



ARSO METEO
Slovenian Environment Agency



New approaches to better drought management in Slovenia and Danube region

Andreja Sušnik

2nd Workshop of the Water platform of
the Alpine Convention on Drought Risk Management in Alps
23 January 2018, Vienna/Austria



DriDanube – Drought Risk in the Danube Region
Project co-funded by European Union funds (ERDF, IPA)

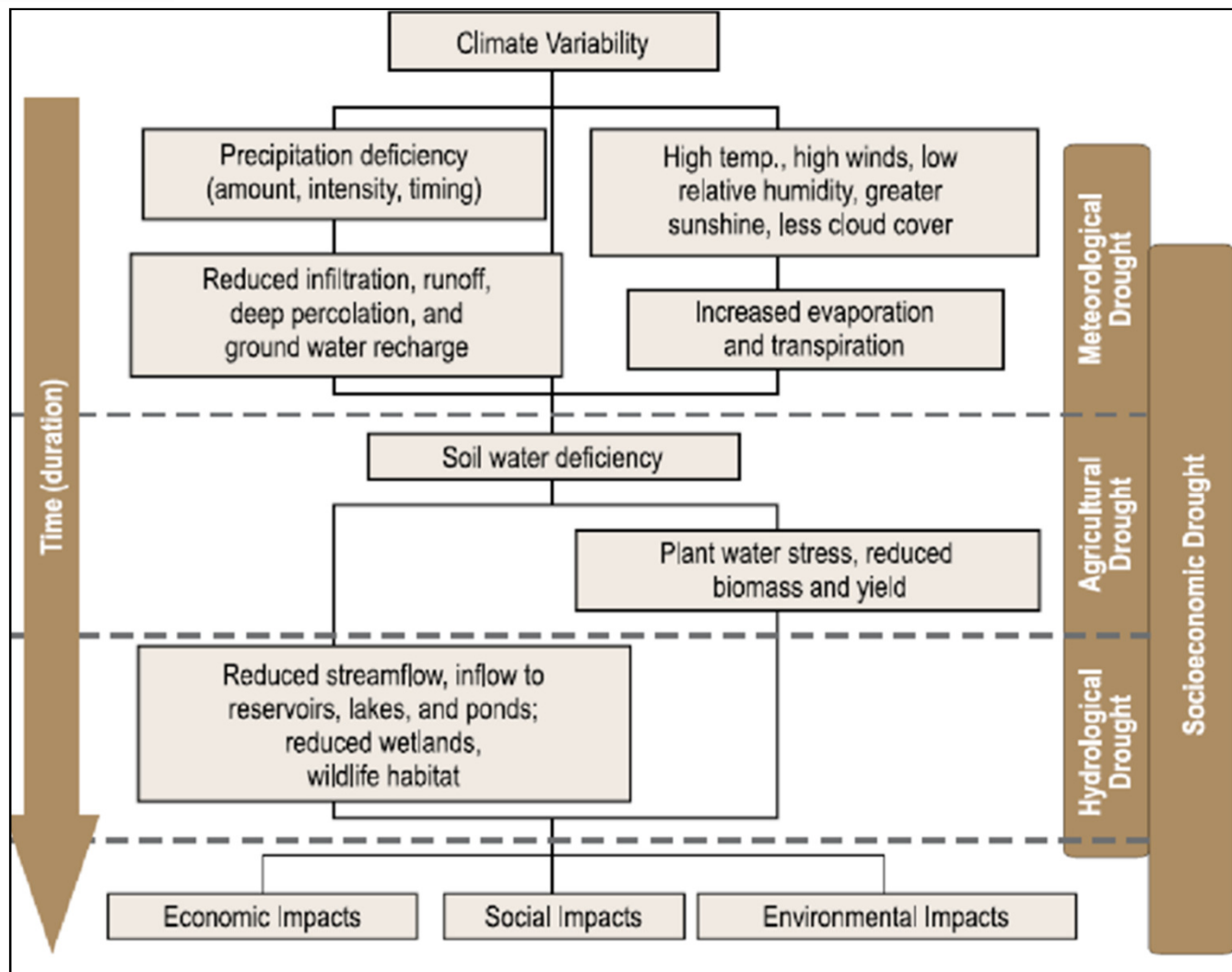


Slovenia faced with more frequent droughts

3 pillars of drought preparedness

Project DriDanube

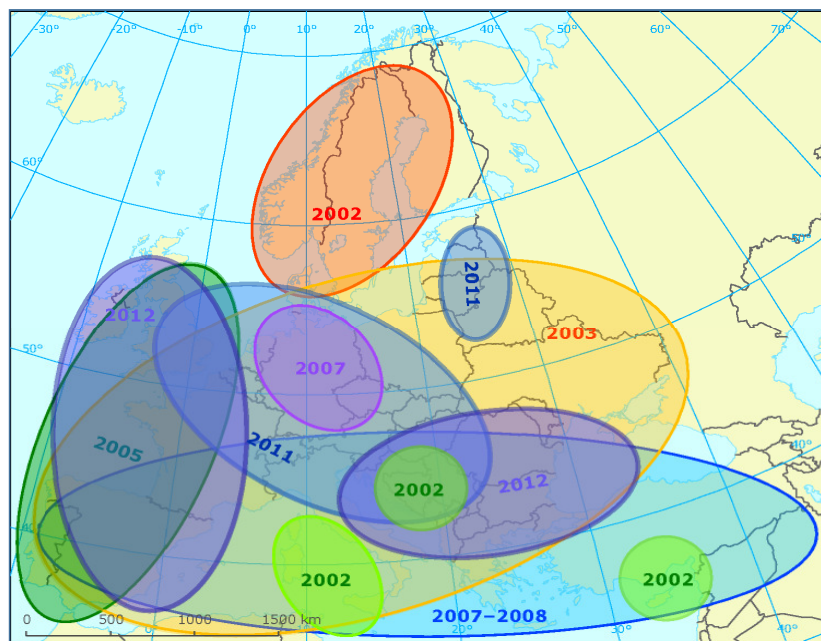
Foundation for better drought management



- Drought typology
- Emphasis on water resource management
- Increasing complexity of impacts and possible conflicts

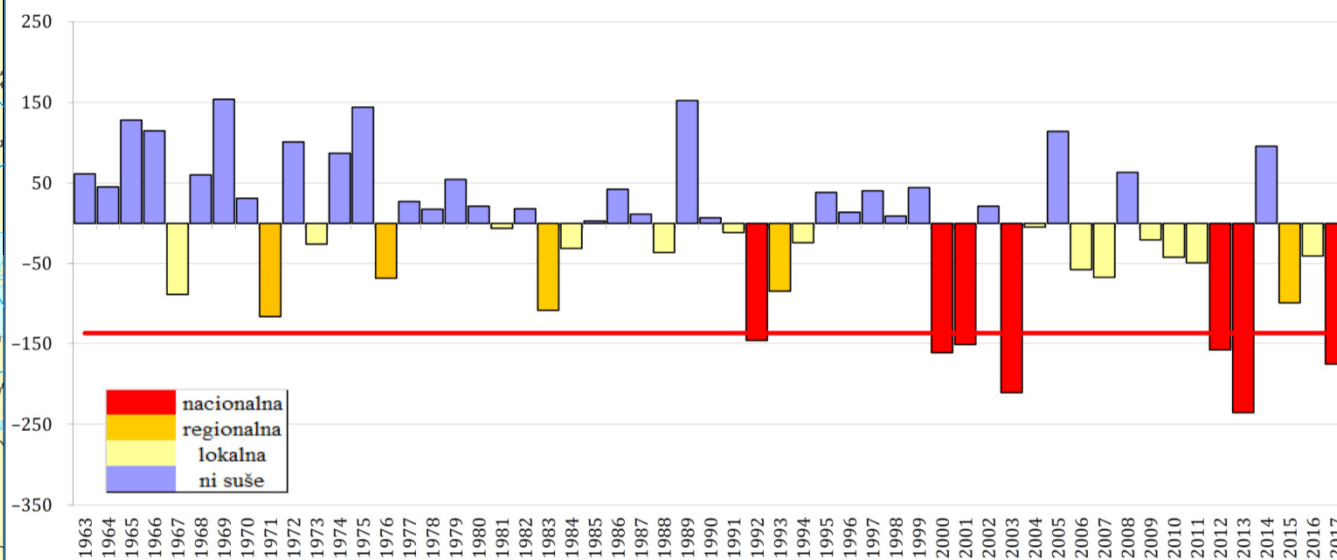
Drought reality in Europe and Slovenia

Severe droughts in Europe 2002 -2015



Vir: EEA, 2012; EEA, 2017

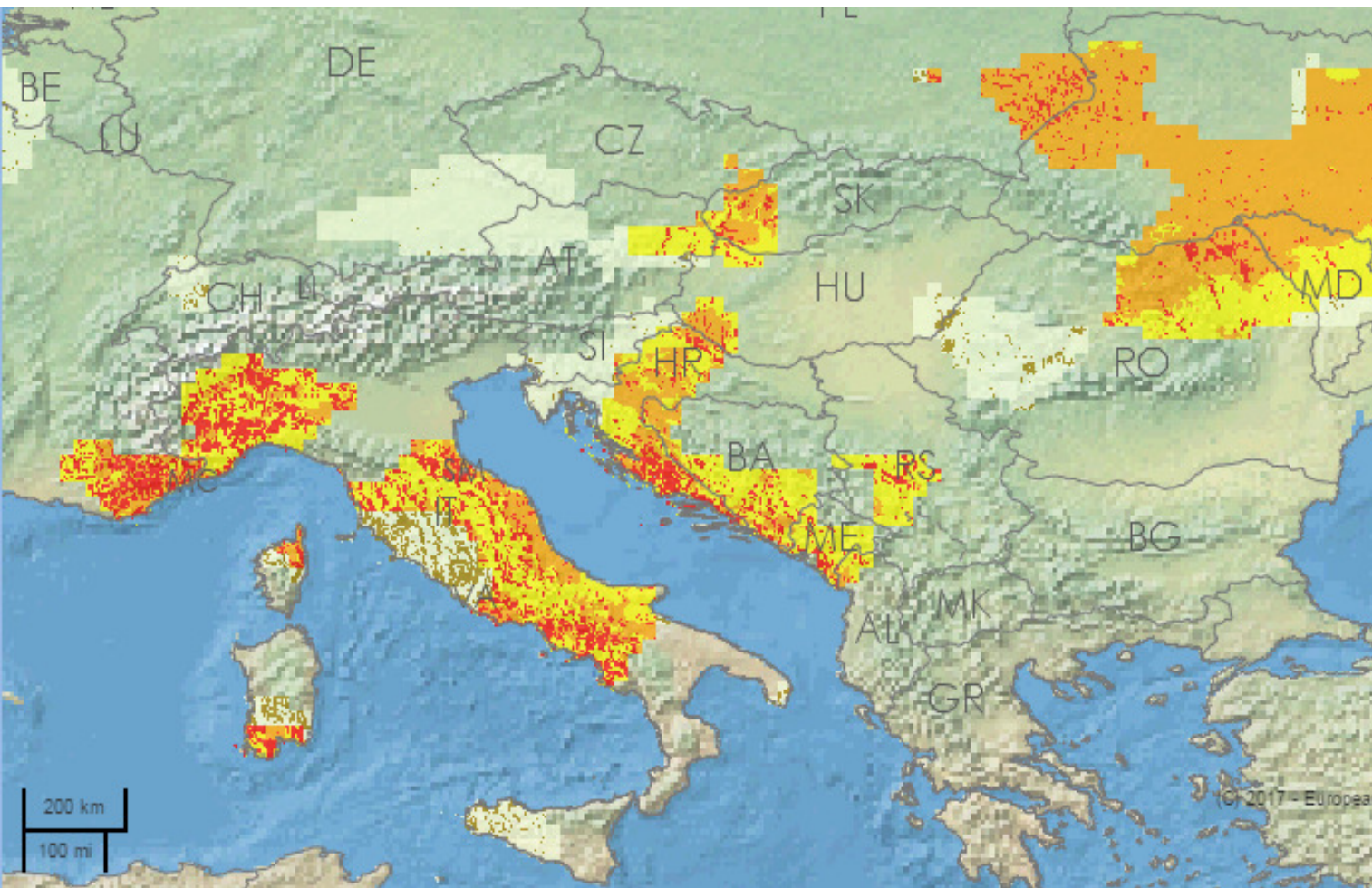
Agricultural droughts in Slovenia 1963 - 2017 (expressed in water balance [mm])



Intensity and severity of droughts is increasing in Slovenia and in **Danube region** (2003, 2007, 2015, 2016, 2017).

Drought in 2017 – European Drought Observatory

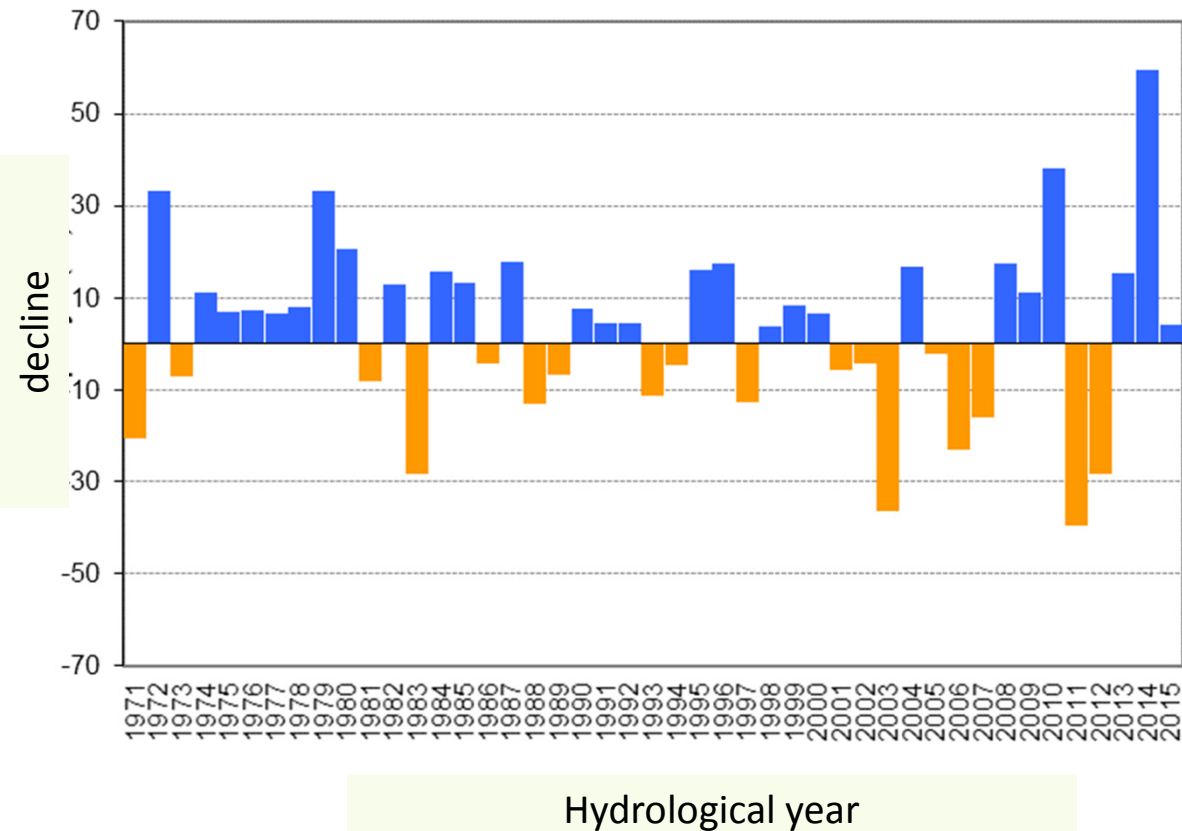
Combined Drought Indicator, August 2017



Source: Joint Research Center, EDO – European Drought Observatory, URL, <http://edo.jrc.ec.europa.eu/edov2/php/index.php?id=1111>, August 2017

Hydrological droughts in Slovenia

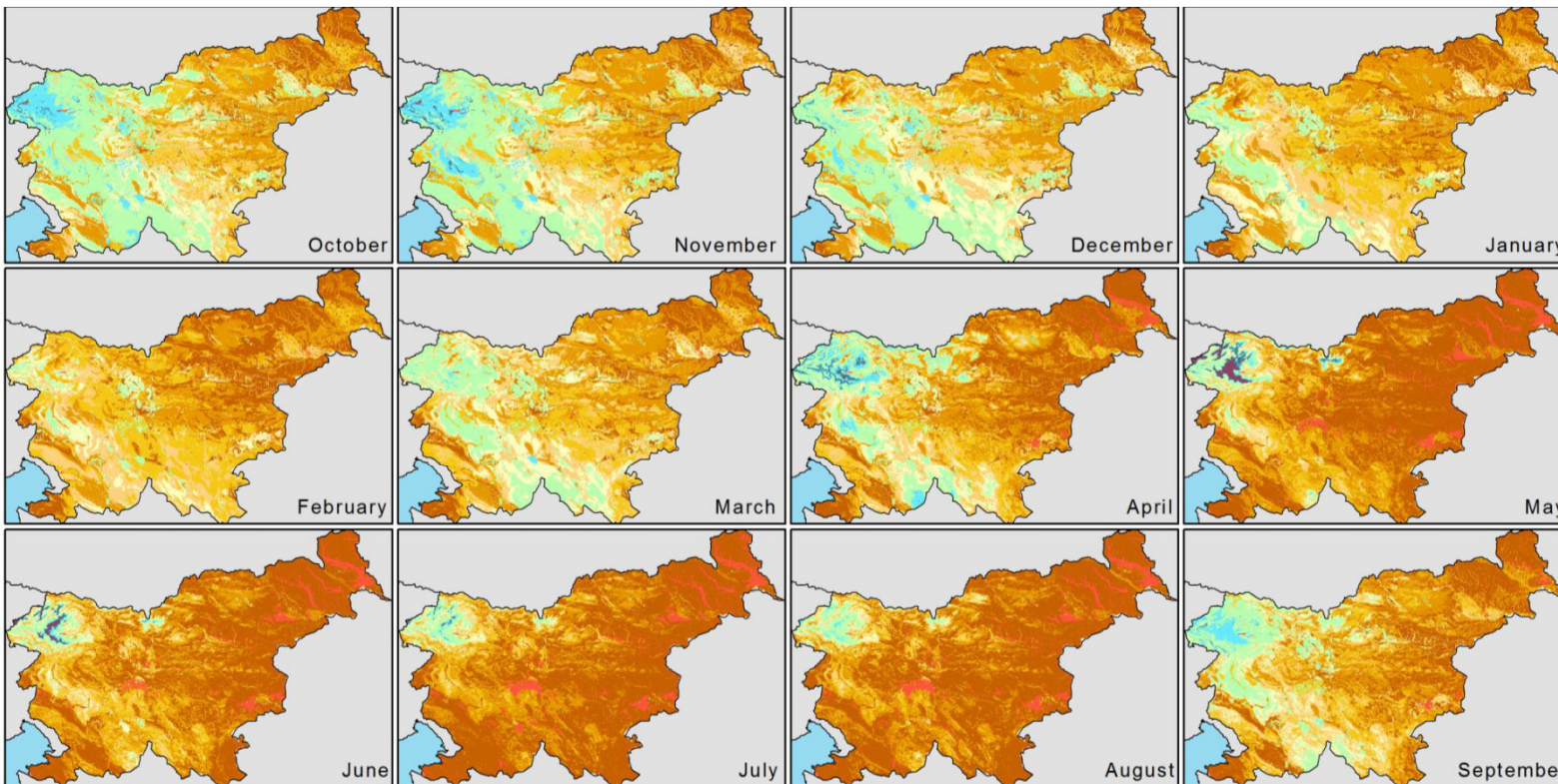
Decline of groundwater recharge (%), hydrological year (Nov-Oct) in comparison to 1981 - 2010



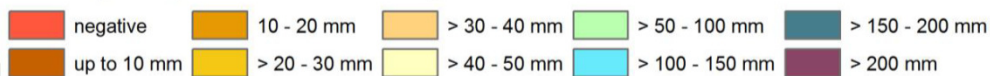
- Droughts in the runoff regimes were observed in the 1980s and are becoming more intense in winter and in summer
- Decrease in mean flow
- Longer and more frequent dry periods

Groundwater recharge - hydrological droughts

Long term average 1981-2010



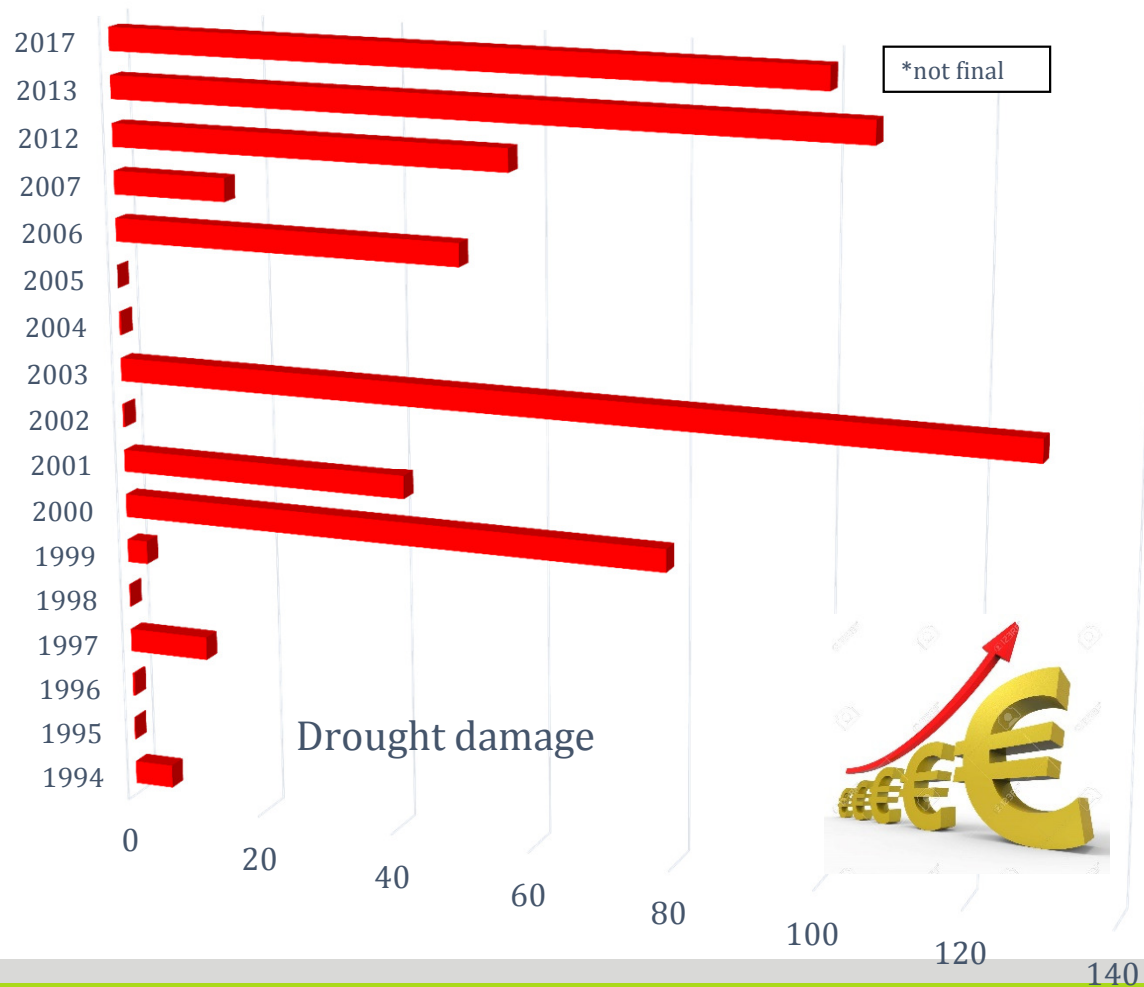
Monthly net groundwater recharge



100 km

- Hot spots of weak groundwater recharge in Slovenia

Economical losses due to drought in Slovenia



Source: www.delo.si

mio EUR

Source: www.stat.si and www.arsktrp.gov.si

3 pillars of drought preparedness in Slovenia

Drought management plan (DMP) in Slovenia

still doesn't exist; foundation for some elements of DMP are included in RBMP (WFD) containing actions to determine drought indices and thresholds

Pillar 1

Monitoring products/ EWS/decision support system

- Drought monitoring (**emphasis on agriculture, less on hydrology**), including remote sensing technologies and some applications, drought reports and Hydrometeorological bulletin;
- Drought early warning system (DEWS): SPI, water balance, GROWA model, IRRFIB model, DISS (crop specific indicator) ;
- Drought forecast (agrometeorological forecast, irrigation forecast, seasonal forecast via SEECOF).

Pillar 2

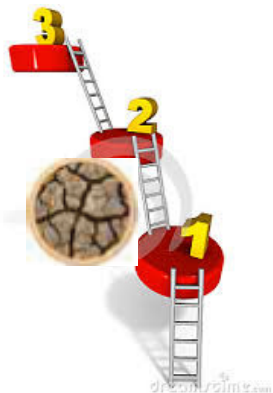
Risk assessment

- **Civil protection mechanism – EU Directive for natural disaster**; task related to risk assessment / impact assessment (system AJDA – post disaster evaluation of damage in place in the country);
- Drought vulnerability study of agri crops (initiated by Ministry of Agriculture with aim to include it in agricultural policy).

Pillar 3

Mitigation and response/measures

- Pre-drought program – only technological guidelines by Ag Chamber for some measures, support for investments in irrigation by National Irrigation plan;
- Post-drought program – compensation / tax reductions;
- Research initiatives & on-going projects (**DriDanube project**);
- Drought related climate change projections;
- International activities (EDO & **DMCSEE**);
- Insurance.



Three-level concept of agricultural drought detection in Slovenia

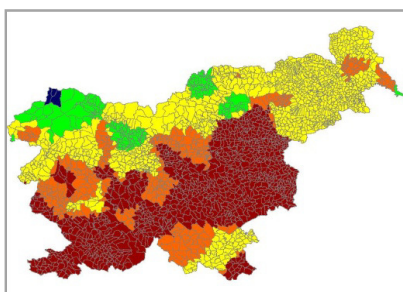
Phase	Activity	Description	Indicator
Phase 1	Early drought warning	Precipitation deficit (meteorological drought)	SPI3 < -1, Share of cumulative precipitation in the vegetation period (% of long-term average)
Phase 2	Alerts for first signals of agricultural drought	Meteorological water balance (reference crop)	Meteorological water balance under the thresholds (percentile analysis): <ul style="list-style-type: none"> - 75th percentile – dry - 90th percentile – very dry - 98th percentile – extremely dry
Phase 3	Agricultural drought	Agricultural crop drought stress (water balance for specific agricultural crops)	DISS _k for specific agricultural crops <ul style="list-style-type: none"> - 75th percentile – dry - 90th percentile – very dry - 98th percentile – extremely dry

Example of phase 1

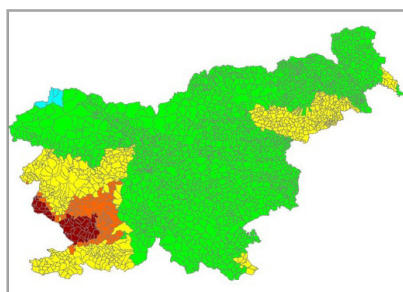
Standardised precipitation index – SPI-3 and SPI-4 (support for insurance company)



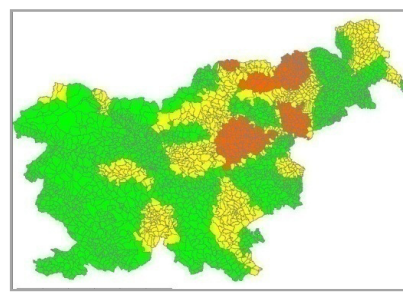
2003



2012



2013



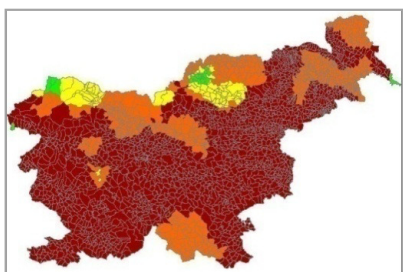
SPI-4 in the vegetation period for summer crops (**SPI4**, calculated on September 1).

Extremely
wet

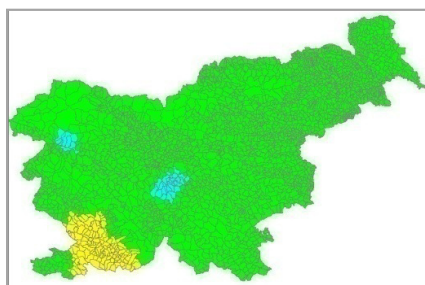


Extremely
dry

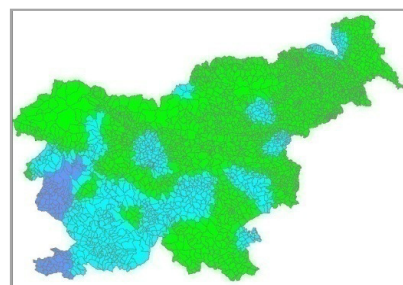
2003



2012



2013



SPI-3 in the vegetation period for spring crops (**SPI3**, calculated on June 15) in the year 2003, 2012 and 2013 for cadastral municipalities.

Example of phase 2

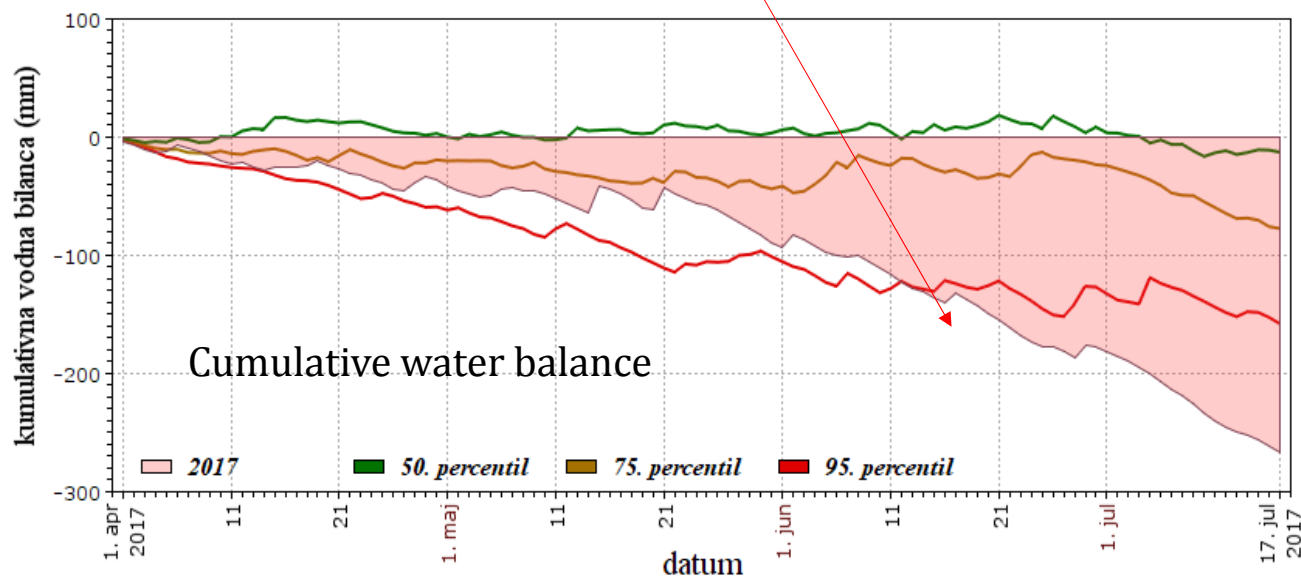
Extreme agricultural drought in SE Slovenia in 2017



Meteorological water
balance,
Novo mesto,
1.4.-17.7.2017

Awareness of public

Extremely dry



Kmetijska suša se zaostrojuje, najhuje na jugovzhodu

Klub lokalnim padavinam, ki so ponekod rahlo popravile stanje vodne bilance površinskega sloja tal, se kmetijska suša v vegetacijskem obdobju (od 1. aprila dalje) močno zaostrojuje na jugovzhodu države. Predvsem na Dolenjskem, delu Posavja (Krško-Brežiško območje) in v delu Bele Krajine stanje površinskega sloja tal že od sredine junija drsi v ekstremne sušne razmere. Izhlapjevanje se bo ob prihajajočih dneh spet povečalo.

Obeti ne kažejo obilnejših padavin, zato se bo stanje vodne bilance kmetijskih tal še poslabševalo.

Povezane strani

- [Bilten Agrometeorološka napoved](#)

Priplete datoteke

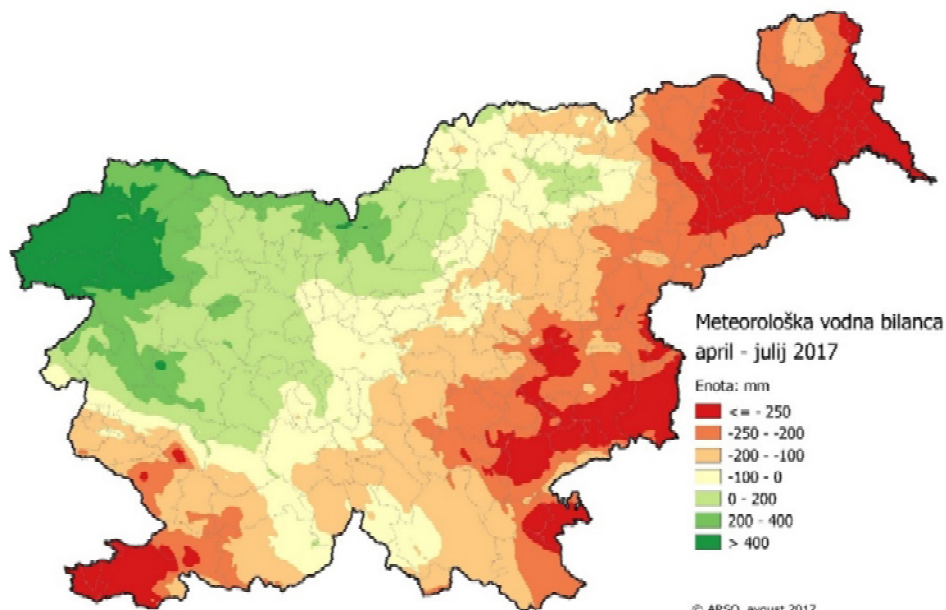
- [Celotno sporočilo za javnost](#) [pdf, 190.6 KB]

Example of phase 2

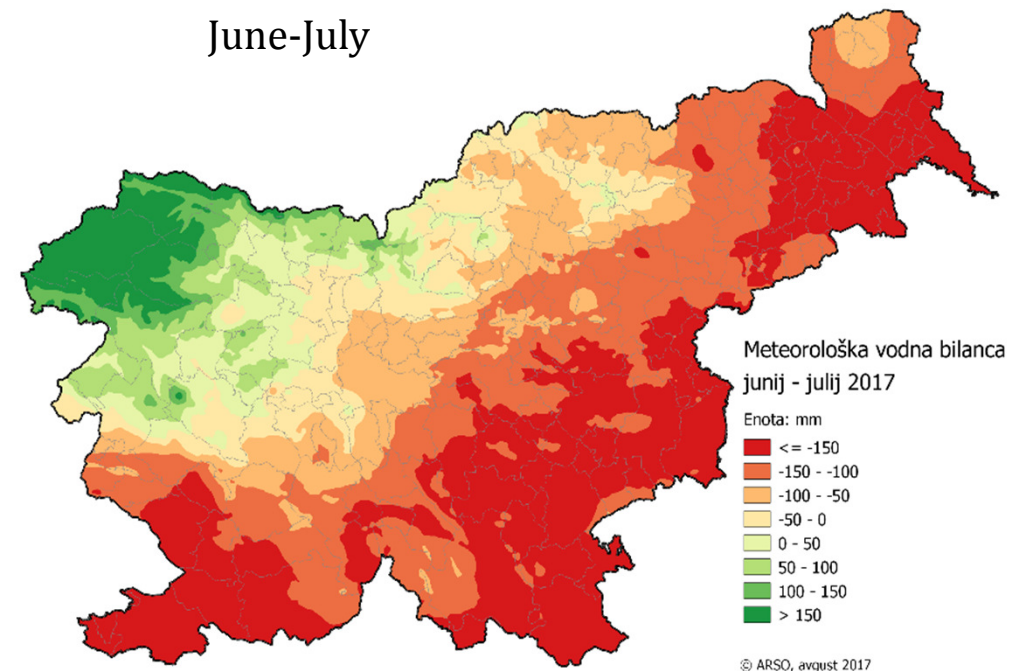
Agricultural drought 2017

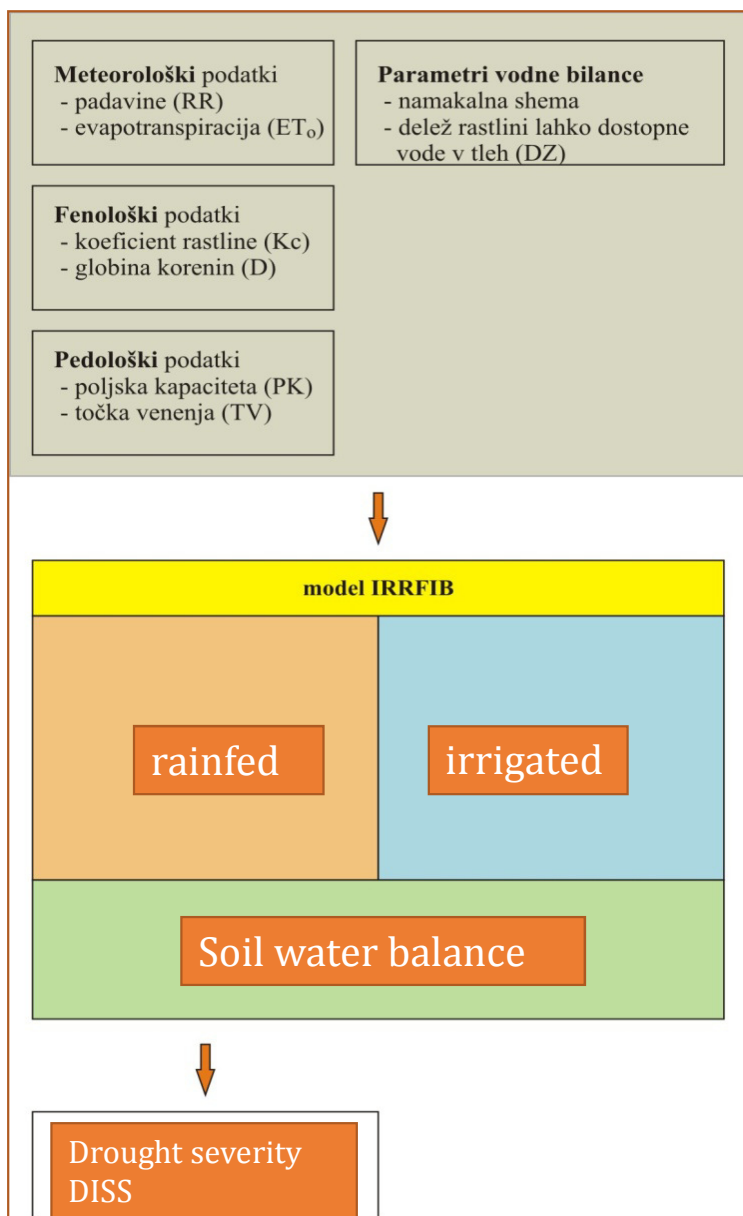
Drought development using meteorological water balance as an indicator

April-July



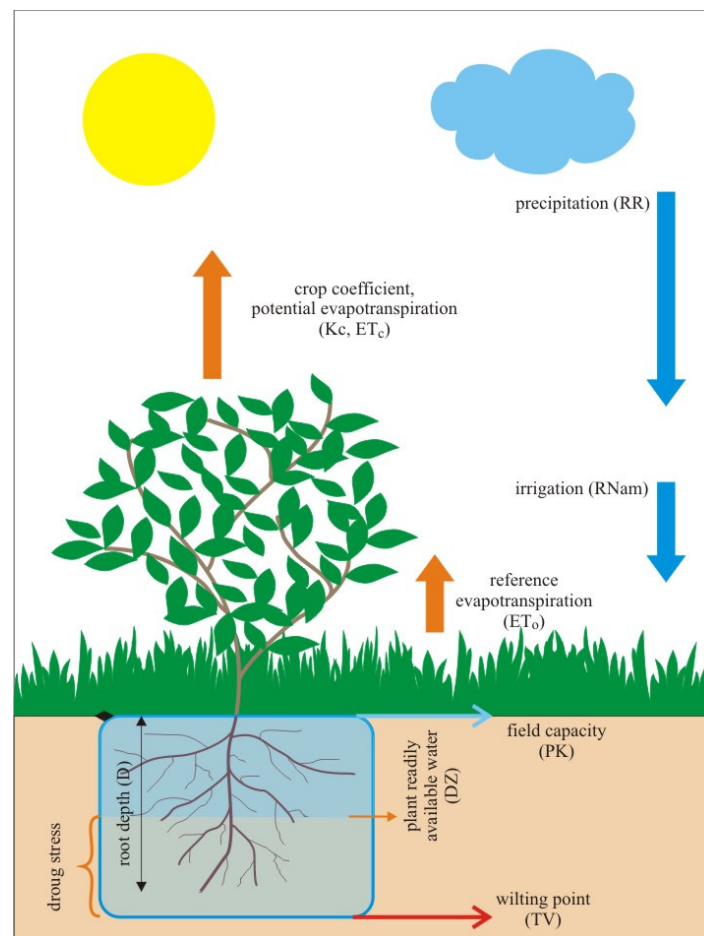
June-July





Example of phase 3

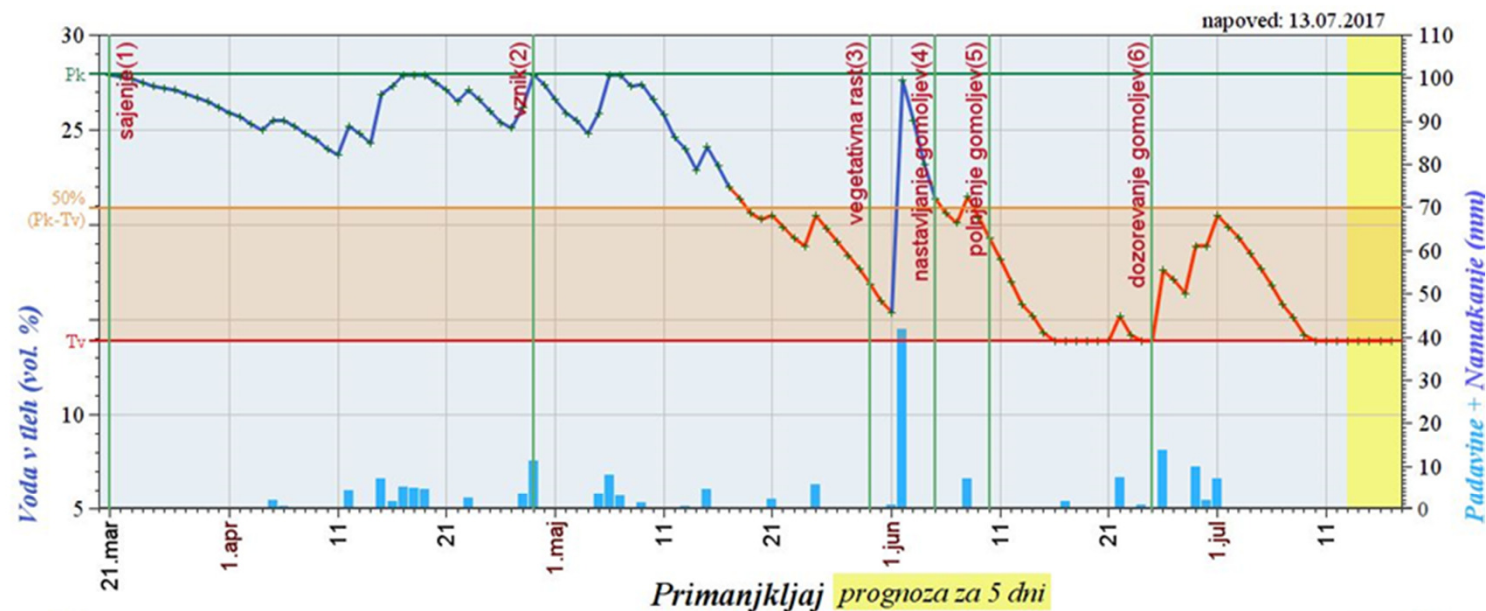
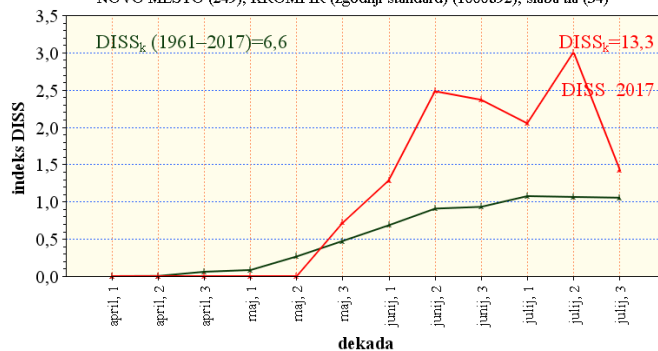
Crop water model IRRFIB 03.1.



Example 3 Potato drought stress identification by indicator DISS with forecast (Novo mesto, soil with low water retention capacity, year 2017)



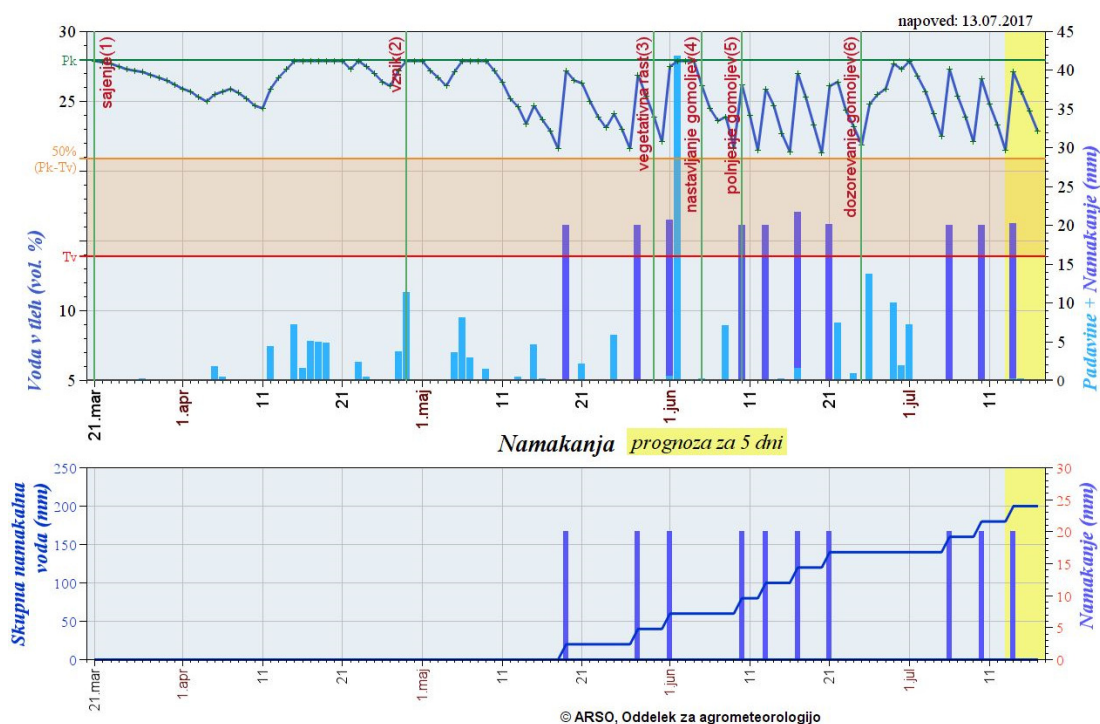
Dekadni indeks sušnega stresa v obdobju marec, 1.dekada – julij, 3.dekada, 2017
NOVO MESTO (249), KROMPIR (zgodnji-standard) (1000892), slaba tla (34)



© ARSO, Oddelek za agrometeorologijo

Irrigation forecast for farmers based on IRRFIB model

Real and forecasted crop water balance (potato var. Jelly) – from 21.3. till 17.7.2017, Krško field (SE Slovenia)



OPTIMAL CROP WATER SUPPLY



FORECAST: 17.7.2017

date	rr [mm]	etp [mm]	etr [mm]	irrigation [mm]
2017-07-17		5.3	4.2	0.0
2017-07-18		5.7	4.6	0.0
2017-07-19	0.1	4.8	3.8	0.0
2017-07-20	0.2	6.8	5.4	20.0
2017-07-21	0.4	4.3	3.5	0.0

RR = 172 mm; ETP= 527 mm. Crop water use 360 l of water.

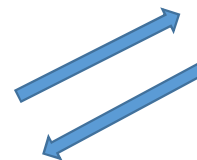
Irrigation – 10 times/ total 200.0 mm.

Decision support system for farmers Agrometeorological forecast – info related to drought

Link:

<http://meteo.arso.gov.si/met/sl/agromet/forecast/>

15 regions in Slovenia



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

- Daily meteorological information and
- Forecasts of different agrometeorological parameters

Temporal dynamics of drought monitoring products in Slovenia



Indicator	Time of calculation	Analysed period
Decline of cumulative precipitation	every 10-day period in the vegetation season	day
SPI1	every month	month
SPI3	every month	3-month period
SPI3 for spring crops	June 15	year
SPI4 for summer crops	September 1	year
Meteorological water balance with forecast	every 10-day period in the vegetation season	day
DISS _k for specific crop	every 10-day period in the vegetation season	day
DISS _k spatial	end of vegetation season	year

Potential users of drought indicators in agriculture

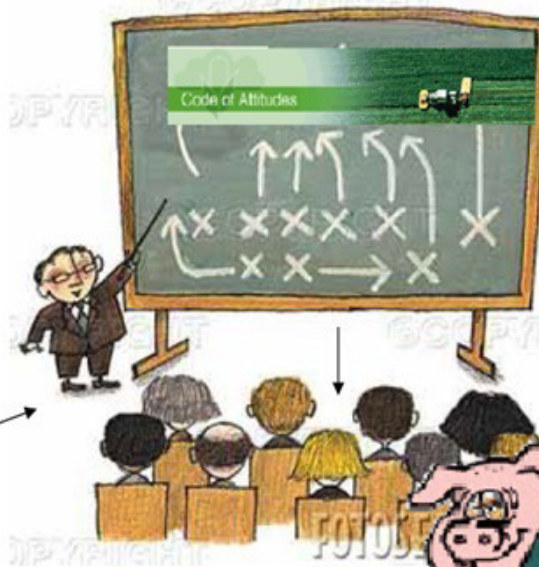
Important feedback of end users!



INDICATOR		USER
precipitation	Early drought warning – stage 1	<ul style="list-style-type: none"> – agricultural advisory service*, – ecological agencies & institutes; – insurance companies*, – water management, – hydrological monitoring, – disaster prevention services*, – research and education , – general public , – local and state policy: <ul style="list-style-type: none"> - natural disasters*, - water resources, - agriculture*, - hydroenergy, - climate change adaptation - etc
SPI	SPI1	
	SPI3; SPI4	
Water balance	First sign of agricultural drought – stage 2	
DISS _k	Agricultural drought – stage 3	

* using already

Communication on the products should take into account local capabilities (channels) and local need (contents)



Users are different,
effort to translate the
info



Info: timely and relevant to the
action

Stanje, 24. avgust 2017

Povzetek stanja

Nastopili so bolj vremensko prijazni dnevi, vročina je v zadnjih dneh nekoliko popustila. V preteklem vikendu je povsod po Sloveniji deževalo. Jutra so bila v začetku tedna sveža, najnižje jutranje temperature zraka so bile od 4 do 10, na Primorskem do 18 °C. Dnevi po prehodu fronte so se segreli le na od 22 do 27 °C. Za popolno slovo od suše je bilo dežja premalo. V večjem delu Slovenije so bile količine dežja med 20 in 30 mm, na Obali, v delu osrednje, jugovzhodne Slovenije ter severovzhoda pod 20 mm. Največ dežja, več kot 40 mm, je padlo le v višjeležečih predelih.

Na najbolj s sušo prizadetih območjih je dež namočil le površinski sloj tal. Količine dežja zadostujejo za nekaj dni, primanjkljaj meteorološke vodne bilance v sušno najbolj prizadetih območjih se je ponekod rahlo popravil, vendar poškodovanosti zaradi suše kmetijske rastline več ne morejo ubežati. Padavine so bile ugodne le za travinje, vznik strniščnih posevkov, jesenske zelenjadnice in trajne nasade. Še vedno pa padavine niso bile zadostne, da bi popravile padavinsko sliko letošnje vegetacijske sezone. Na jugovzhodu je v letošnjem poletju padlo le 48 % dolgoletnih padavin. Ker spet prihaja obdobje vročega vremena, se bo na najbolj ogroženih območjih stanje ponovno poslabšalo. Kmetijska suša se bo tam nadaljevala.

Vodnatost rek po državi je mala. Številni vodotoki v južni, vzhodni, jugozahodni in deloma osrednji Sloveniji imajo za poletje značilno sušno vodnatost. Najmanj vodnate, ponekod celo suhe, so manjše reke v Prekmurju, na Dolenjskem, v Slovenski Istri in na Obali ter na Vipavskem. Mura in Drava še ohranjata srednje pretoke. V prihodnjih dneh bo vodnatost rek ostala mala. Postopno zmanjševane pretokov se bo odražalo s sušno vodnatostjo na vse več rekah. V prihodnjem tednu se bodo običajne sušne razmere površinskih vodotokov stopnjevale. Sušne razmere se bodo na vseh izpostavljenih območjih do konca avgusta še nadaljevale. Postopno zmanjševane pretokov se bo odražalo s sušno vodnatostjo na vse več rekah. Vodnatost večine, predvsem manjših rek, bo zadnje dni avgusta predvidoma manjša od značilne poletne sušne vodnatosti.

Tudi v drugi polovici avgusta gladine podzemne vode večjega dela države ostajajo podpovprečne, izjemno nizke vodne količine pa v tem času spremljamo na prostorsko najbolj omejenih plitvih medzrnskih vodonosnikih, ki najhitreje reagirajo na primanjkljaj obnavljanja podzemne vode. Tako v Čatežu na Čateškem polju in v Šentjerneju na Šentjernejskem polju beležimo najnižje gladine podzemne vode dolgoletnega obdobja meritev, zelo nizko pa so se vodne gladine spustile tudi v Vipavskem Križu v Vipavski dolini. Vodne razmere se v primerjavi s preteklim tednom niso bistveno spremenile, zelo nizko količinsko stanje podzemnih voda se še naprej ohranja v sušno najbolj izpostavljenih vodonosnikih Krško Brežiške in Dravske kotline, kjer je padavinski primanjkljaj daljšega obdobja največji. V Gorišnici na Ptujskem polju beležimo najnižje gladine značilne za ta letni čas, ki pa še ne dosegajo ekstremnih vrednosti. Kraški izviri so podpovprečno izdatni, zelo nizke pretoke spremljamo na izvirih nizkega Dinarskega kraka na jugovzhodu države. Vremenski izgledi do 1. septembra:

V celotnem obdobju bo nad južno polovico Evrope vztrajalo območje visokega zračnega tlaka. K nam bo od jugozahoda dotekal razmeroma suh in zelo toplel zrak. Prevladovalo bo sončno vreme, več dnevne oblačnosti bo v hribovitim svetu severozahodne Slovenije. Najvišje dnevne temperature se bodo dvigale nad 30 °C. Nadaljevalo se bo suho vreme, največja verjetnost za krajevne nevihte je v četrtek, 24. avgusta in v ponedeljek, 28. avgusta, pa še to le v gorskem svetu.

Več informacij:

Dnevna hidrološka napoved površinskih voda: <http://www.arso.gov.si/vode/napovedi/>

Trenutno hidrološko stanje površinskih voda – podatki avtomatskih hidroloških postaj:

<http://www.arso.gov.si/vode/podatki/amp/>.

Spletni bilten Agrometeorološka napoved za 15 regij v Sloveniji:

<http://meteo.arso.gov.si/met/sl/agromet/forecast/>

(aplikacija deluje v brskalnikih Google Chrome in Mozilla Firefox)

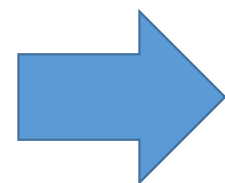
Hydrometeorological bulletin – foundation for integrated drought monitoring

During the longer drought period
Slovenian Environment Agency (ARSO)
issues a weekly bulletin on
“Hydrometeorological conditions in
Slovenia”:

- Meteorological situation
- Surface water status
- Groundwater quantity
- Water balance of agricultural soil
- Outlook

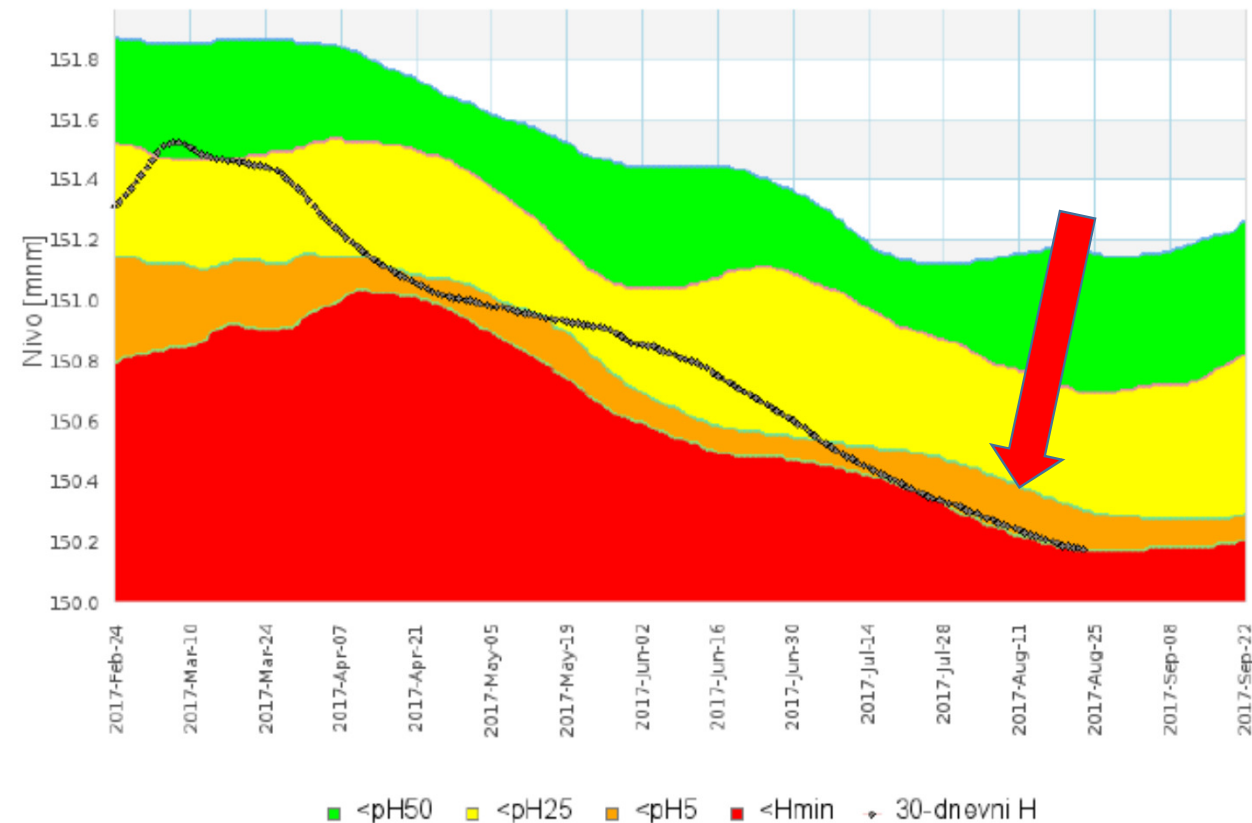
Distributed to public and professional
institutions and sectoral ministries.

<http://www.arso.gov.si/o%20agenciji/novice/arhiv.html>



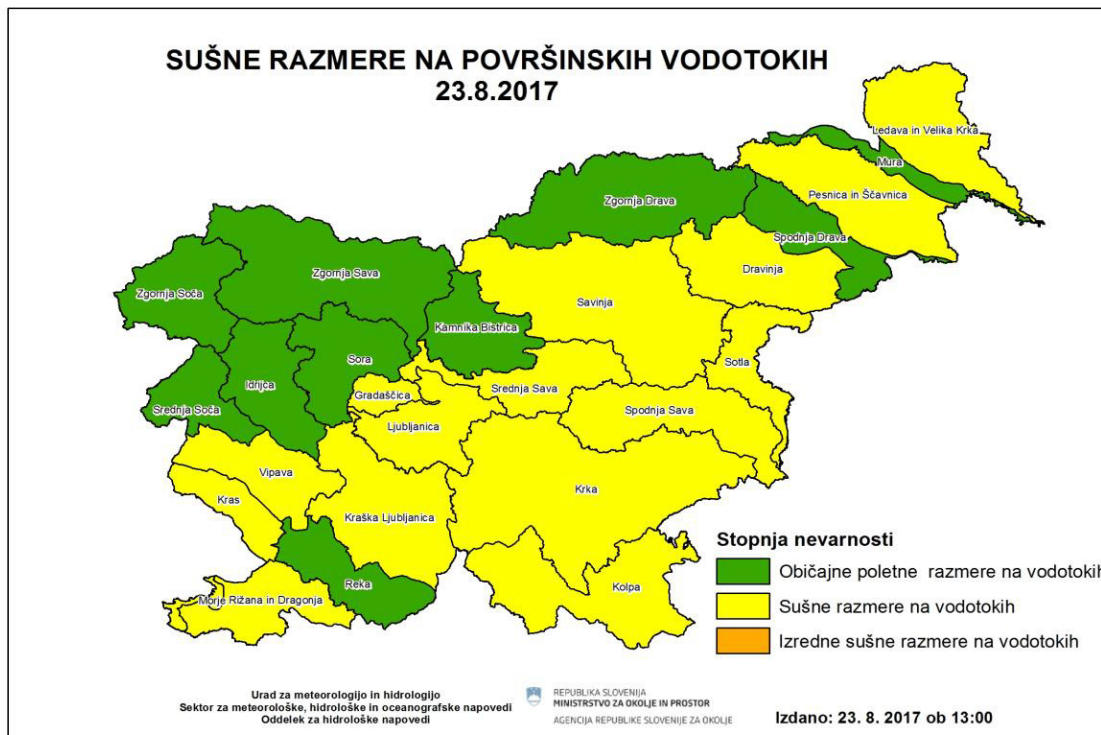
...includes info about eg. summer 2017 developed into **hydro drought**

- Decreasing groundwater levels due to scarcity of snow in winter 2016/17;
- Drying of wells reported in some regions;
- No restrictions to water supply due to interconnections but calls to save water in vulnerable regions;
- In few municipalities in SE drinking **water shortage** has occurred.



Groundwater levels from March to August 2017 – Šentjernejsko polje (SE)

Hidroalarm – part of Hydrometeorological bulletin every week (monitoring & forecast) at ARSO (web, alerts, warnings)



Low flow Krka, Podbukovje (SE)



ARSO METEO
Slovenian Environment Agency



DMCSEE
Drought Management Centre
for Southeastern Europe



[Home](#) [Drought monitor](#) [Events](#) [Links](#) [Members section](#) [TCP project](#) [News](#) [Contacts](#)

Drought Management Centre for Southeastern Europe - DMCSEE

Drought is a normal part of climate in virtually all regions of the world. South Eastern Europe is no exception; in past decades the drought-related damages have had large impact on the economy and welfare. Therefore the need to establish a Drought Center for SE Europe to alleviate the problems caused by drought in the area became evident at the end of the past century. The idea was further elaborated by International Commission on Irrigation and Drainage (ICID) and UN Convention to Combat Desertification (UNCCD). The UNCCD national focal points and national permanent representatives with the World Meteorological Organization have agreed upon the core tasks of the Drought Management Center for South Eastern Europe (DMCSEE) and the proposed project document.

The mission of the proposed DMCSEE is to coordinate and facilitate the development, assessment and application of drought risk management tools and policies in South-Eastern Europe with the goal of improving drought preparedness and reducing drought impacts. Therefore, DMCSEE will focus its work on monitoring and assessing drought and assessing risks and vulnerability connected to drought.

DMCSEE Project Proposal

Latest news

Drought bulletin 19th October 2017
(19.10.2017)

Drought bulletin 22nd September 2017
(22.09.2017)

Drought bulletin 21st August 2017
(21.08.2017)

Links

[» UNCCD](#)
[» WMO](#)
[» SEE TCP](#)

Founding countries:

→ Albania
→ Bosnia and Herzegovina
→ Bulgaria
→ Croatia
→ FYROM
→ Greece
→ Hungary
→ Moldova
→ Romania
→ Slovenia
→ Turkey
→ Montenegro
→ Serbia

Founding agencies:

→ WMO
→ UNCCD

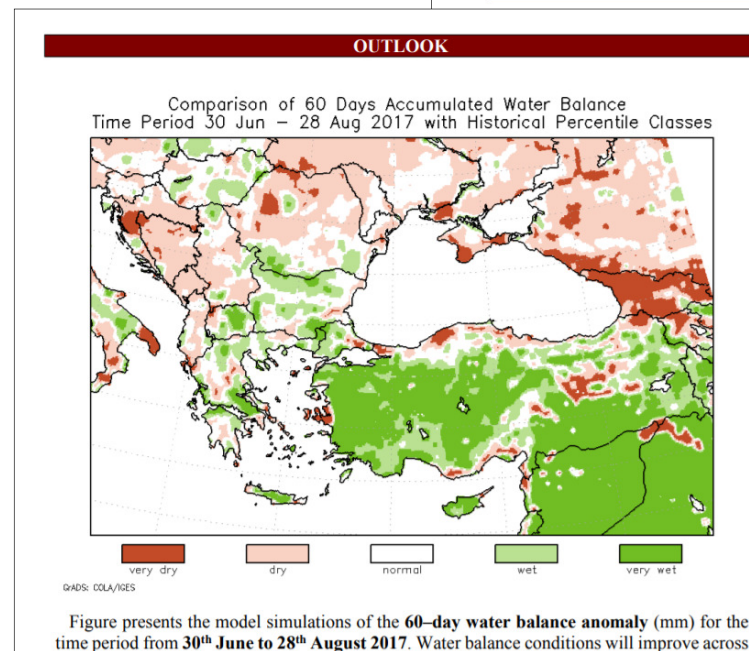
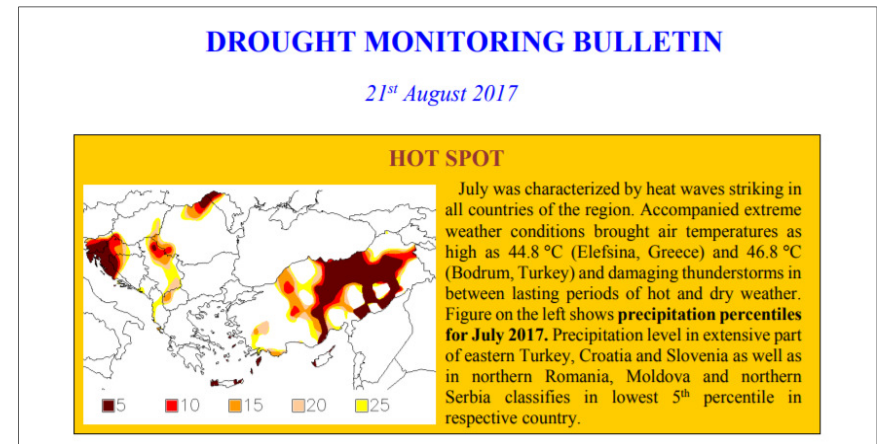
DMCSEE hosted by ARSO

- 10 years – anniversary
- web-based platform:
www.dmcsee.org



Monthly drought bulletin in SE Europe

- **Hot spot** - short summary, short insight of possible circumstances of drought at the time of issue.
- Additional and auxiliary information (such as methodology used, more detailed information on water balance or temperature situation)
- **Report on drought impacts** (scarce info about drought impacts in the region!)
- **Outlook**



IMPACT REPORTS

Hellenic National Meteorological Service issued heat wave alert in late June (29th June to 3rd July), available in pdf online, for the first heat wave this summer. General Secretariat for Civil Protection in Greece issued additional daily heat wave alerts [2, 3] as well as several extreme fire risk alerts over the month [3]. One death was reported due to extreme heat stress. Indirect consequence of hot and dry weather in Greece this July were several wildfires that hit extensive areas of coastal Greece and its islands [4].

Wildfire hit also southeastern coastline of Adriatic Sea and spread across southern Croatia and Montenegro [5-8].

In mid-July, Hungarian Meteorological Service reported that heat wave fattened the areas already experiencing drought conditions, especially its northern and northwestern part and the Great Plain have been severely to heavily affected by drought [9].

Agricultural drought in Slovenia whose roots go back to March this year, worsened over June and July as reported by Slovenian Environment Agency in mid-July [10]. Most affected were regions of northeastern and southern half of Slovenia where maize has completely stopped in growth and dry stream discharge was recorded on several rivers, described in Agency's Hydrometeorological report as of 20th July [11].

Reports on moderate to extreme drought conditions come from Serbia as well. According to Republic Hydrometeorological Institute, water levels of Tisa, Sava, Velika Morava and Danube rivers were in mid-low to low values as stated in Institute's weekly meteorological bulletins in July [12-15].

- [1] <http://civilprotection.gr/el/toi-oi-vnpl-ko-kivnoyos-mpraktika-katagoria-kivnoyos-4-gru-atropo-kivnaki-02-ioulou-2017>
- [2] <http://civilprotection.gr/el/orfithochi-anodot-gru-dieyksoyia-gru-ti-anoyimio-pmteq>
- [3] <http://civilprotection.gr/el/toi-oi-vnpl-ko-kivnoyos-mpraktika-katagoria-kivnoyos-4-gru-atropo-tytatiq-26-noeiyou-2017-0>
- [4] <http://www.keastalinggreenec.com/2017/07/07/bwldfires-green-warming/>
- [5] http://nato.int/nato_speech_02014/assets/pdf/pdpf_2017_07/0217025_OPS-EADRCC-2017-0166.pdf
- [6] <http://www.mup.gov.mk/en/rubrike/vanredne-situacije/17691/inicijativa-co-stanuje-po-zemlja-u-13-saveta-nu>
- [7] <http://itellifires.it/en/about-the-project/about-the-project-and-the-goal-from-a-perspective-of-innovation.html>

WHY?

Current status

Monitoring

- untimely delivery
- cross-border inconsistencies
- lack of integration of risk and impact data
- increase in the number and duration of droughts in the Danube region in last decades (in 2003, 2007, 2015, 2016, 2017)

Impacts and risk assessment

- no systematic collection of drought impacts
- lack and incomparable drought risk assessment methodologies
- despite the impacts on the economy and welfare of people, mainly in agriculture, drought is still not considered an issue of high priority

Management

- reactive, dealing mainly with losses and damages
- cooperation between key actors is missing
- formal legislation does not exist

Motivation for the DriDanube project

Drought is becoming one of the major challenges in water management in the Danube region.



Drought Risk in Danube Region

DriDanube

- Project financed by European fund for regional development (85%)
- Lead partner: ARSO/DMCSEE
- Project budget: 1.974.750,00€
- Duration of project: 30 months (**January 2017 – June 2019**)

7 EU countries
3 Non-EU countries
15 partners
8 Strategic 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 (RHMS), Serbia
- Institute of Hydrometeorology and Seismology (IHMS), Montenegro
- Republic Hydrometeorological Service of Republic of Srpska (RHMZ RS), Bosnia and Herzegovina

Associated Strategic Partners:

- International Commission for the Protection of the Danube River (ICPDR), Austria
- Administration of the RS for Civil Protection and Disaster Relief (URSZR), Slovenia
- The State Land Office (SLO), Czech Republic
- Agricultural Station/Forecasting and Warning Service of Serbia in plant protection (PIS), Serbia
- Environment Agency Austria (EAA), Austria
- Austrian Federal Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW), Austria
- Ministry of Environment and Energy, Water management directorate (MZOIE), Croatia
- Ministry of Agriculture (FM), Hungary

Main Outputs

Improved drought emergency response and better cooperation among operational services and decision making authorities in the Danube region.

Drought User Service

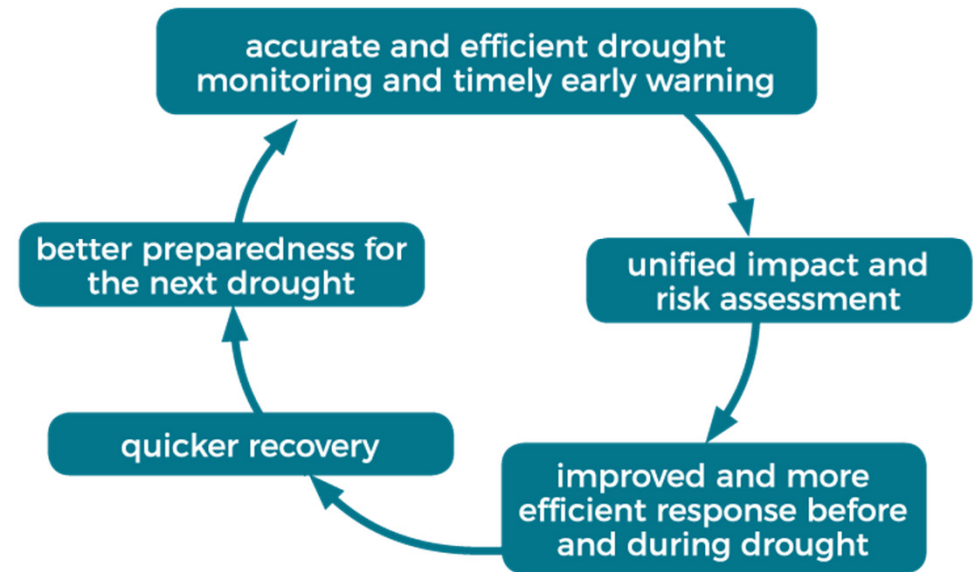
An innovative tool integrating all available data, including large volume of remote sensing products and serving the authorities to monitor, forecast and respond during drought development faster and with higher precision.

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.



Result 1: Drought User service – DUS

- Web-based interface for drought monitoring in real-time
- Source of data: satellite (Big Data), meteorological data

Some integrated products:

SWI anomalies – product to express amount of water contained in soil (daily)

NDVI anomalies – Vegetation greenness/vigor (decadal)

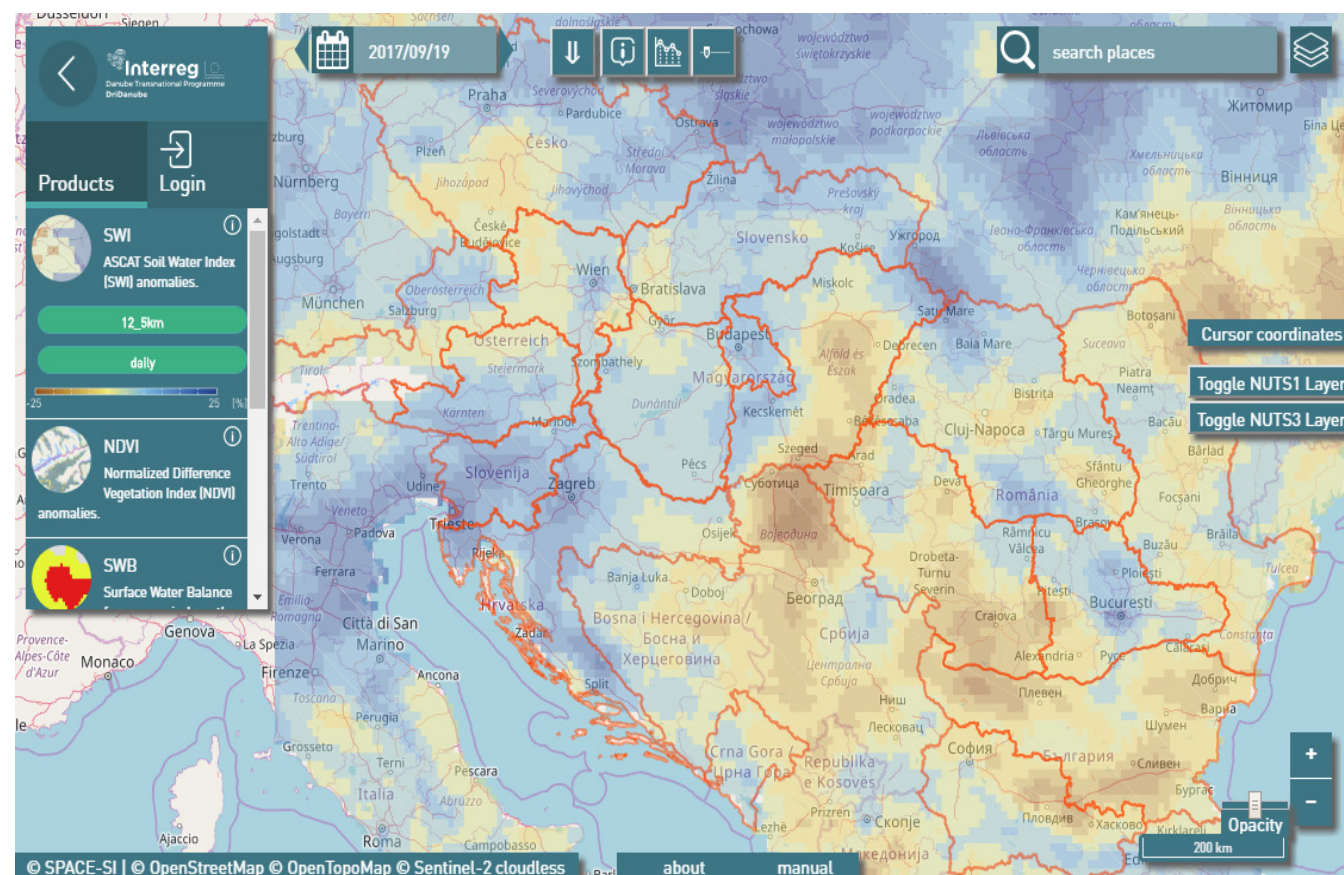
SWB – Surface Water Balance from numerical weather prediction (NWP) model

SWBSLO – Surface Water Balance from numerical weather prediction (NWP) model for the territory of Slovenia

VegCon1 – Relative vegetation condition for crops and grasslands

VegCon2 – Relative vegetation condition for all vegetation types

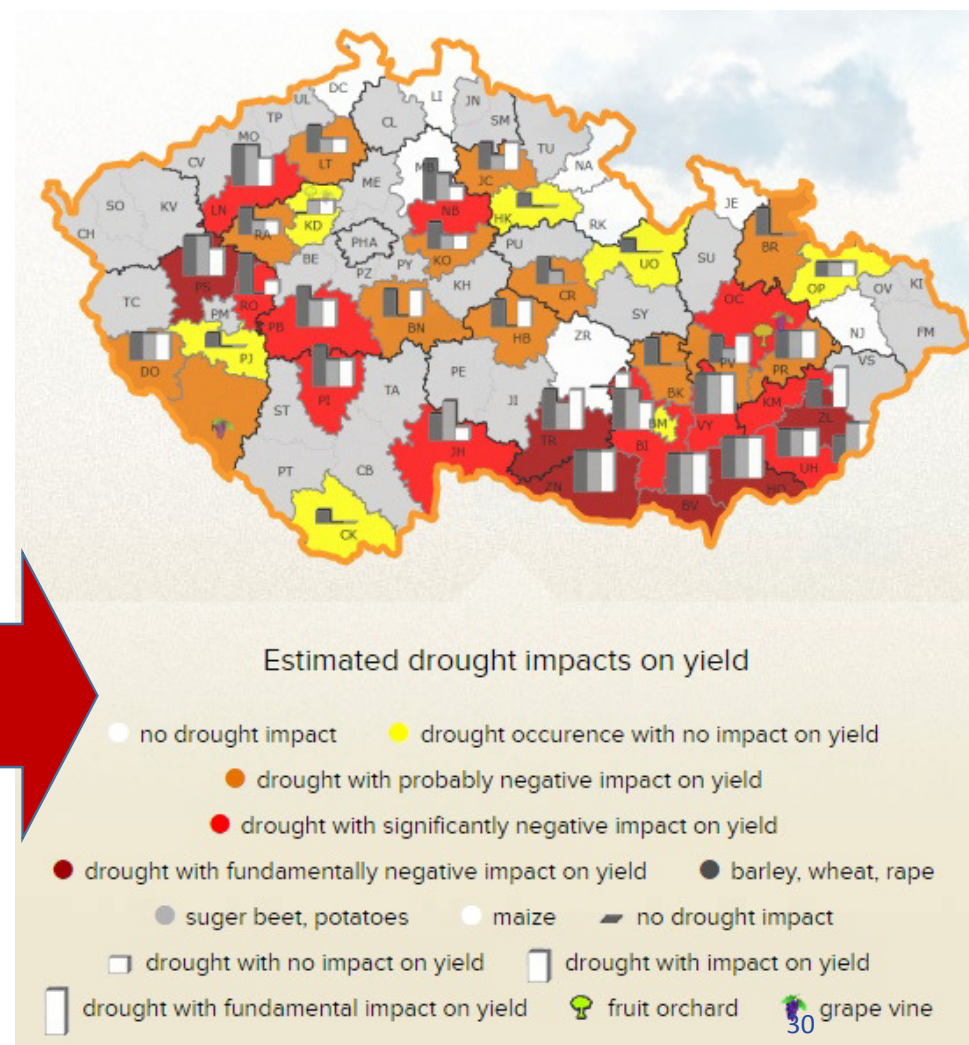
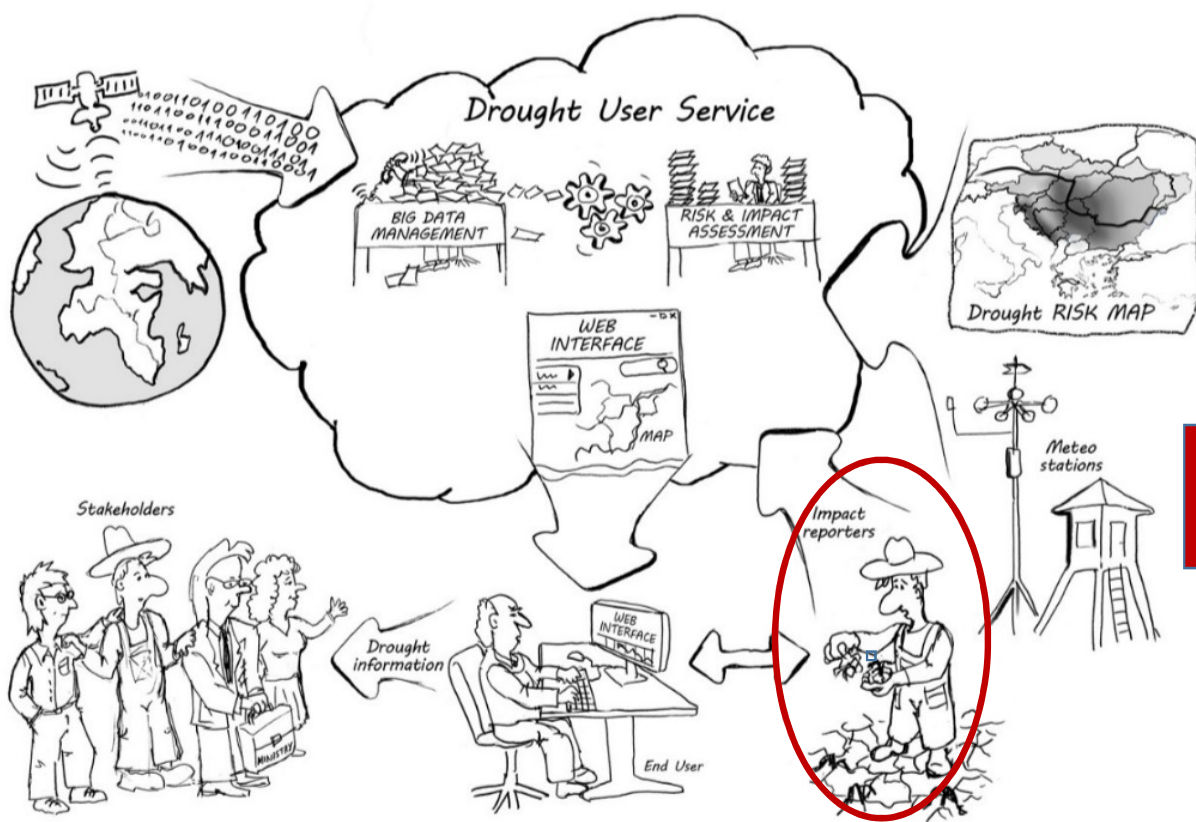
- drought reporters.



- ✓ Accurate drought monitoring and forecast in real time
- ✓ Faster response.

Result 2: Metodology for drought impacts assessment – interactions with reporters on weekly routine

In Danube region including Slovenia, already in place in CZ



DriDanube Questionnaire for reporters - entry



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.



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



Points for discussion

Early drought warning in Slovenia/SEE/Danube region:

- active countries participation in existing platforms (global, regional – EDO, DMCSEE), exchange information inside/outside the countries, harmonized data collection, methodologies (impact & risk on EU level);

Networks

- DMCSEE and consortium partners, **Alpine countries, ICPDR, EUSDR;**

Common projects

- GWP/IDMP, WMO, Adaptation fund, FAO, LIFE, Adaptation Fund;
- project calls (enlarge DriDanube, DTP projects cooperation or **new initiatives?**).

Change of management paradigm /policy

- missing policy; DriDanube project has intention to increase technical capacities and elaborate more targeted water management policies taking into account water scarcity and droughts (DriDanube Strategy); results will be considered and used as input for further strengthening of RBMP (to the EU WFD);
- Drought Directive???

Public awareness / capacity building

- drought news/impacts information sharing, media;
- guidelines, manuals, trainings, publications, **Forum Alpinum hot spot;**
- DriDanube info at www.interreg-danube.eu/dridanube & leaflets.

