WATER CONVENTION

Global Workshop on
Water, Agriculture and Climate Change

17-18 October 2022, Geneva and online

Cooperation on drought management at regional level – the DMCSEE example

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ARSO METEO
Slovenian Environment Agency

Ministry of Infrastructure and Water Management

UNECE

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Bundesamt für Umwelt BAFU
Office fédéral de l'environnement OFEV
Ufficio federale dell'ambiente UFAM
Uffizi federal d'ambient UFAM

ADAPTATION FUND

FAO FIAT PANIS

INTERNATIONAL NETWORK OF BASIN ORGANIZATIONS

IWMI
International Water Management Institute

ARSO METEO
Slovenian Environment Agency

DMCSEE
Drought Management Centre for Southeastern Europe

Outline

- Slovenia hosting Drought Management Center (DMCSEE)
- DMCSEE products
- Building operational products through projects (DriDanube)
- Way forward

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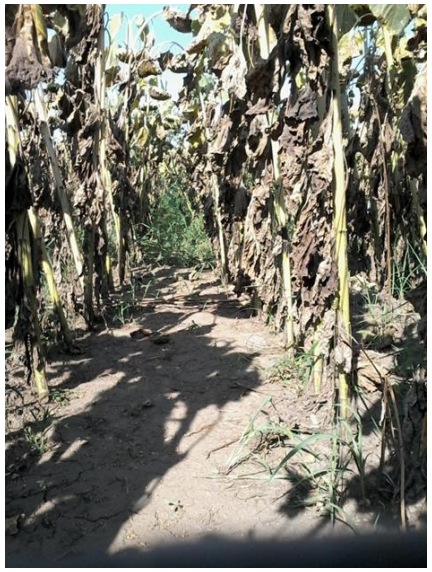
DMCSEE
Drought Management Centre for Southeastern Europe

Drought as a challenge

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



2003, 2007, 2012, 2013, 2015, 2016, 2017, 2019, 2020-2022

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DMCSEE
Drought Management Centre for Southeastern Europe

United Nations
Convention to Combat Desertification

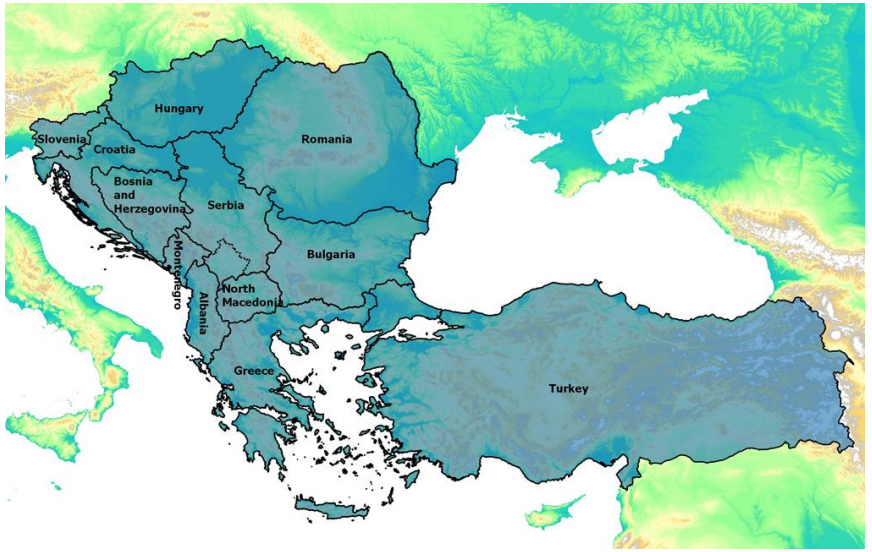
www.dmcsee.org

- Established in 2006 (WMO, UNCCD)
- hosted by Slovenian Environment Agency
- 13 countries

Mission:

- development & application of **drought risk-management tools and policies** in SEE
- **improve drought preparedness to reduce drought impacts**

SI, HR, HU, RO, BG, EL (EU members);
RS, ME, MK, AL, BiH, TR, MD



Joint activities & **cooperation** with **WMO**, **IDMP**

Help in **implementation of UNCCD mission**

monthly & seasonal **bulletins**

bring in **new knowledge** & **skills**; support & organisation of **trainings of national experts**

Drought policy recommendations (national level, regional bodies)

WMO ET Drought
IDMP programme partner
UNCCD annex IV and V partner

WORLD METEOROLOGICAL ORGANIZATION

IDMP
Integrated Drought Management Programme

Global Water Partnership

ARSO METEO
Slovenian Environment Agency

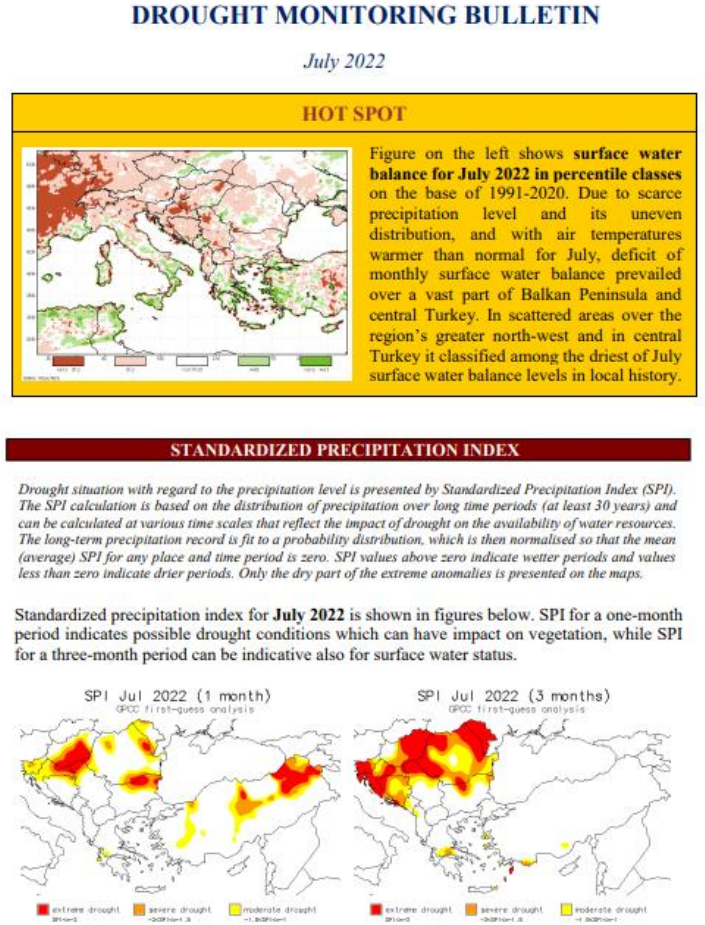
Operational products development – bulletins, web-based tools

DMCSEE
Drought Management Centre for Southeastern Europe

SOUTH EAST EUROPE · DMCSEE Drought Management Centre for Southeastern Europe · Interreg Danube Transnational Programme DRIDanube · EUROPEAN UNION

http://www.dmcsee.org/en/drought_bulletin/

- Hot spot - short summary, short insight of possible drought circumstances at the time of issue.
- Additional and auxiliary information (methodology used, detailed info on surface water balance, temperature and SPI situation)
- FVC development Mar-Dec at 13 locations across SEE
- Report on drought impacts
- Water balance outlook



DROUGHT MONITORING BULLETIN

July 2022

HOT SPOT

Figure on the left shows **surface water balance for July 2022 in percentile classes** on the base of 1991-2020. Due to scarce precipitation level and its uneven distribution, and with air temperatures warmer than normal for July, deficit of monthly surface water balance prevailed over a vast part of Balkan Peninsula and central Turkey. In scattered areas over the region's greater north-west and in central Turkey it classified among the driest of July surface water balance levels in local history.

STANDARDIZED PRECIPITATION INDEX

Drought situation with regard to the precipitation level is presented by Standardized Precipitation Index (SPI). The SPI calculation is based on the distribution of precipitation over long time periods (at least 30 years) and can be calculated at various time scales that reflect the impact of drought on the availability of water resources. The long-term precipitation record is fit to a probability distribution, which is then normalised so that the mean (average) SPI for any place and time period is zero. SPI values above zero indicate wetter periods and values less than zero indicate drier periods. Only the dry part of the extreme anomalies is presented on the maps.

Standardized precipitation index for **July 2022** is shown in figures below. SPI for a one-month period indicates possible drought conditions which can have impact on vegetation, while SPI for a three-month period can be indicative also for surface water status.

SPI Jul 2022 (1 month) GPCC first-guess analysis

SPI Jul 2022 (3 months) GPCC first-guess analysis

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Drought Risk in Danube Region
DriDanube

- Interreg project (85% financed by European fund for regional development)
- Lead partner: ARSO; Project budget: 1.974.750,00€
- Duration of project: 33 months (January 2017 – September 2019)
- 15 partners + 8 strategic partners from 10 countries

Partners:
Slovenia 2
Austria 2
Czech Republic 1
Slovakia 2
Hungary 2
Romania 1
Croatia 1
Serbia 2
Montenegro 1
Bosnia and Herzegovina 1

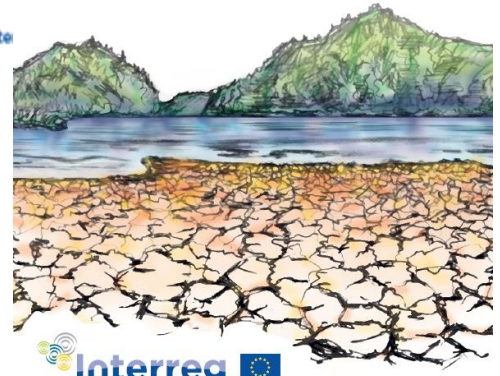
Lead Partner:
- Slovenian Environment Agency (ARSO), Slovenia

Partners:
- EODC Earth Observation Data Centre for Water Resources Monitoring GmbH (EODC), Austria
- Global Change Research Institute CAS, (CzechGlobe), Czech Republic
- Global Water Partnership Central and Eastern Europe (GWP CEE), Slovakia
- Hungarian Meteorological Service (OMSZ), Hungary
- Vienna University of Technology (TU Wien), Austria
- Szent Istvan University (SZIU), Hungary
- National Meteorological Administration (NMA), Romania
- Centre of Excellence for Space Sciences and Technologies (SPACE-SI), Slovenia
- Meteorological and Hydrological Service (DHMZ), Croatia
- Slovak Hydrometeorological Institute (SHMU), Slovakia
- Faculty of Agriculture, University of Novi Sad (FAUNS), Serbia
- Republic Hydrometeorological Service of Serbia (RHMSS), Serbia
- Institute of Hydrometeorology and Seismology (IHMS), Montenegro
- Republic Hydrometeorological Service of Republic of Srpska (RHMZ RS), Bosnia and Hercegovina

Associated Strategic Partners:
- International Commission for the Protectio
- Administration of the RS for Civil Protectio
- The State Land Office (SLO), Czech Republi
- Agricultural Station/Forecasting and Warni
- Environment Agency Austria (EAA), Austria
- Austrian Federal Ministry of Agriculture, Fo (BMLFUW), Austria
- Ministry of Environment and Energy, Wate
- Ministry of Agriculture (FM), Hungary

DriDanube
Drought Risk in the Danube Region

Be prepared. Know the risks. Take action.



Interreg
Danube Transnational Programme
DriDanube
Project co-funded by European Union funds (ERDF, IPA)

Main outputs

Drought User Service

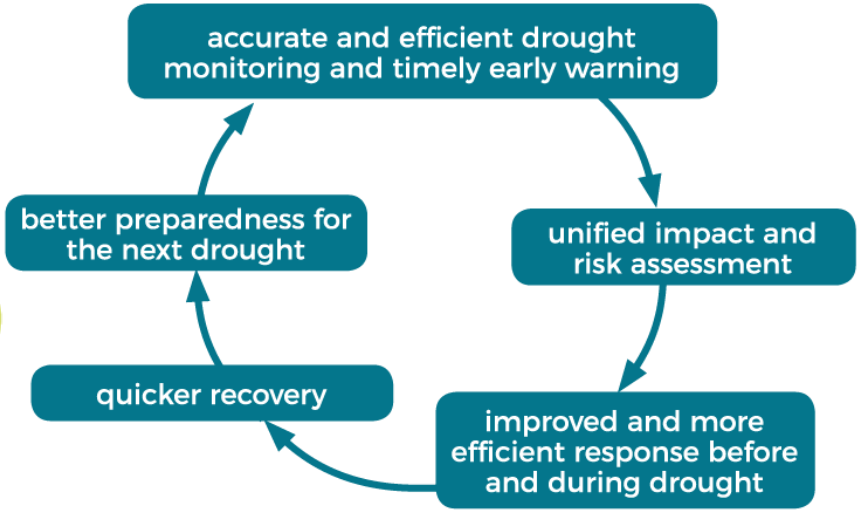
An innovative tool integrating all available data, including large volume of remote sensing products and serving the authorities to monitor, forecast and respond during drought development faster and with higher precision.

Methodologies for drought impact and risk assessment

Unification and cross-border coherence of drought Risk and Impact assessments. Establishment of network of reporters as additional source of information for drought impacts in agriculture.

DriDanube Strategy

A clear guidance for overcoming the gaps in the drought decision-making processes and improvement of drought emergency response in the Danube region.



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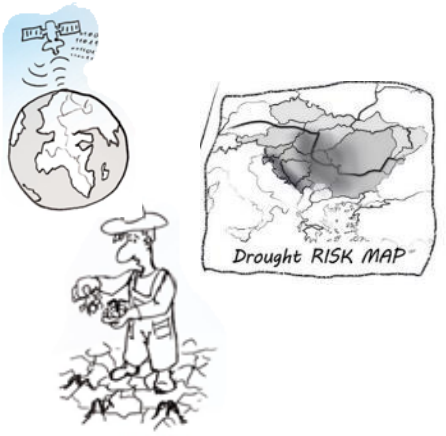
Drought User Service - DroughtWatch

www.droughtwatch.eu

- An open online tool for drought monitoring through different drought indices:

  - ***Interactive***
    Multiple functionalities to view and examine data
  - ***Meteorological & agricultural drought***
    Potential to cover hydrological aspect
  - ***Near-real-time information***
    Indices refreshed daily, weekly or every 10 days



- Integrates 3 different types of info on drought:
  - A) Remote-sensed and modelled data -- from satellite & reanalysis
  - B) Drought risk maps -- from the assessment of past meteo & yield loss events.
  - C) On-field drought impacts observations -- from national reporting networks,

- Wider view on state of soil and vegetation (changes over time, Danube basin as a whole)

Interreg
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DriDanube

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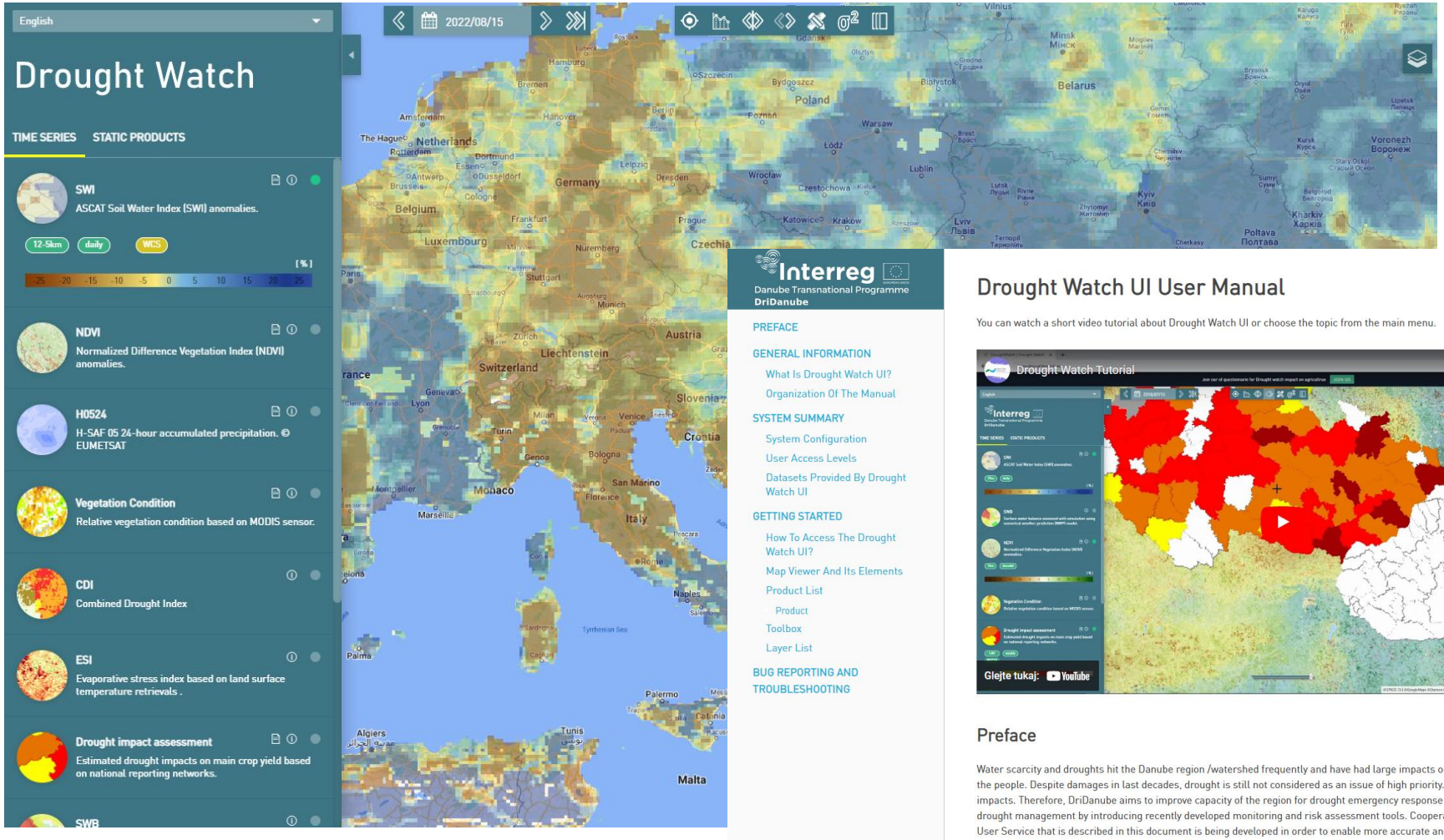
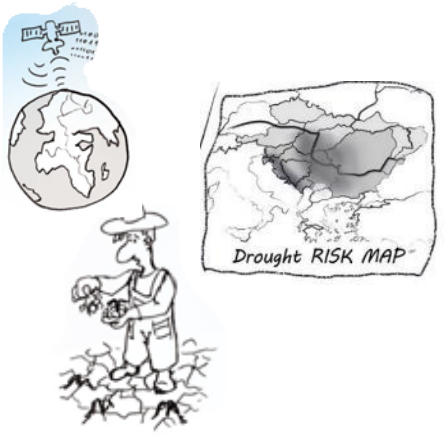


Soil moisture: SWI, mid-August 2022

User manual, incl. video tutorial



Interreg
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DriDanube

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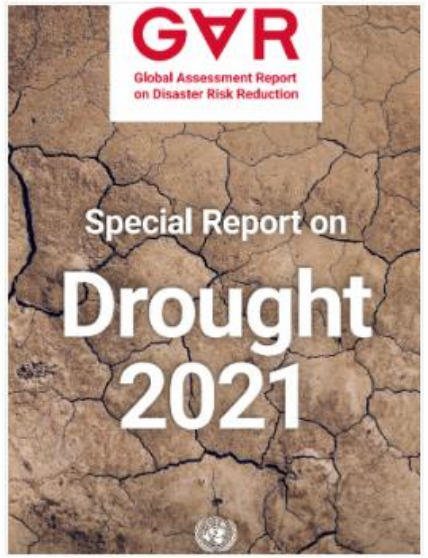
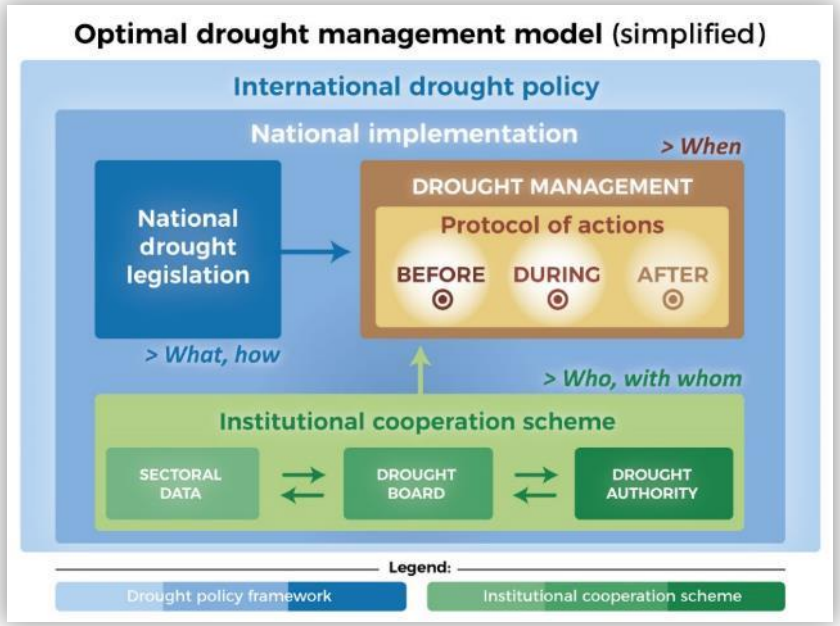
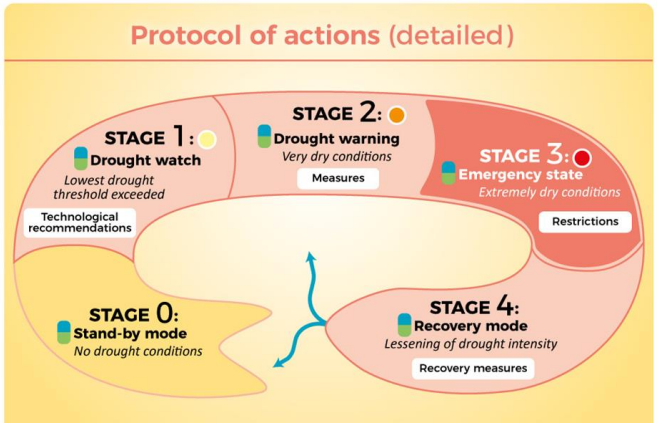
Danube Drought Strategy: connect monitoring & response

- Proposed framework for improved drought management
- Core: **Optimal Drought Management Model** for proactive institutional approach
- Connects drought monitoring with measures/actions (also during no-drought conditions)
- Can be a practical national document *(who, what, when)*
- Applicable to any country







Good practice of drought management integrated into national legislation in Danube Basin country:
Slovak National Action Plan to Combat Drought

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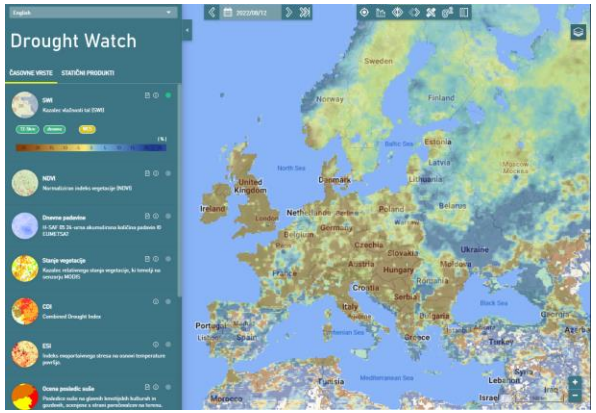
Recent developments: Alps and national level

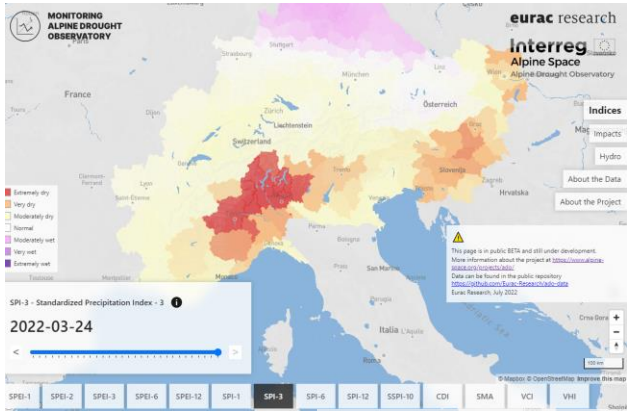
regional

Drought Watch (12.8.2022)



www.droughtwatch.eu

ADO platform (Alps – hydrological component)



https://ado.eurac.edu/

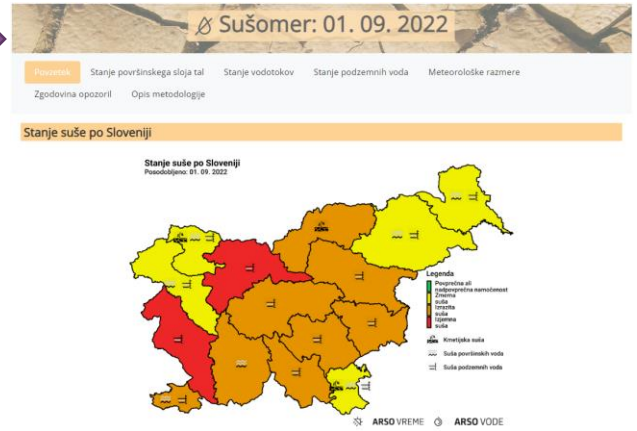
Interreg
Danube Transnational Programme
DriDanube

Interreg
Alpine Space
Alpine Drought Observatory

national

ARSO VREME

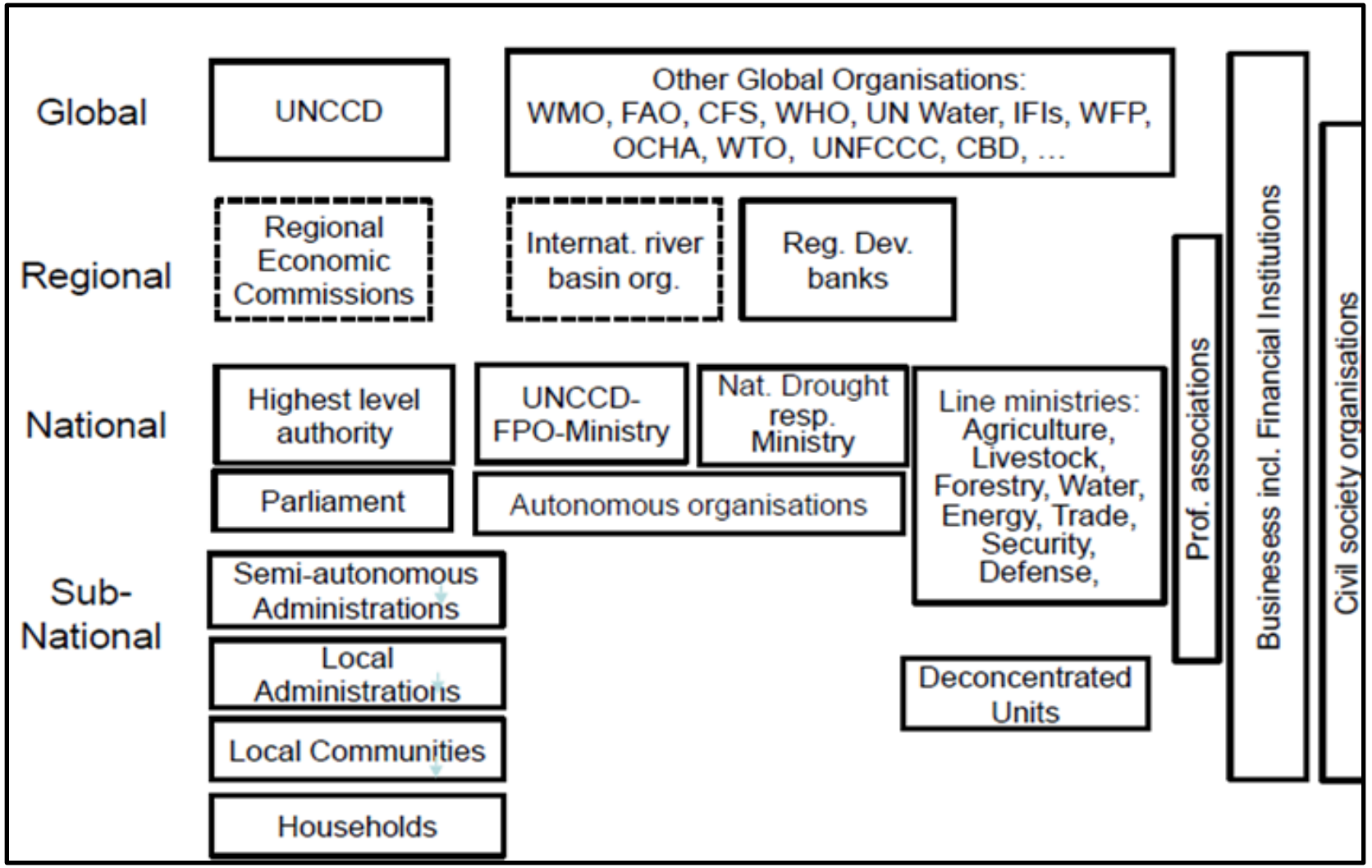
ARSO VODE



Sušomer –
ARSO weekly drought monitoring bulletin

https://www.meteo.si/uploads/probase/www/agromet/bulletin/drought/sl/

Legislation of drought management?



Global:
WMO, UNCCD, GWP

Regional: ICPDR

ICPDR IKSD
International Commission for the Protection of the Danube River
Internationale Kommission zum Schutz der Donau

Credit: Michael Brüntrup (2020)

Thank you

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Twitter: @meteoSI (in slovene)