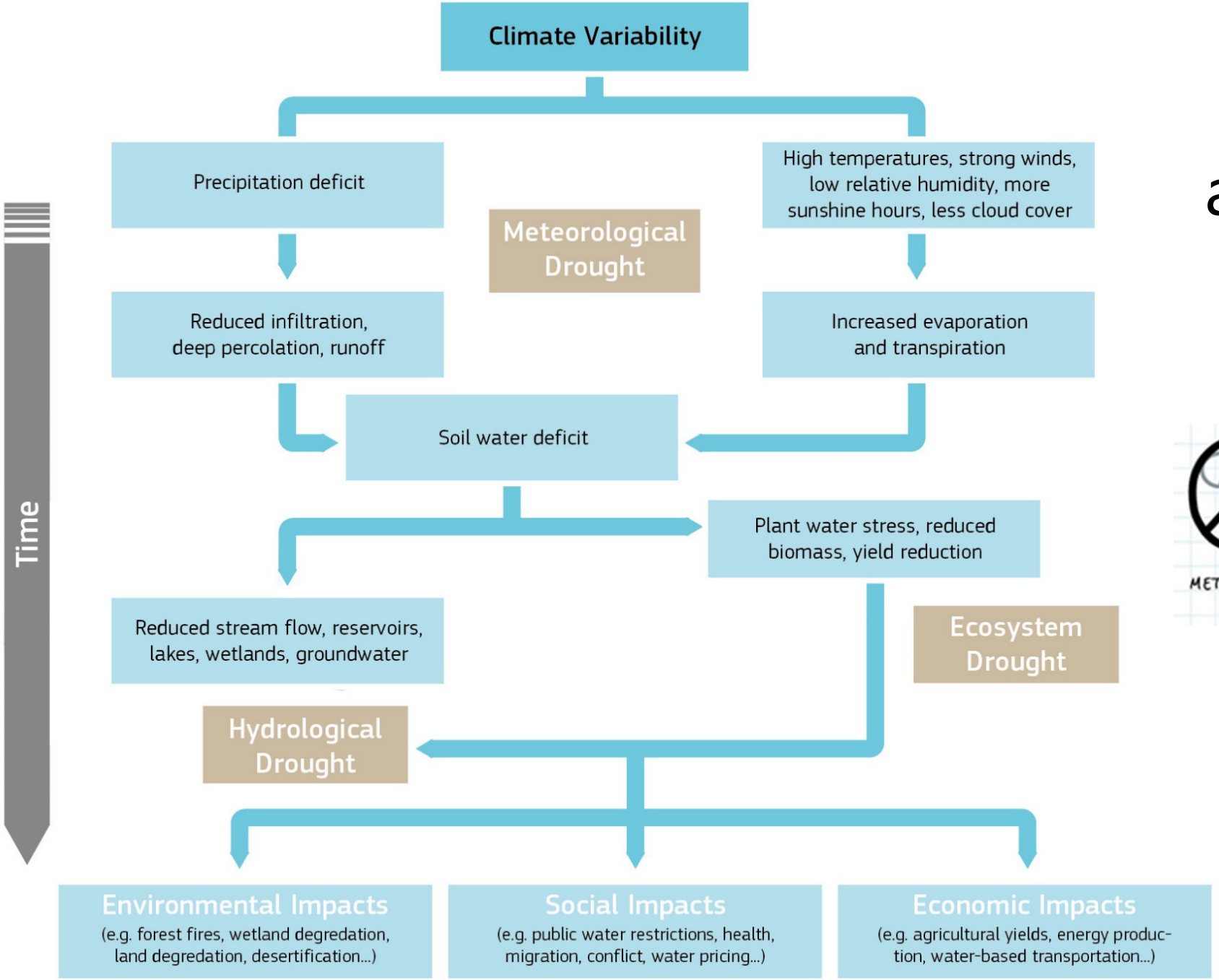
What is drought?

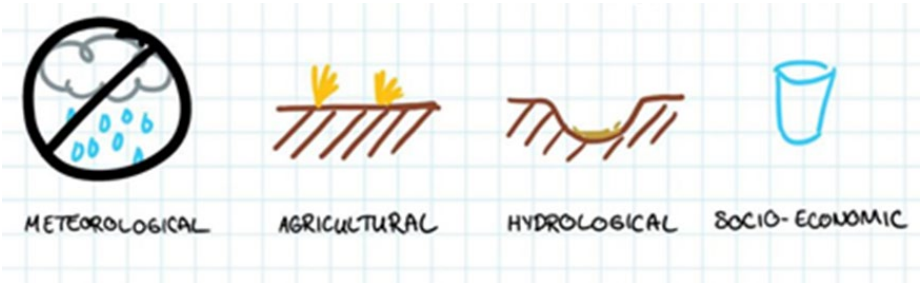
- A complex and little-understood phenomena among those in “weather and climate extremes”;
- slow (not sudden) development;
- difficult to define its start and end;
- diverse, non-structural impacts;
- high spatial and temporal variability.



Credit: WMO-CAgM (2018)

Drought triggers and drought types





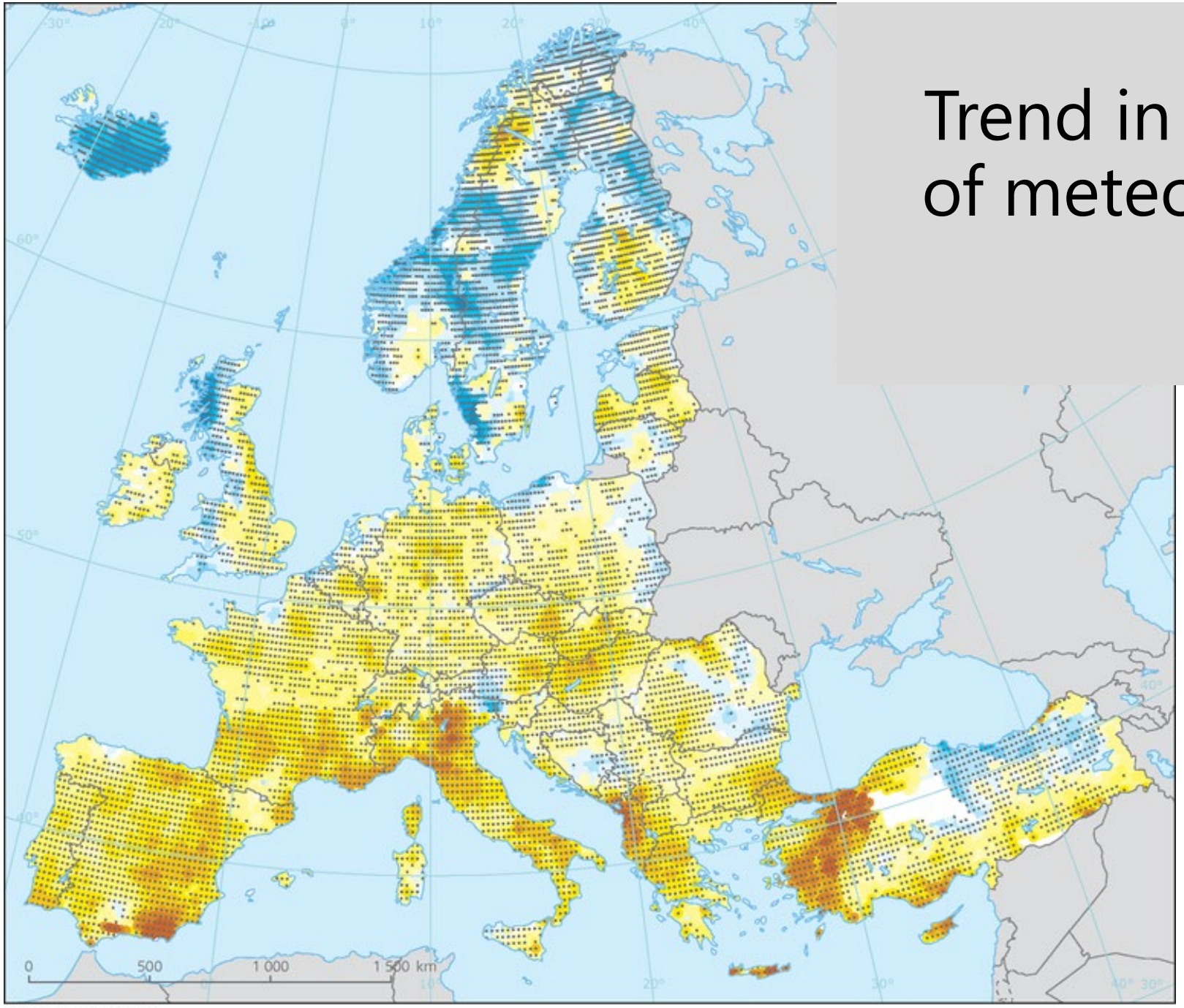
Graphic: abc.net.au

Credit: WAD-JRC, adapted from US National Drought Mitigation Centre (drought.unl.edu) (2017).

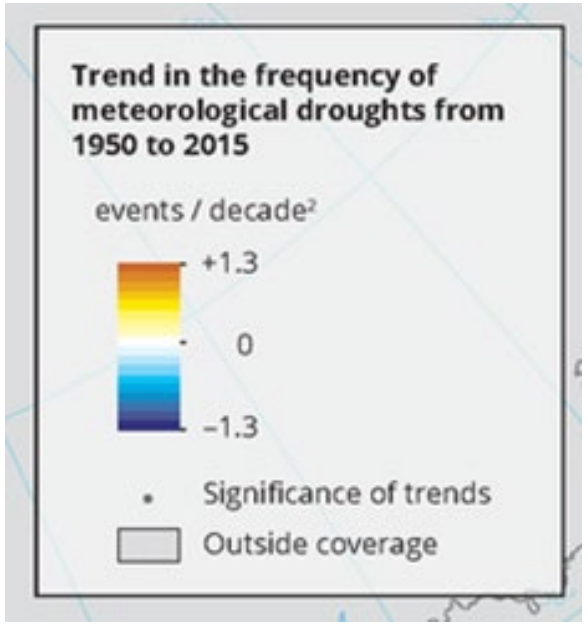
Drought – phenomenon known from the past

„XVII weeks without rain drop“ note in the rock, Žagolič, Col, Slovenia, 1822 (photo: A. Žust).

Trend in the annual frequency of meteorological droughts in Europe (1950-2015)



Reference data: ©ESRI



Credit: EEA (2020)

Interreg
Danube Transnational Programme
DriDanube

A regular visitor in the Danube region

- Increasing occurrence of drought;
- since the early 1980s, the number of drought-affected areas in Europe has been steadily increasing, especially in the countries of the S, SE and W Europe;
- major drought years incude 2003, 2007, 2012, 2015, in year 2017 it affected significant parts of the Danube region; it persisted in its N parts throughout 2018 and 2019 and in a part of region in 2020;
- also traditionally rainfall-rich countries such as the Alpine region are facing drought.

Diverse impacts on the different water-related sectors & exstensive damages

Deseret News

Suša "gasi" svjetla na Balkanu

Amerin M. | četvrtak, 06 September 2012 11:08

Sviđa mi se | Pošalji | Budi prvi među svojim prijateljima kome se ovo sviđa.

- Agriculture
- Navigation
- Water supply (drinking water)
- Energy (Hydropower)
- Industry (cooling water)
- Water quality
- Ecology (Biodiversity)
- Recreation
- Others

Drought 2020

CULTURE & SOCIETY | CZECH REPUBLIC | NEWS | POLAND | SLOVAKIA

Czech Republic, Poland and Slovakia face “catastrophic” droughts

BY KAFKADESK
2 MAY 2020
COMMENTS 0

WORLD

Associated Press

Published: April 27, 2020, 12:12 pm
Updated: April 28, 2020, 7:53 am

Tags: Environment, Nature

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Germany hopes for rain to avoid 3rd straight summer drought

Full Screen 1 / 12

Drought destroys a quarter of Romania’s crops this year

07 October 2020 | by Andrei Chirileasa

France imposes water restrictions in 55 departments

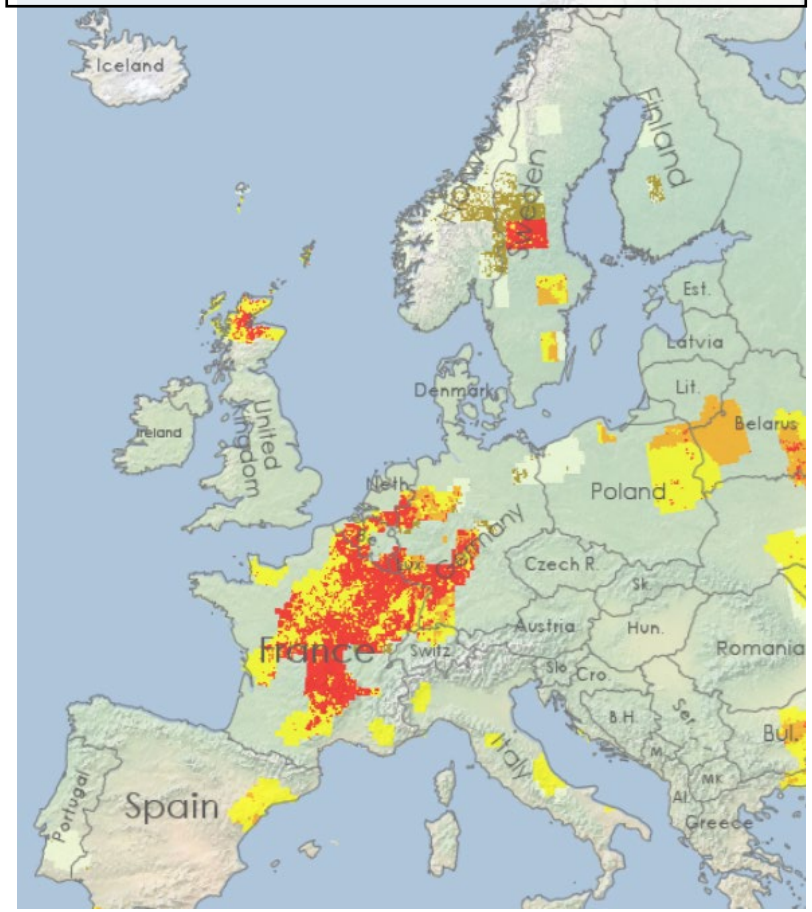
Fifty-five departments in France have had water restrictions imposed as the drought alert level reaches the second-most severe “orange” in some areas, as July 2020 is declared the third-driest July since 1994.

23 July 2020

New faces of droughts in Europe: shift S/N; spring/autumn/winter

Summer – 3rd decade of July 2018

Autumn – 2nd decade of October 2020



Combined Drought Indicator - CDI

- Watch: rainfall deficit
- Warning: soil moisture deficit
- Alert: vegetation stress following rainfall / soil moisture deficit
- Partial recovery of vegetation
- Full recovery of vegetation to normal conditions

Copernicus Europe's eyes on Earth

Vari	poral scale	Spatial scale
Precipitation, soil moisture, and vegetation response.	10 days (= 1 dekad)	5 km

Credit: EDO (2018, 2020)

Flash & consecutive droughts

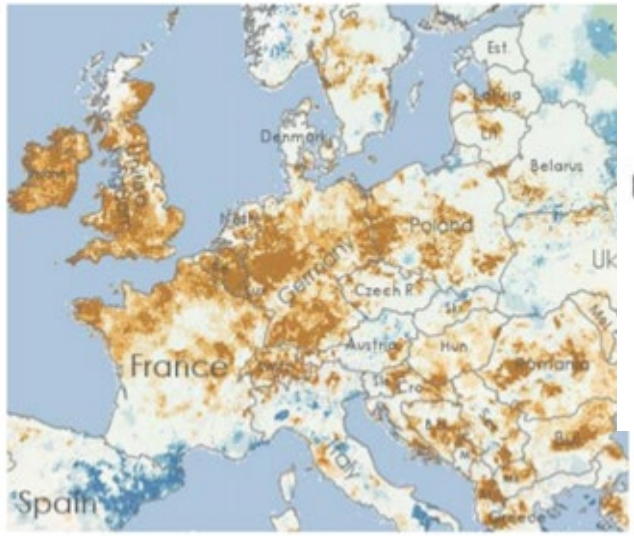
- Flash drought: extreme event, distinguished by sudden onset and rapid intensification of drought conditions with severe impacts (2018, 2019).
- The 2020 drought marks the third consecutive year of unexpectedly dry conditions across Europe.

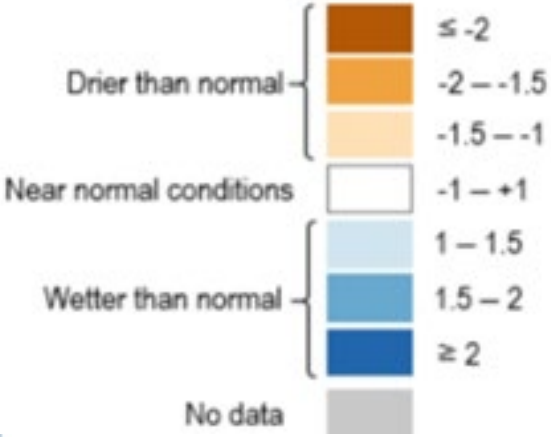
2019

SMA, 11th to 20th of June 2019

SMA, 21st to 31st of July 2019

2020





Credit: EDO (2019, 2020)

Soil moisture anomaly (SMA):

2nd decade in June 2019 (upper left) & 3rd decade of July 2019 (upper right); from mid May to mid June 2020 (below)

What we need for proactive drought management?

Credit: IDMP (2018)

Findings from the Danube region

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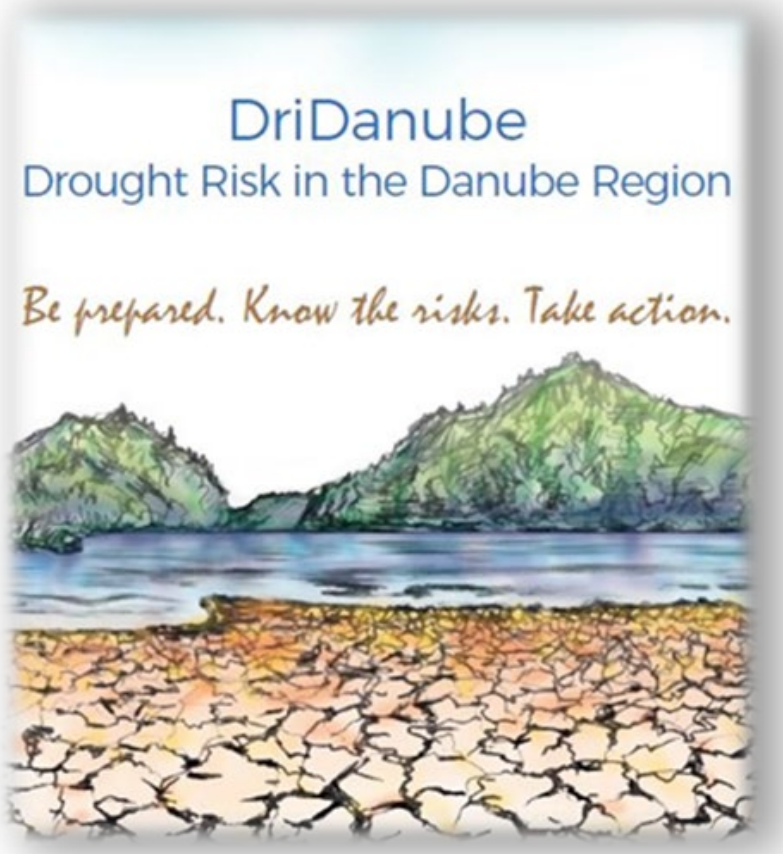


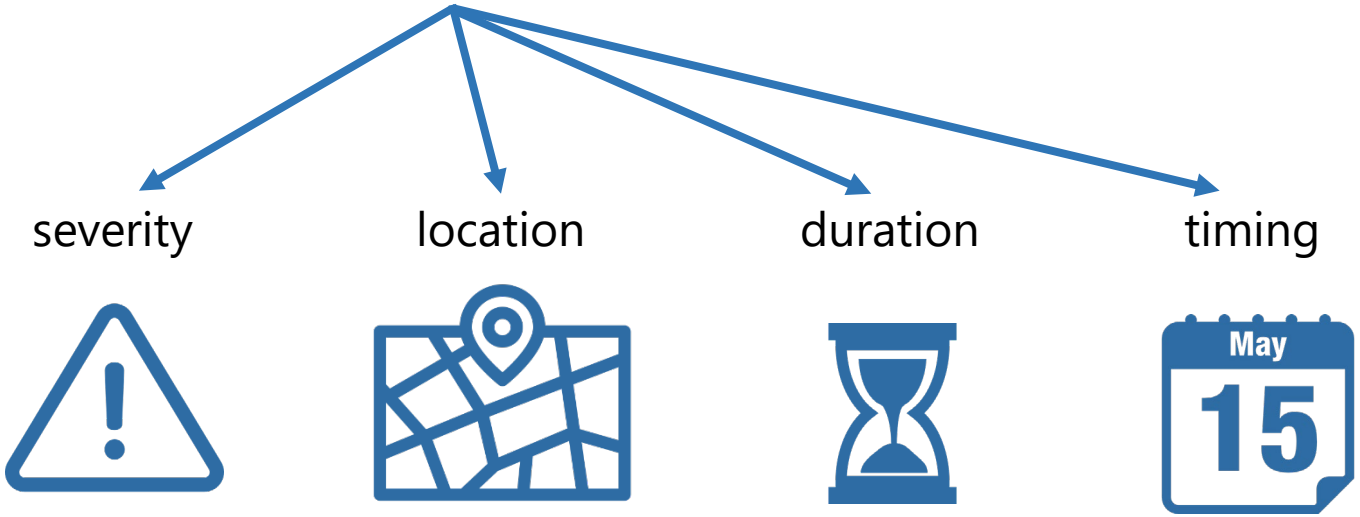
www.interreg-danube.eu/dridanube

Drought monitoring & risk assesment in the Danube region

- Regionally diverse drought monitoring (as well as risk estimation), variety of indices used;
- early warnings (EWS) are in most countries either not in place or not agreed upon at country level;
- EWS mostly carried out when first signs of drought impacts have already occurred (after drought on-set);
- missing systematic and regular collection of drought impacts to complement drought monitoring.

Drought characteristics detection

Droughts can be characterized in terms of their



Drought indicators and indices provide options for identifying drought characteristics listed above. These are associated with different types of drought.

Credit: Vlahović (2020)

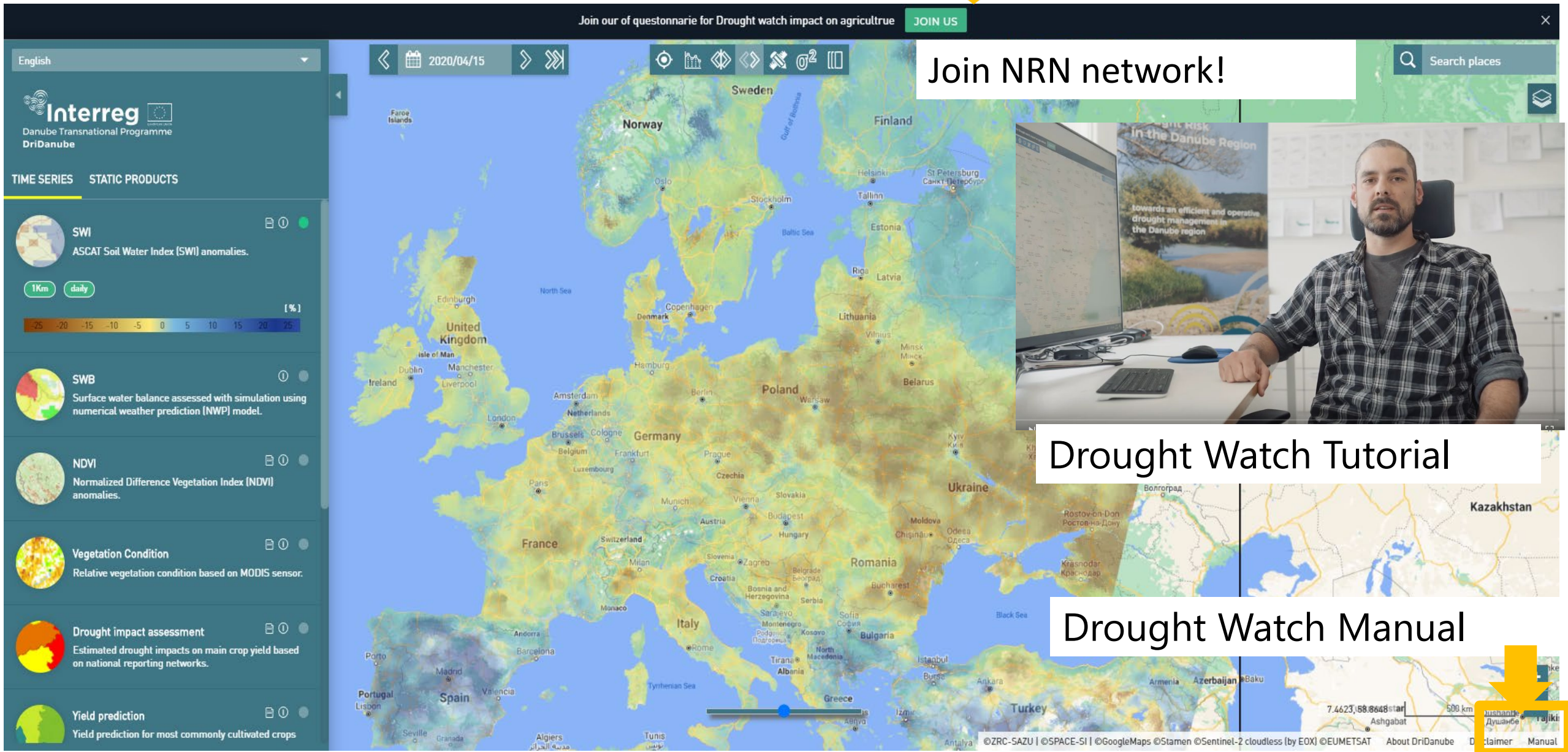
Achievement 1: Drought Watch

Interreg
Danube Transnational Programme
DriDanube

- web-based interactive tool for near-real-time drought monitoring through different drought indices;
- enables more accurate and efficient drought monitoring and early warning for the entire Danube region;
- integrates risk and impact maps.

www.droughtwatch.eu

Tutorial, manual, catalogue, national reporting networks

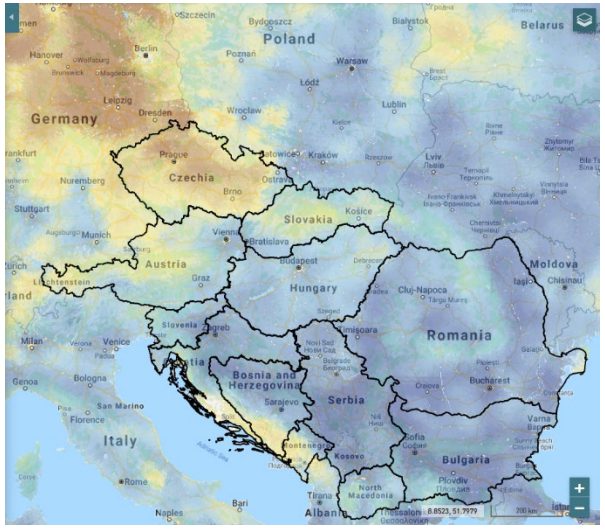


Drought development in 2018 in 2019 using Drought Watch

2018

Winter/spring 2018 (1 March)

Summer 2018 (24 July)

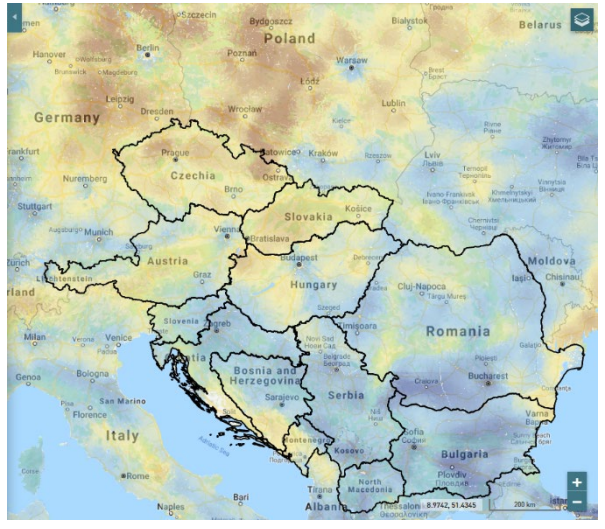


Autumn 2018 (28 October)

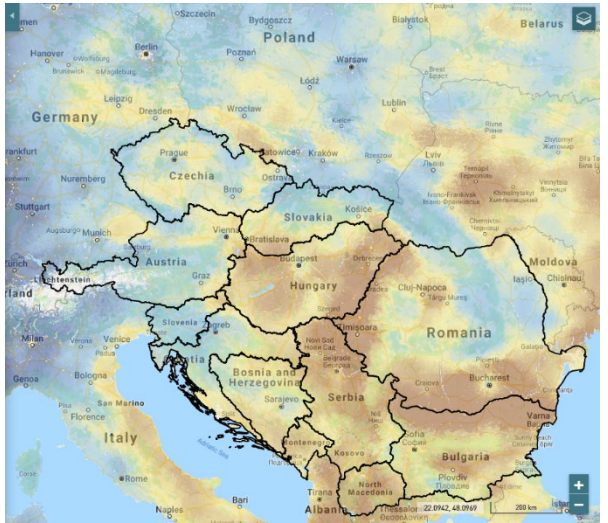
2019

Spring 2019 (1 April)

Summer 2019 (24 July)

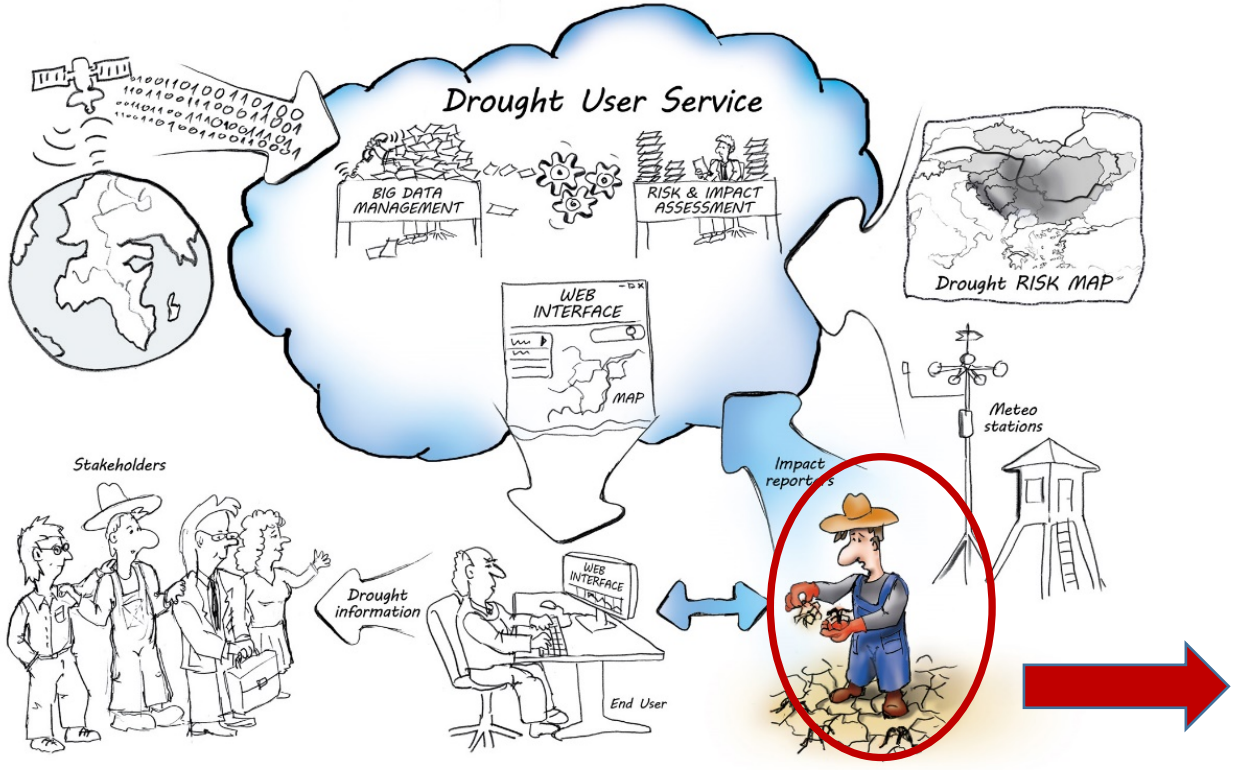


Autumn 2019 (28 October)



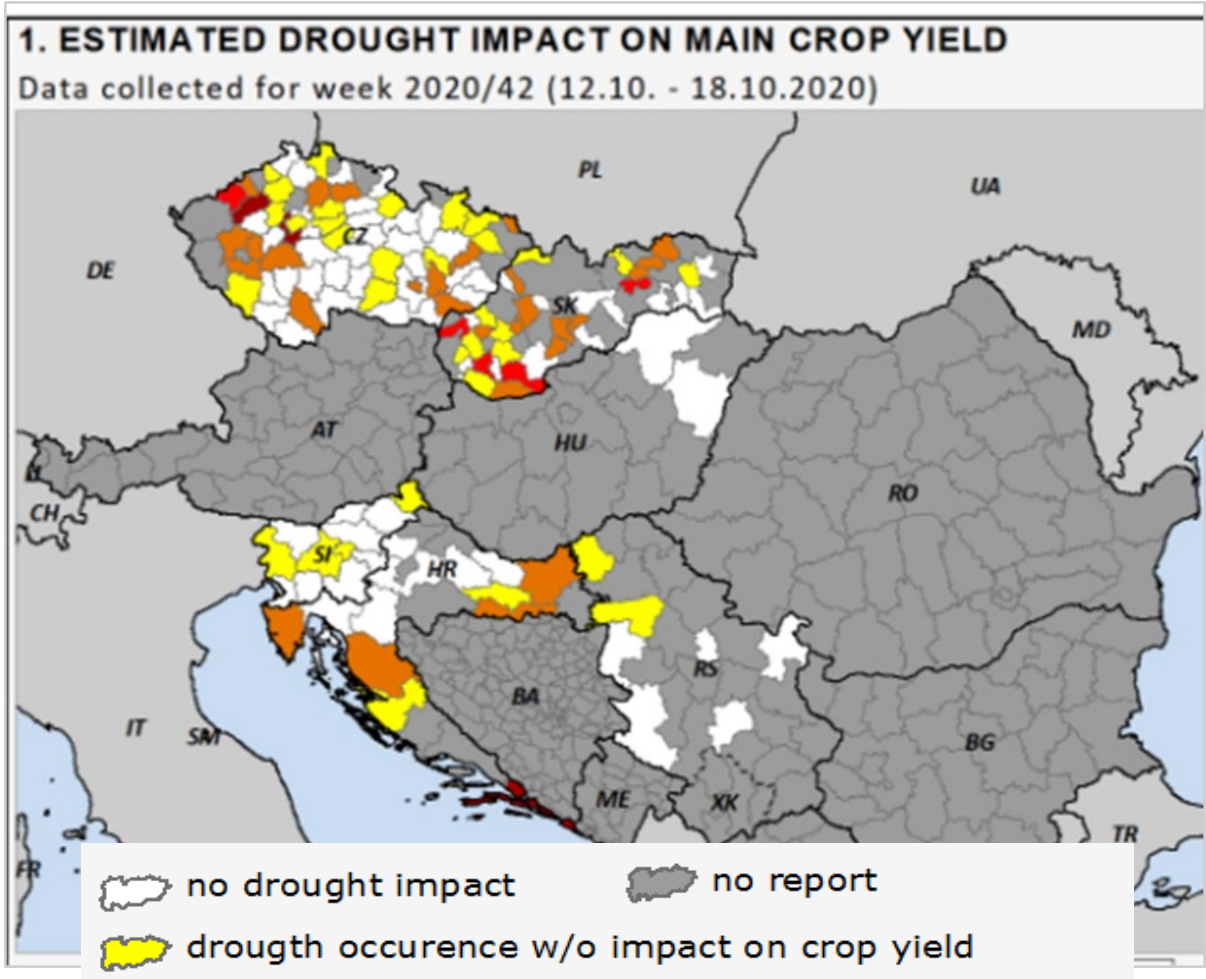
Achievement 2: Network of drought reporters

Interreg
Danube Transnational Programme
DriDanube



2nd decade, October 2020

Weekly routine to validate and complement drought indices



DriDanube Questionnaire for reporters - entry

Interreg
Danube Transnational Programme
DriDanube

Vir: https://blog.donedeal.ie/2013/09/make-farming-21st-century

DriDanube Questionnaire | About Project | Contact

DriDanube - Drought Risk In The Danube Region

The main objective of DriDanube project is to increase the capacity of the Danube region to manage drought related risks. Your contribution to the project bring the information about drought impacts currently in real time from your locality. Thank you for your cooperation.

http://questionnaire.intersucho.cz/en/

How it works

1

Register

The automatical registration will be created with the first filling in a questionnaire. Please, use your email adress to login to the system thereafter.

2

Fill in questionnaire

Please, make sure you complete your questionnaire carefully according to field of your activity at the location of your business conducting. Instructions for questionnaire completing are attached HERE.

3

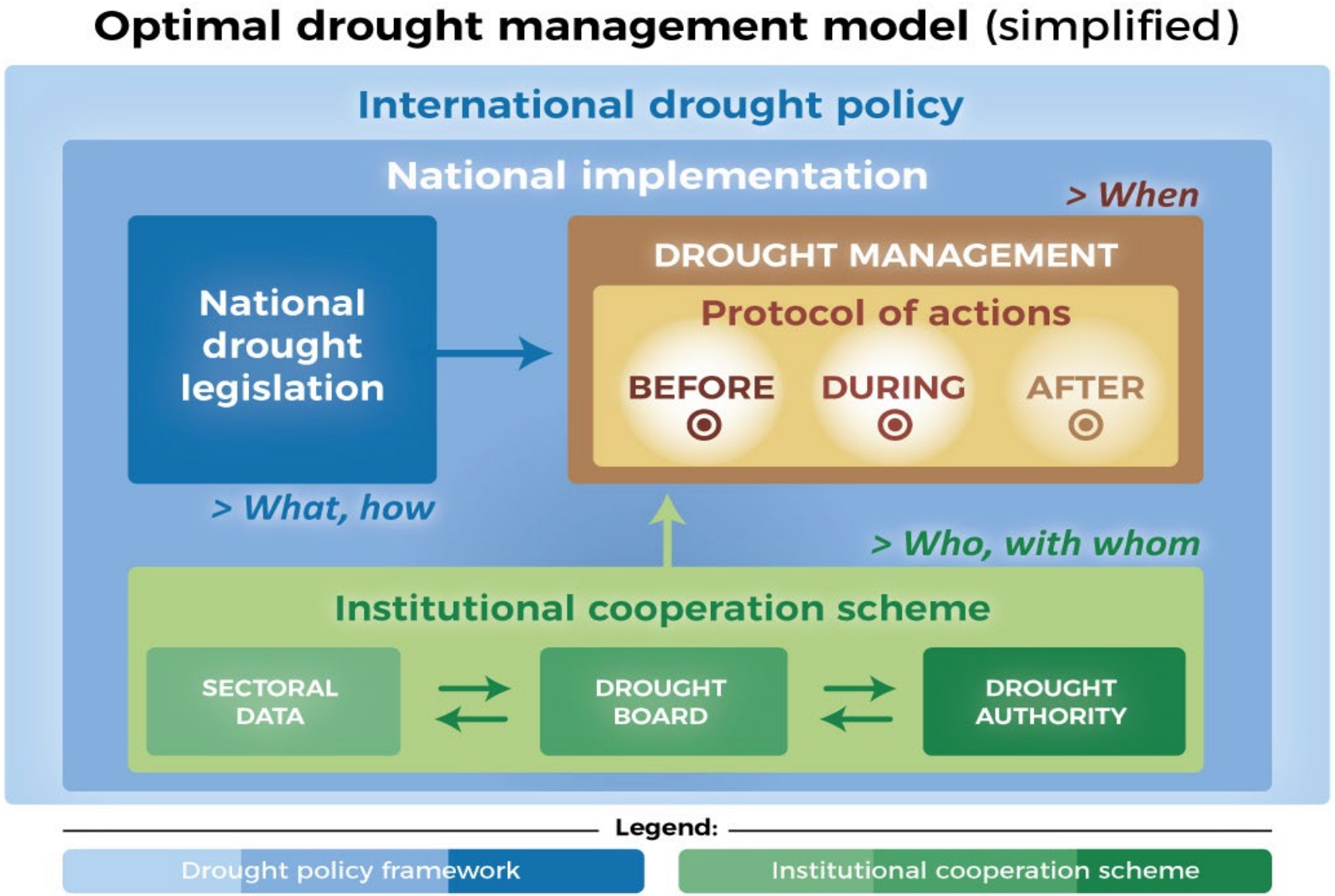
Continue in work

Please, keep reporting every week. Reporting continuity is core for entire cooperation. If you need an assistance, do not hesitate to contact us.

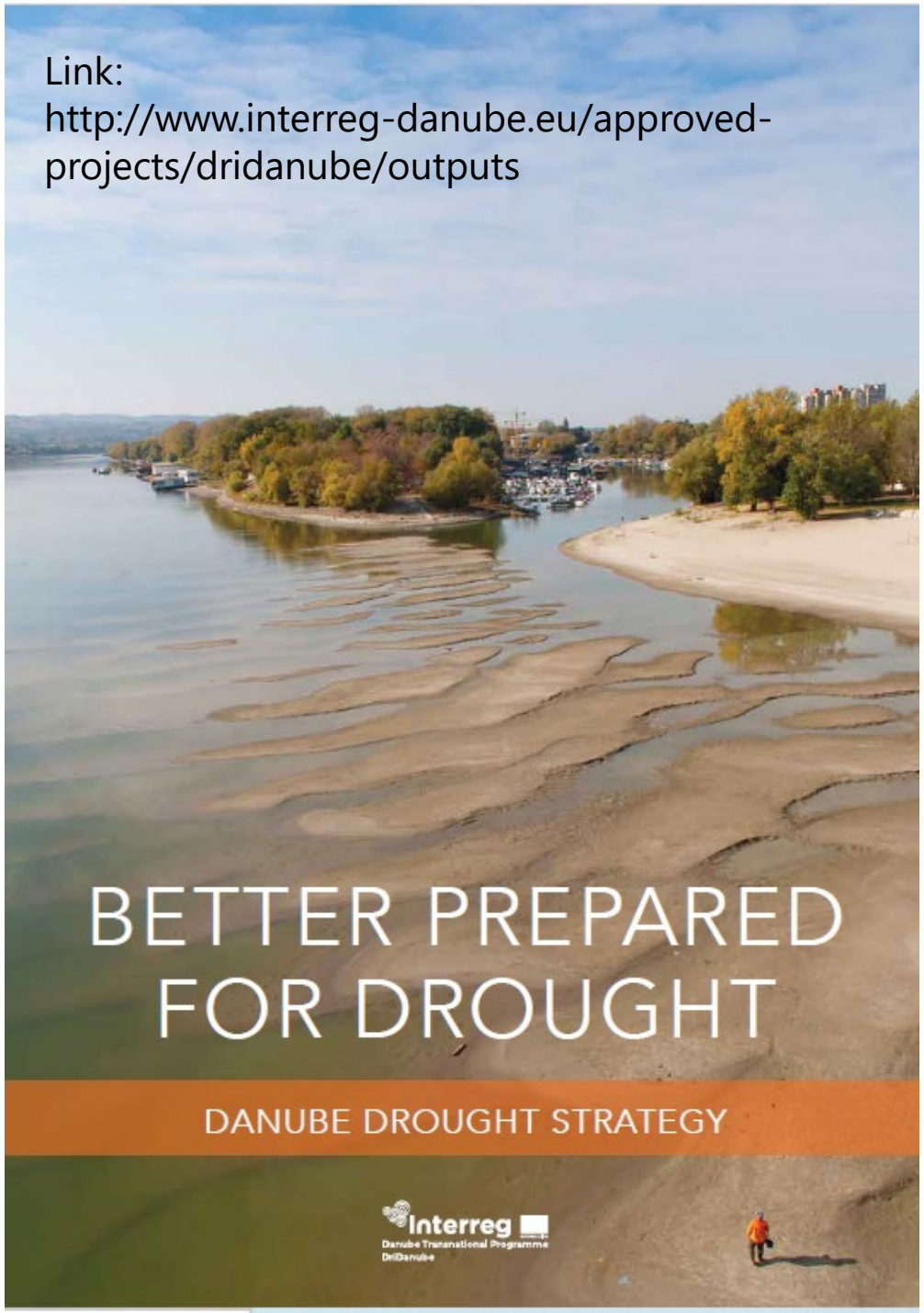
Drought response is weak

- Lack of cooperation between relevant national institutions & across vulnerable sectors;
- no clear inter-institutional scheme of data, responsibility and communication flow → weak response before, during drought (mainly crisis management);
- existing drought policies support the adoption of reactive drought response that mainly deals with the treatment of drought impacts;
- missing formal umbrella document (legislation, regulatory and financial instruments) on proactive drought management;
- drought still not considered an issue of high priority (of policy and society).

Achievement 3: Drought Strategy



Link:
http://www.interreg-danube.eu/approved-projects/dridanube/outputs



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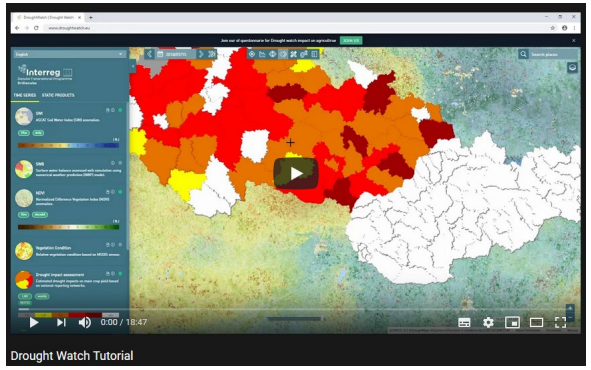
Be prepared. Know the risks. Take action.

DANUBE DROUGHT STRATEGY SUMMARY FOR POLICY MAKERS

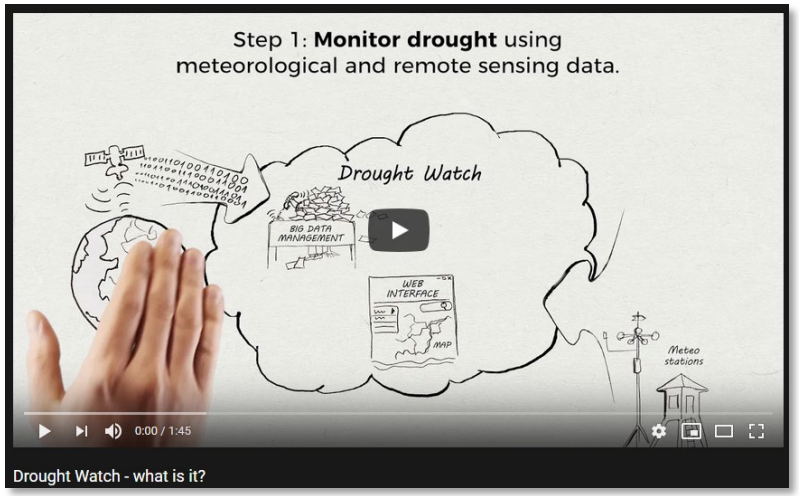
Proactive drought management comes to life through interdisciplinary cooperation among policy makers at all levels and a collaborative effort.

Quick links

Contact: andreja.susnik@gov.si



Bottom right corner of the tool



- Drought Watch open access: www.droughtwatch.eu
- User material:
  - Manual: https://droughtwatch.eu/#/manual
  - Drought Watch Tutorial (youtube video)
- Danube Drought Strategy:
  - http://www.interreg-danube.eu/approved-projects/dridanube/outputs
- Videos:
  - Drought Watch – what is it? (youtube video)
  - Drought Watch – an innovative monitoring tool (youtube video)