



**Hungarian Meteorological  
Service (OMSZ) and Disaster  
Risk Management  
Knowledge Center (DRMKC)  
of the European Commission**



**REPUBLIC HYDRO  
METEOROLOGICAL  
SERVICES OF  
REPUBLIC OF SRPASKA,  
Bosnia and Herzegovina**



## Drought in Republic of Srpska

**Igor Kovačić  
Prof Dr Mihajlo Marković  
Ines Čizmić**



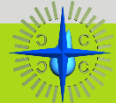
**Interreg**



**Danube Transnational Programme**

**DriDanube**

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



**FOCUS ON AGROMETEOROLOGY -organisation**



**Ministry of Agriculture, forestry and water management**

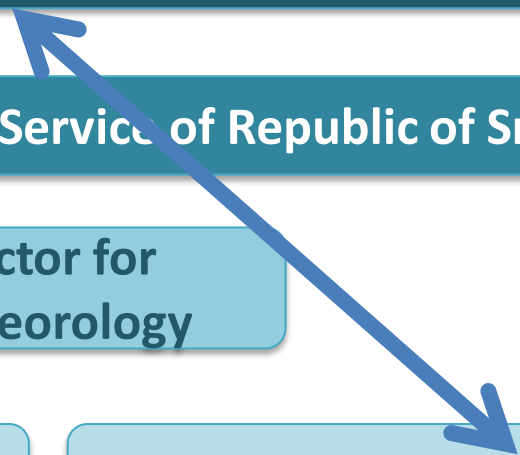
**Republic Hydro Meteorological Service of Republic of Srpska, B & H**

**Sector for Meteorology**

**Department for meteorological observation and forecast**

**Department for agrometeorology**

**Department for climatology**





## FOCUS ON AGROMETEOROLOGY



- ✓ The activity of Agrometeorological Service is organised through the Republic Hydrometeorological Service of Republic of Srpska, as part of the Department for Climatology and Agrometeorology
- ✓ The goal of operative tasks and applied research carried out in the Department for Agrometeorology is to contribute to the efficiency of agricultural production in Republic of Srpska and its sustainable development.
- ✓ Various products of operative activities, like agrometeorological analyses, forecasts and warnings are used in setting the dates for sowing and harvesting, planning of measures of economic policy and other modes of short-term and long-term planning of activities in agriculture.



these activities are carried out in cooperation with the advisory service of the Ministry of Agriculture, Forestry and Water Management



## FOCUS ON AGROMETEOROLOGY



### Programme of operative jobs and tasks covers:

- ✓ processing and analysis of agrometeorological data **agrometeorological yearbooks**: phenological, soil temperature;
- ✓ permanent monitoring and analysing of actual meteorological conditions and making of: **seven-day, decade and monthly agrometeorological bulletins and annual analyses** of the influence of meteorological factors on growth, development and yield of agricultural crops, and, when necessary, also preparation of urgent agrometeorological information, analyses and warnings.

### Within **applied agrometeorological research**, the focus is on:

- ✓ studying of agroclimatic potential on the territory of Republic of Srpska, monitoring of their changes and assessment of future changes as consequences of climate fluctuations and climate changes in the region;
- ✓ studying of climate extremes and meteorological phenomena causing greatest damages in agriculture and their consequences (drought, extremely high and low air temperatures, storms with hail).



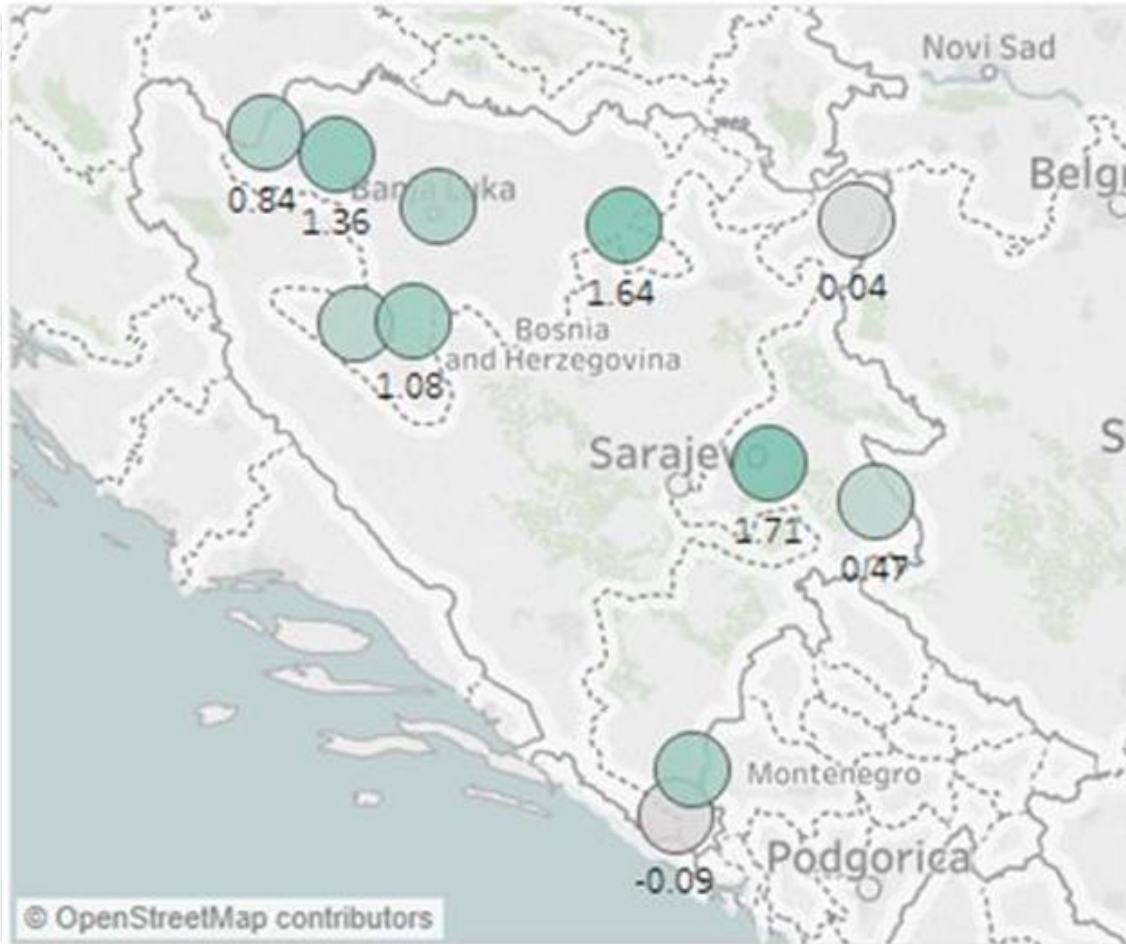


# FOCUS ON AGROMETEOROLOGICAL BULLITEN



moisture conditions  
SPI Index

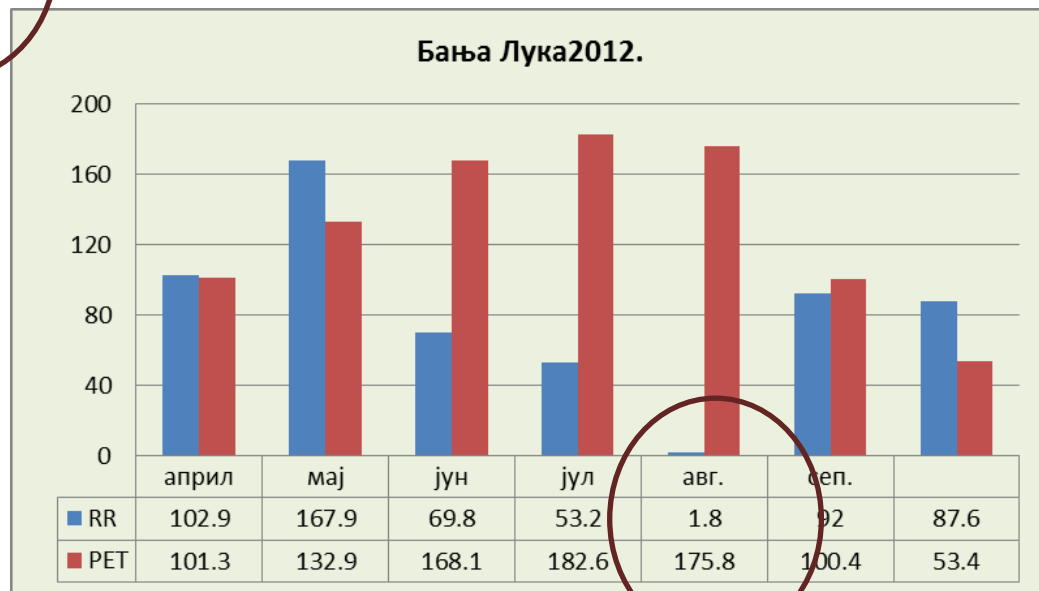
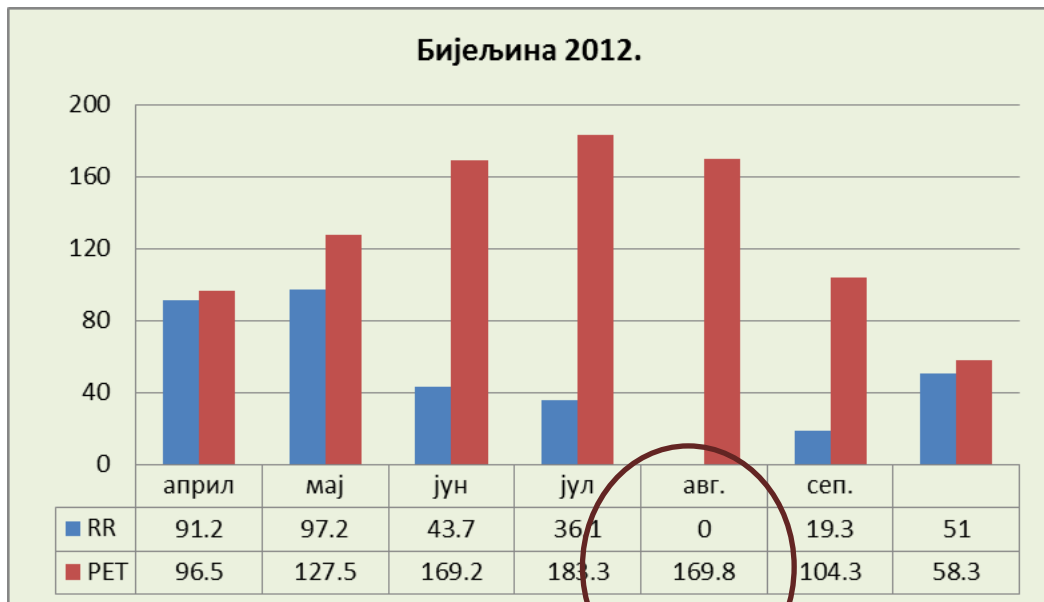
### SPI12 - September 2018



тембар 2018.

односно  
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птембар  
су у  
Српске  
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да је  
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повољно  
је током





## Monitoring of drought- Hargreaves ETo



16/06/2017





## Monitoring of drought YIELD 2017.

- Overall losses in maize production is around **50%**
- Estimation of the expert services of the Ministry of agriculture, forestry and water management and Agricultural Institute of Republic of Srpska

Region	Area with corn (ha)	Expected yield (t)	Estimated decrease in production	Expected yield after drought (t)
Doboj	34,079	238,551	50%	119,276
Rijeljina	31,783	222,481	50%	111,240
Gradiška	22,600	158,199	60%	63,279
Prijedor	14,923	104,458	50%	52,229
Banja Luka	10,905	76,335	50%	38,167
Sokolac	350	2,450	50%	1,225
Trabinje	150	1,050	50%	525
<b>Total</b>	<b>114,789</b>	<b>803,523</b>		<b>385,942</b>







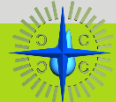
## Monitoring of drought YIELD 2017.



photo: Agricultural Institute of Republic of Srpska







## Monitoring of drought YIELD 2017.

- Losses in Herzegovina around **20%**



Agrofin vineyards, Trebinje, Herzegovina





## Monitoring of drought- DMCSEE



### DROUGHT MONITORING BULLETIN

12<sup>th</sup> June 2017

#### HOT SPOT

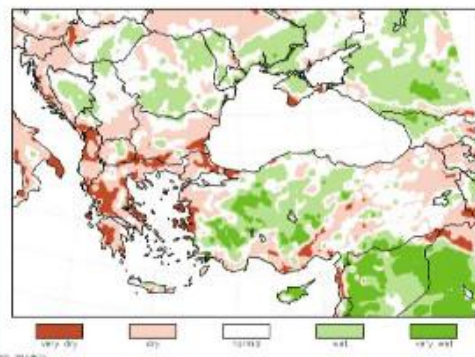


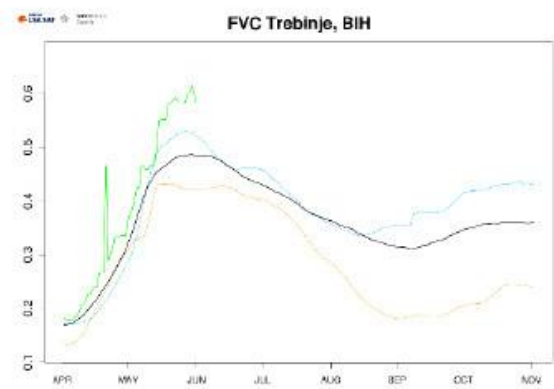
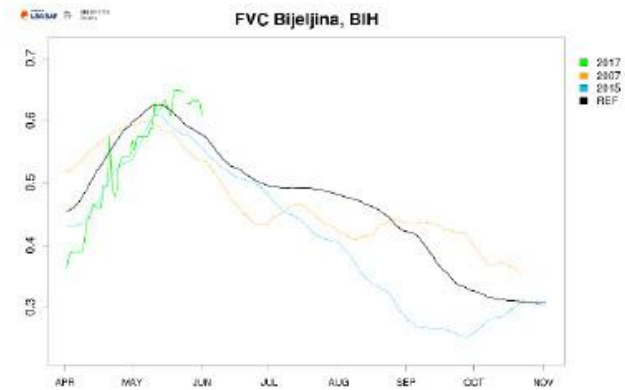
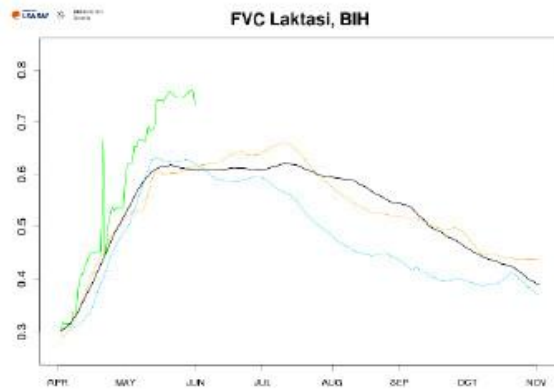
Figure shows accumulated water balance anomaly for the time period from 22<sup>nd</sup> March 2017 to 20<sup>th</sup> May 2017. It was the driest 60-day window across the region since early March with vast area of dry condition spreading across the region. Water deficit of up to 120mm was present in eastern Turkey and north-western Balkan Peninsula while several scattered parts in southern half of the region, especially in Greece and Albania, experienced extreme drought with water deficit of 180-210mm.





## Monitoring of drought- cooperation with DMCSEE 3 location

### BOSNIA AND HERZEGOVINA (REPUBLIC OF SRPSKA)



Positive water balance in May across the entire Bosnia and Herzegovina boosted vegetation growth in all parts of the country. Graphs for both Laktaši in the north and Trebinje in the south show high excess of vegetation cover in comparison to normal state, around 15% in both areas. According to FVC index, vegetation was developing as expected also in Bijeljina in eastern Bosnia and Herzegovina.





## Monitoring of drought-IRRFIB MODEL



- ✓ It counts the water balance and the available water around the root system

### Input data:

- ✓ Type of land
- ✓ Water capacity of the land
- ✓ Pheno Phase
- ✓ Atmospheric conditions: precipitation and PET

## Cooperation with DMCSEE/ IRRFIB MODEL

Irrfib model simulates the water consumption by crops during their vegetation





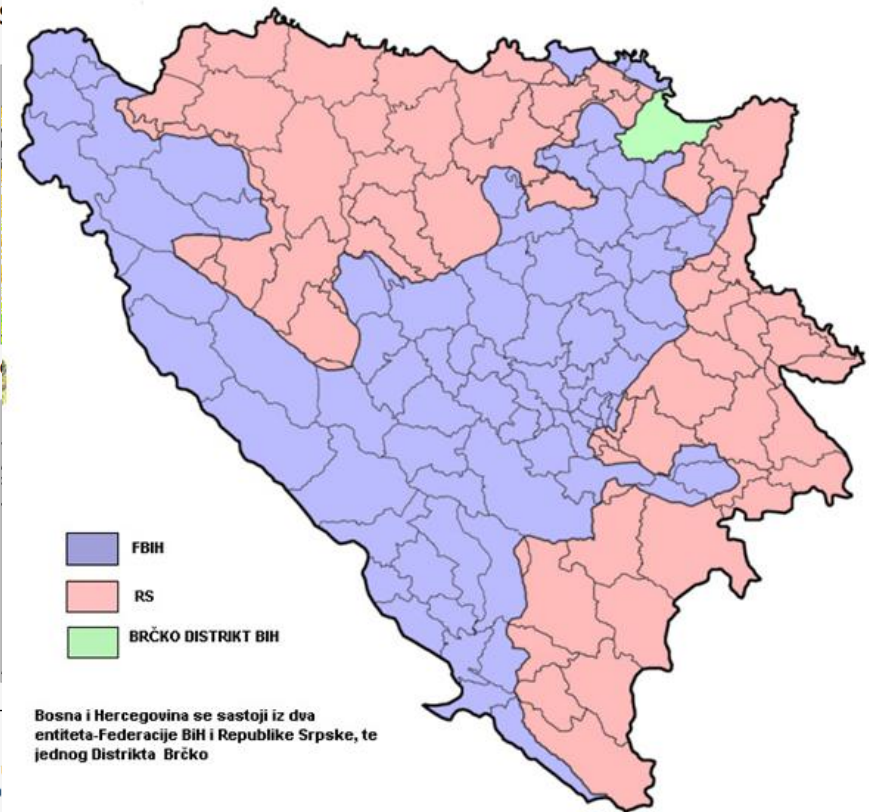
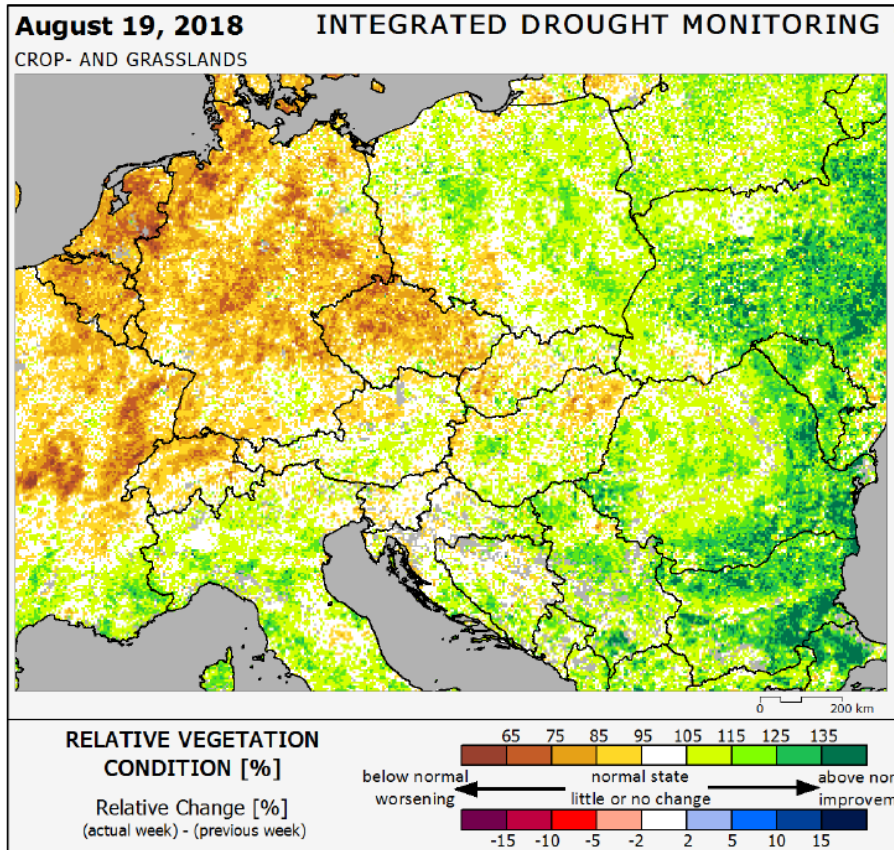


# Monitoring of drought-DRIDANUBE

## Cooperation with Ministry of agriculture, forestry and water management

### Reportes from field-12 regions

Estimated drought impacts on vegetation between 20 August – 2 September 2018





## Cooperation with Ministry of agriculture, forestry and water management

### Reportes from field-12 regions



- ✓ Activities in the project are carried out in cooperation with the Ministry of Agriculture, Forestry and Water Management. Reporting on the condition of the soil and droughts from the terrain is carried out through the regional units of the advisory service of the Ministry of Agriculture.
- ✓ Promotion of the project at scientific meetings related to agriculture, as well as agricultural fairs

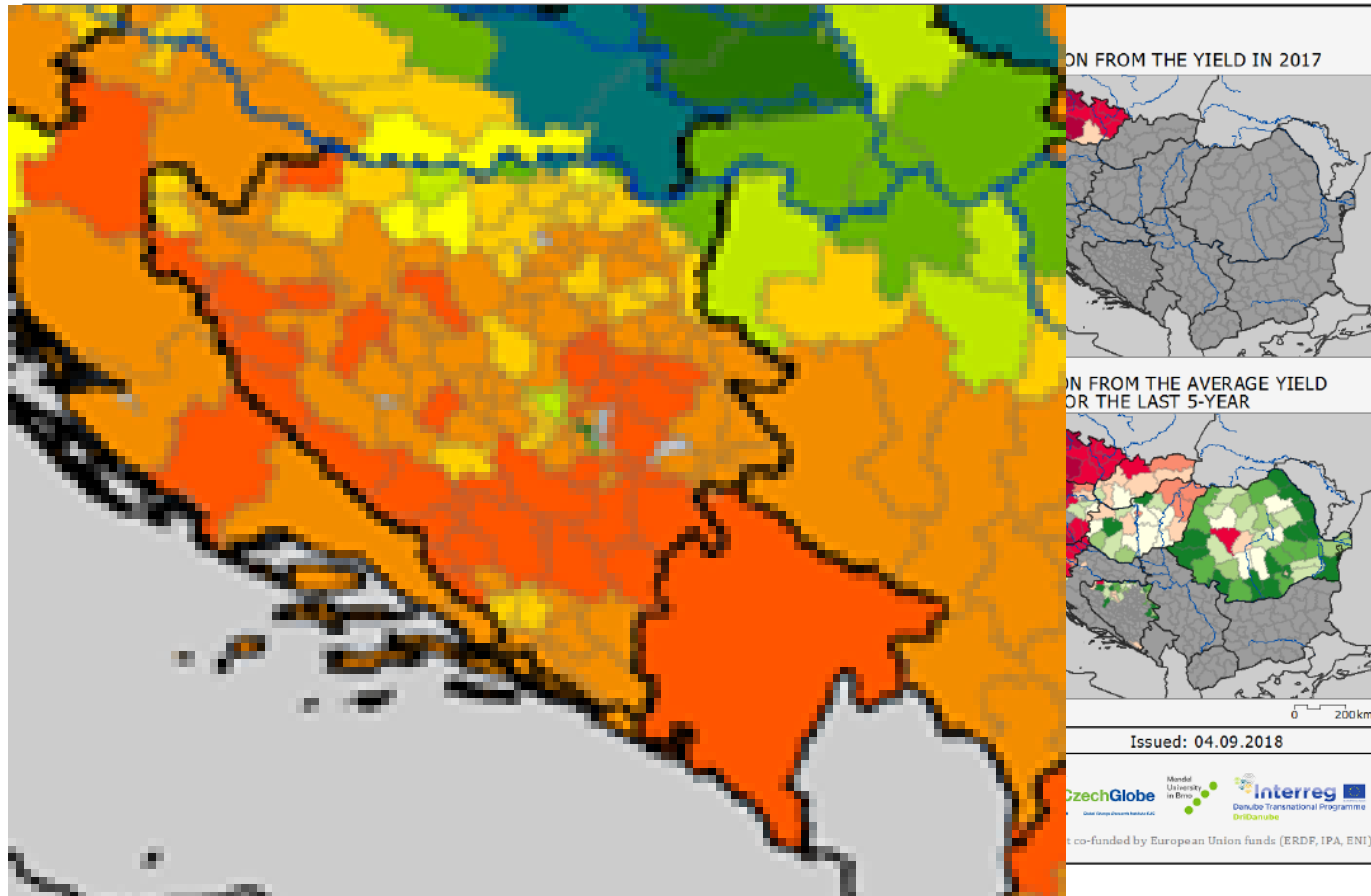




## Monitoring of drought-DRIDANUBE



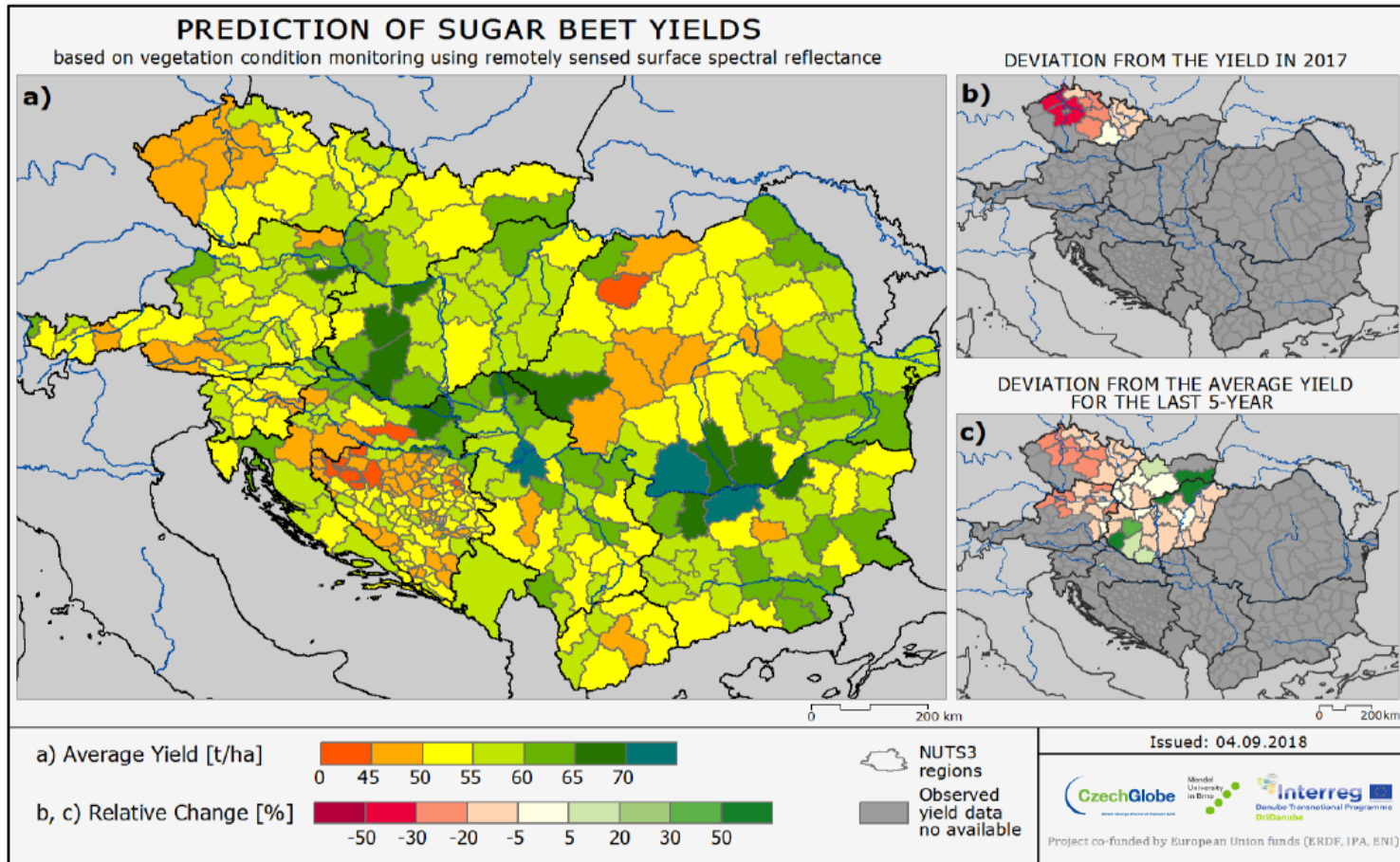
Estimated drought impacts on agriculture between 20 August – 2 September 2018







## Monitoring of drought-DRIDANUBE







## Ministry of Agriculture, forestry and water management



### **1. The Government of the Republic of Srpska has implemented and performs capital projects through the Ministry of Agriculture, forestry and Agriculture of the RS (MAFWM of the RS):**

- Construction of irrigation system in Bijeljina - completed 2014 \* Area 622 ha
- Construction of irrigation system in Pelagićevo - Completed 2014 \* Area of 202 ha
- Construction of irrigation system in Bratunac - Completion May 2018 \* Area 436 ha
- Construction of irrigation system in Ljubinje \* Started works \* Area 250 ha
- Construction of irrigation system in Maglajani ➤ Area 130 ha, ➤ the preparation of the tender documents.
- Construction of irrigation system in Trebinje \* Beginning of field work \* Area of 860 ha





**Ministry of Agriculture, forestry and water management**



2. In addition, in 2017-2018, and according to the provisions of Article 2 of the Rule book on the conditions and method of using funds for procurement of irrigation equipment ("Official Gazette of the Republic of Srpska" No. 101/17), and in connection with the Decision of the Government of the Republic of Srpska on the routing of Resources for the Supply of Irrigation Equipment ("Official Gazette of Republika Srpska" No. 87/17), a public invitation for procurement irrigation equipment. In this regard, 482 beneficiaries are allowed to co-finance 40% of the amount for the purchase of irrigation equipment.

3. The Agency for professional services in agriculture (Agricultural Advisory service) has purchased equipment for monitoring the amount of precipitation, which completes the monitoring of the collection of the hydrometeorological data.





## Ministry of Agriculture, forestry and water management



4. At the beginning of the year, the MAFWM of the RS sent the UNCCD request for assistance for the funds necessary for the development of the Action Plan for Combating Drought (DROUGHT MANAGEMENT PLAN - Action Plan for the Fight against Drought), separately by the entities in BIH: RS and FBiH, according to separate competencies, because it recognized the importance for the preparation and adoption of this document, still did not get the necessary funds for this important document.

Source: MAFWM of the RS (prepared by Mihajlo Markovic, external expert for the DriDanube project in cooperation with Ms. Svetlana Lazic, from the MAFWM of the RS)





## Conclusions



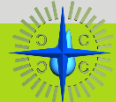
- ✓ Monitoring of drought is initiated and in operation state

### GAPS:

- ✓ Lack of drought management and Drought Master Plan
- ✓ No policy / strategy related to the drought
- ✓ No forecast and warning system
- ✓ Drought monitoring should be more integrated and coordinated between Ministry of Agriculture, forestry and water management and RHMZ Republic of Srpska
- ✓ final integrated with all beneficiaries in Republica Srpska







# FOCUS ON PROJECT UNDER MINISTRY



Donji Pridjel, Dobož

**Info**

Last model execution	2018-10-06 06:01:09
Next scheduled model execution	2018-10-06 10:00:00
Last measurement	2018-10-06 08:00:00
Last forecast cycle	2018-10-06 02:00:00

[Report a disease](#)

**Station Alerts** Expert Recommendation

There aren't any notifications for this station at the selected time period.

Graphs  Daily Hourly

