

# The significance of groundwater monitoring in the area of the FAB Našice

## Značaj monitoringa podzemnih voda u UŠP Našice

Pécs, 13.12.2017.

Nataša Rap



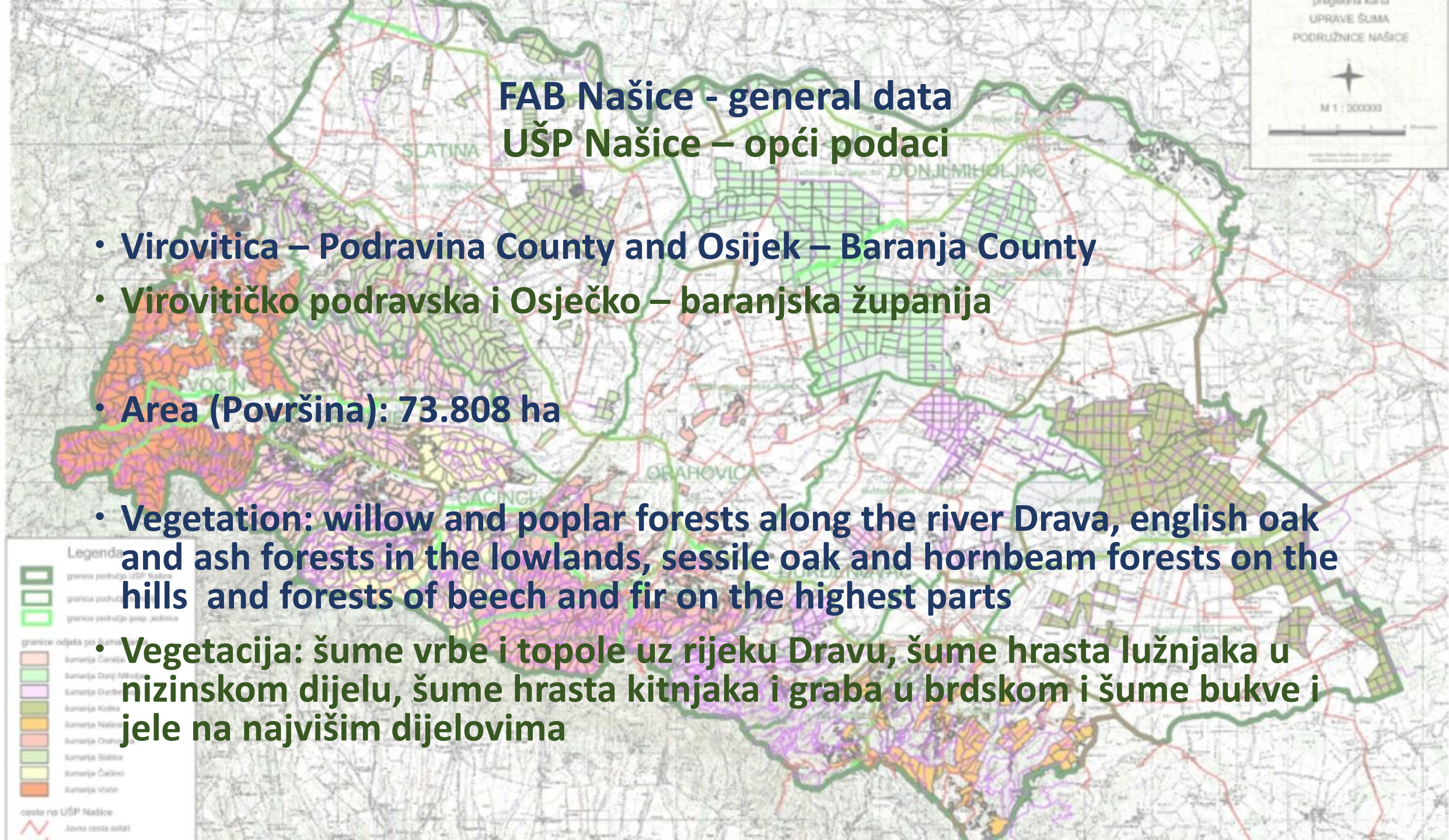
**FAB Našice - general data**  
**UŠP Našice – opći podaci**

- **Virovitica – Podravina County and Osijek – Baranja County**
- **Virovitičko podravska i Osječko – baranjska županija**

• **Area (Površina): 73.808 ha**

• **Vegetation: willow and poplar forests along the river Drava, english oak and ash forests in the lowlands, sessile oak and hornbeam forests on the hills and forests of beech and fir on the highest parts**

• **Vegetacija: šume vrbe i topole uz rijeku Dravu, šume hrasta lužnjaka u nizinskom dijelu, šume hrasta kitnjaka i graba u brdskom i šume bukve i jele na najvišim dijelovima**



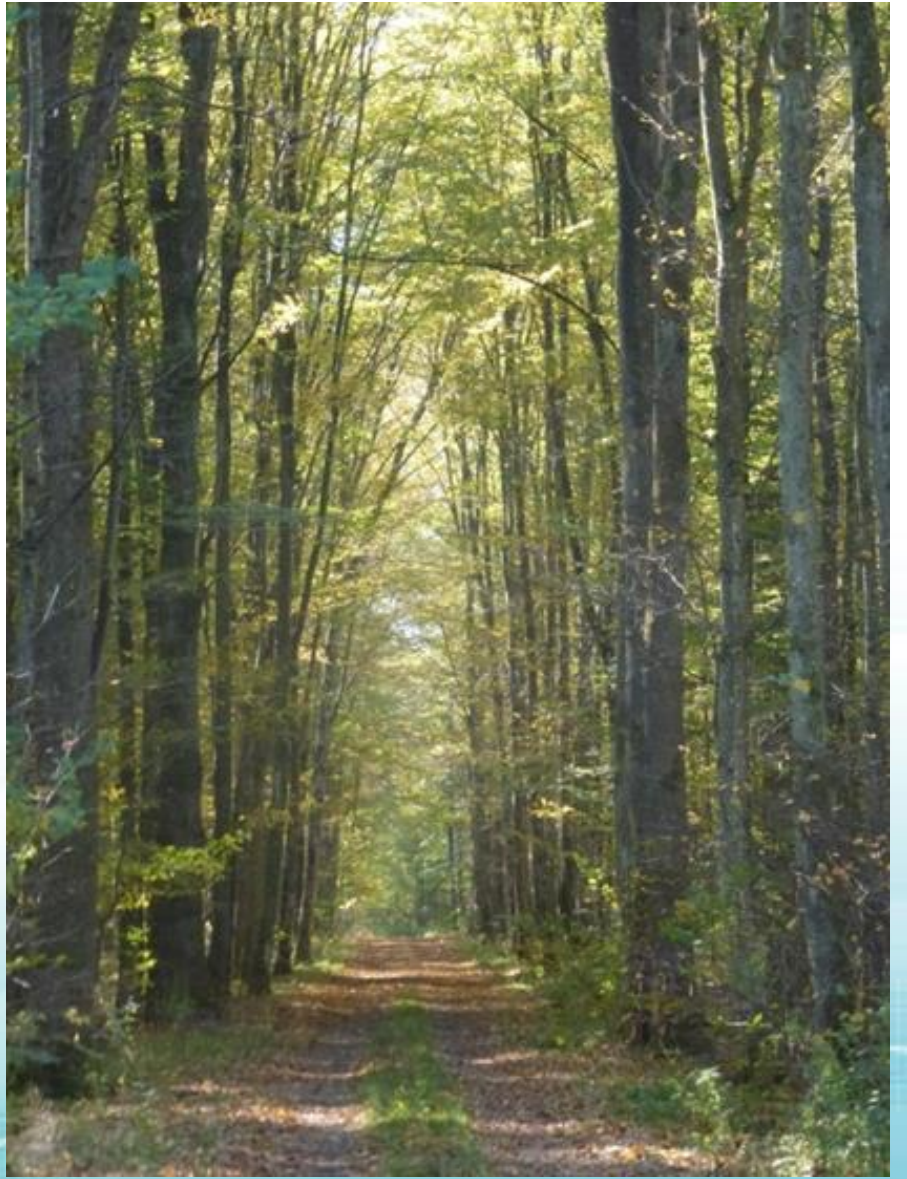


## English oak forests in FAB Našice

### Šume hrasta lužnjaka na području UŠP Našice

- Area over 20.000 ha, in the 5 forest offices: Koška, Donji Miholjac, Slatina, Orahovica and Đurđenovac.
  - Production period 120-140 years.
  - Along with oak trees depending on the habitat there are also: ash, hornbeam, elm, alder
- 
- Površina više od 20.000 ha, na području pet šumarija: Koška, Donji Miholjac, Slatina, Orahovica, Đurđenovac
  - Ophodnja 120 – 140 godina.
  - Uz hrast lužnjak dolaze ovisno o staništu: jasen, grab, brijest, joha





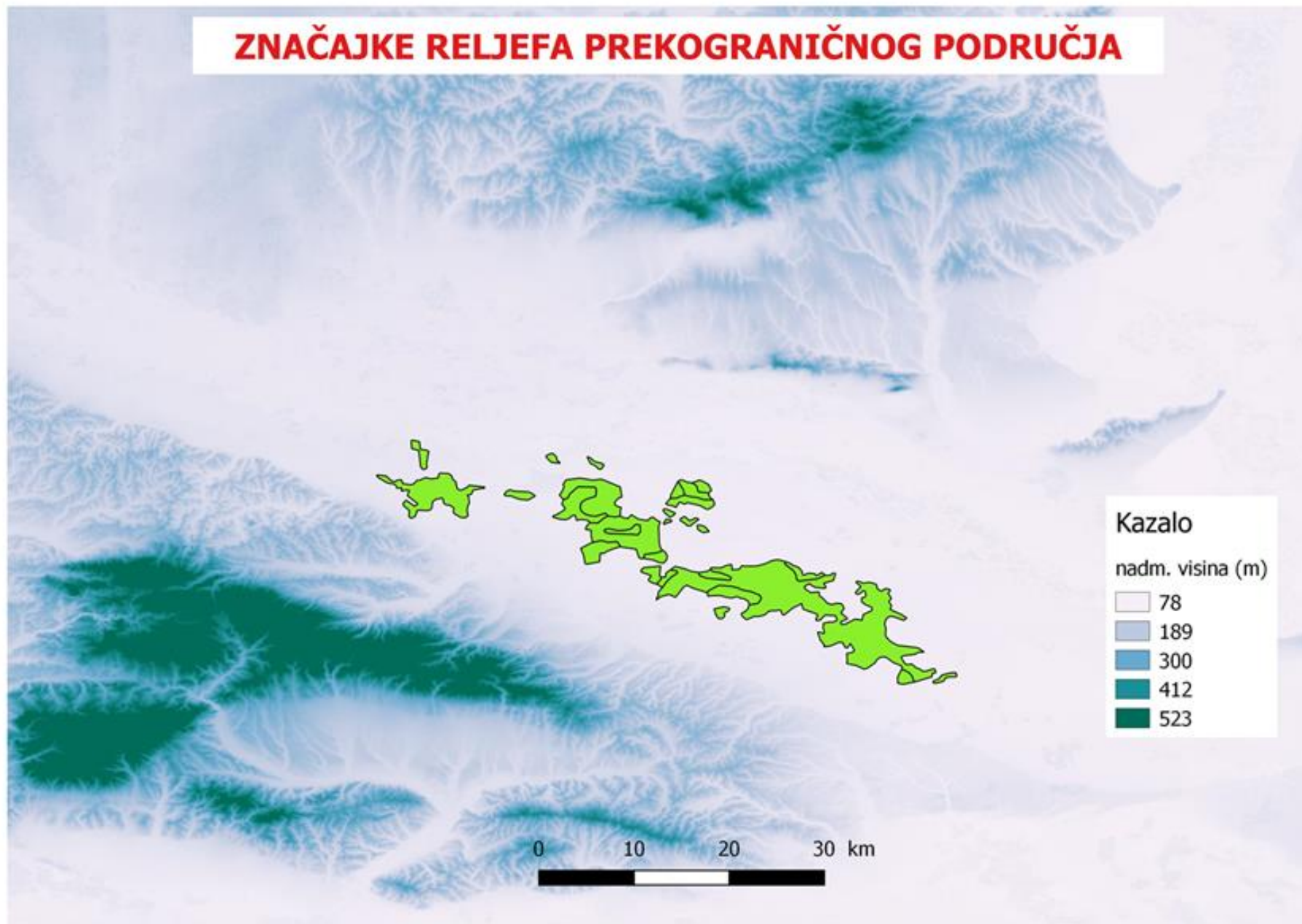


# The beginning of groundwater level monitoring in FAB Našice

## Početak praćenja nivoa podzemnih voda u UŠP Našice

- The problem of oak stands drying, especially after years with less rainfall
- Problem sušenja hrastovih sastojina, posebno nakon sušnih godina
- Cooperation between the Forest Research Institute Jastrebarsko and Croatian forests
- Suradnja Šumarskog instituta Jastrebarsko i Hrvatskih šuma
- 1994 - The idea of systematic monitoring of groundwater level
- 1994 - Ideja o sustavnom praćenju stanja podzemnih voda

## ZNAČAJKE RELJEFA PREKOGRANIČNOG PODRUČJA



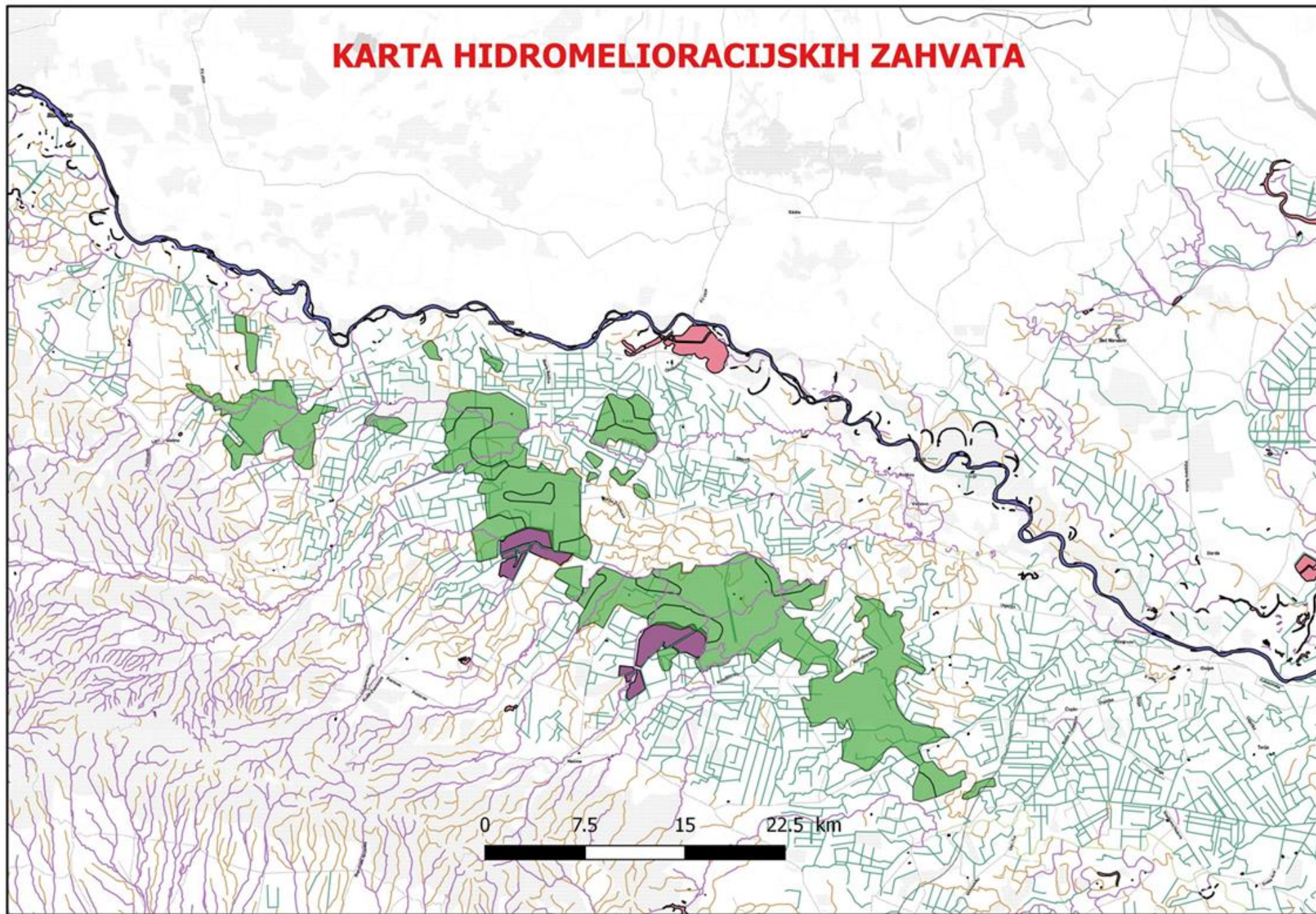


# HIDROGRAFIJA





# KARTA HIDROMELIORACIJSKIH ZAHVATA











Hungary-Croatia  
Cross-border Co-operation Programme

# Installation of piezometers

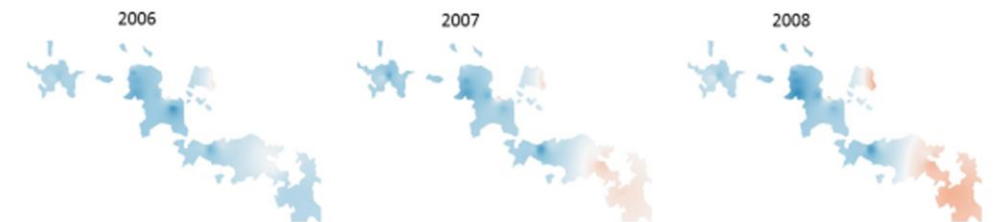
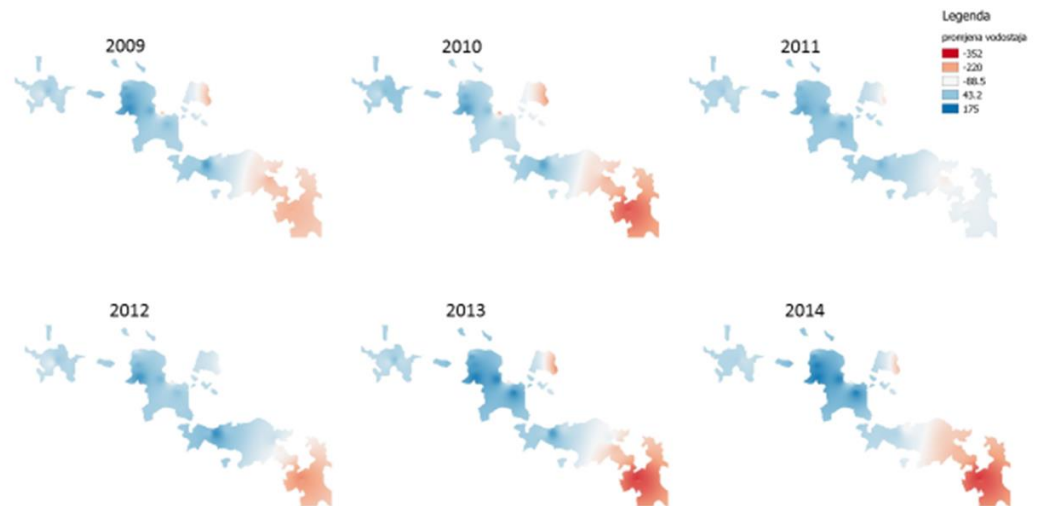
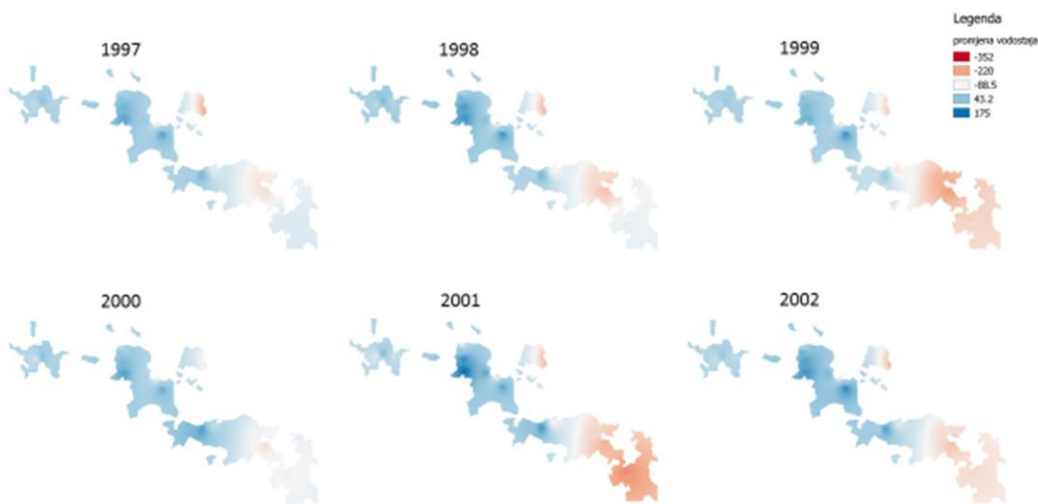








# GODIŠNJE ANOMALIJE PODZEMNIH VODA (GODIŠNJA ODSUTAPANJA OD PROSJEČNIH VIŠEGODIŠNJIH VODOSTAJA, 1997-2015)



Measurement results in FAB Našice  
Rezultati mjerenja u UŠP Našice

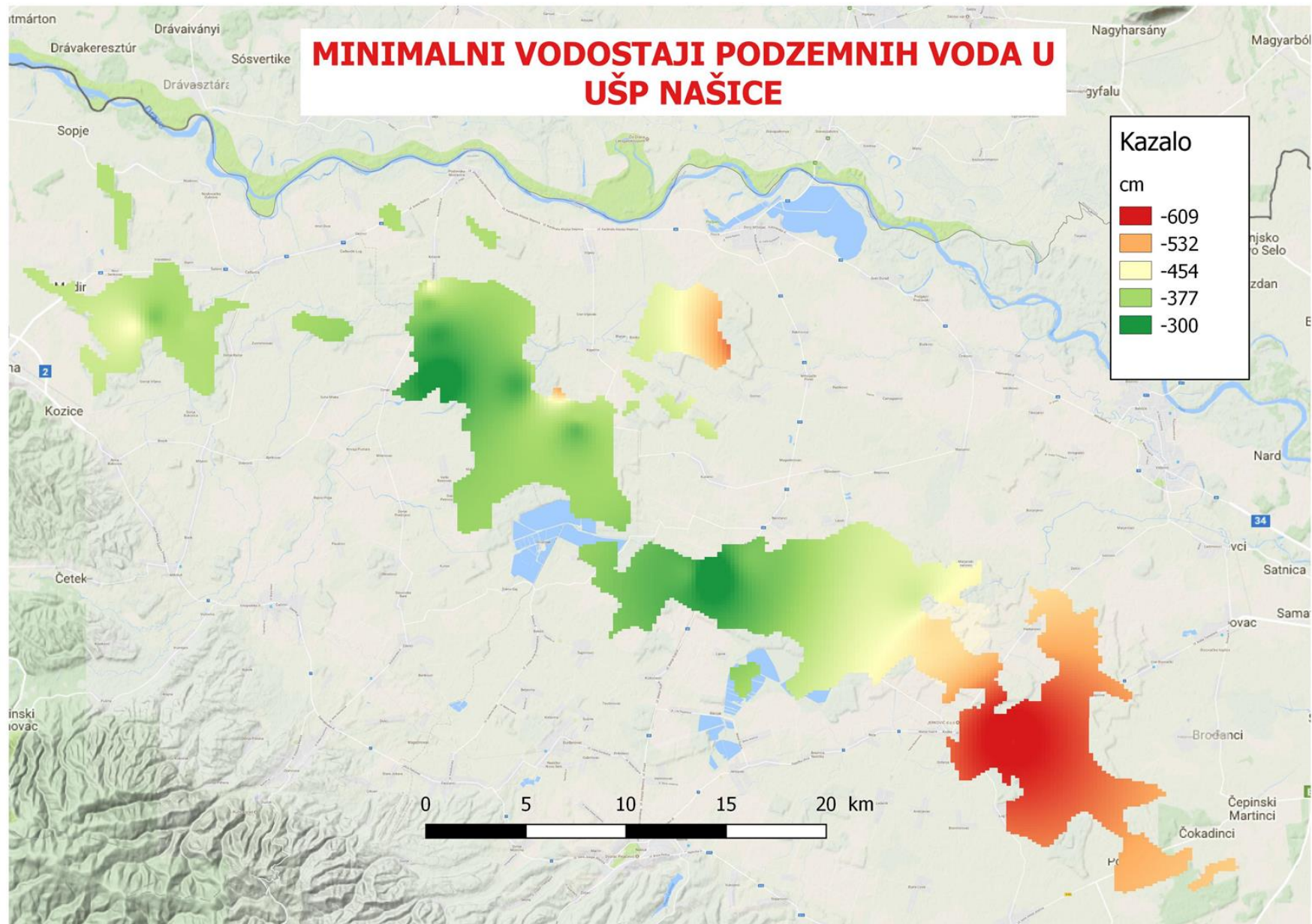


## SREDNJI GODIŠNJI VODOSTAJI PODZEMNIH VODA U UŠP NAŠICE



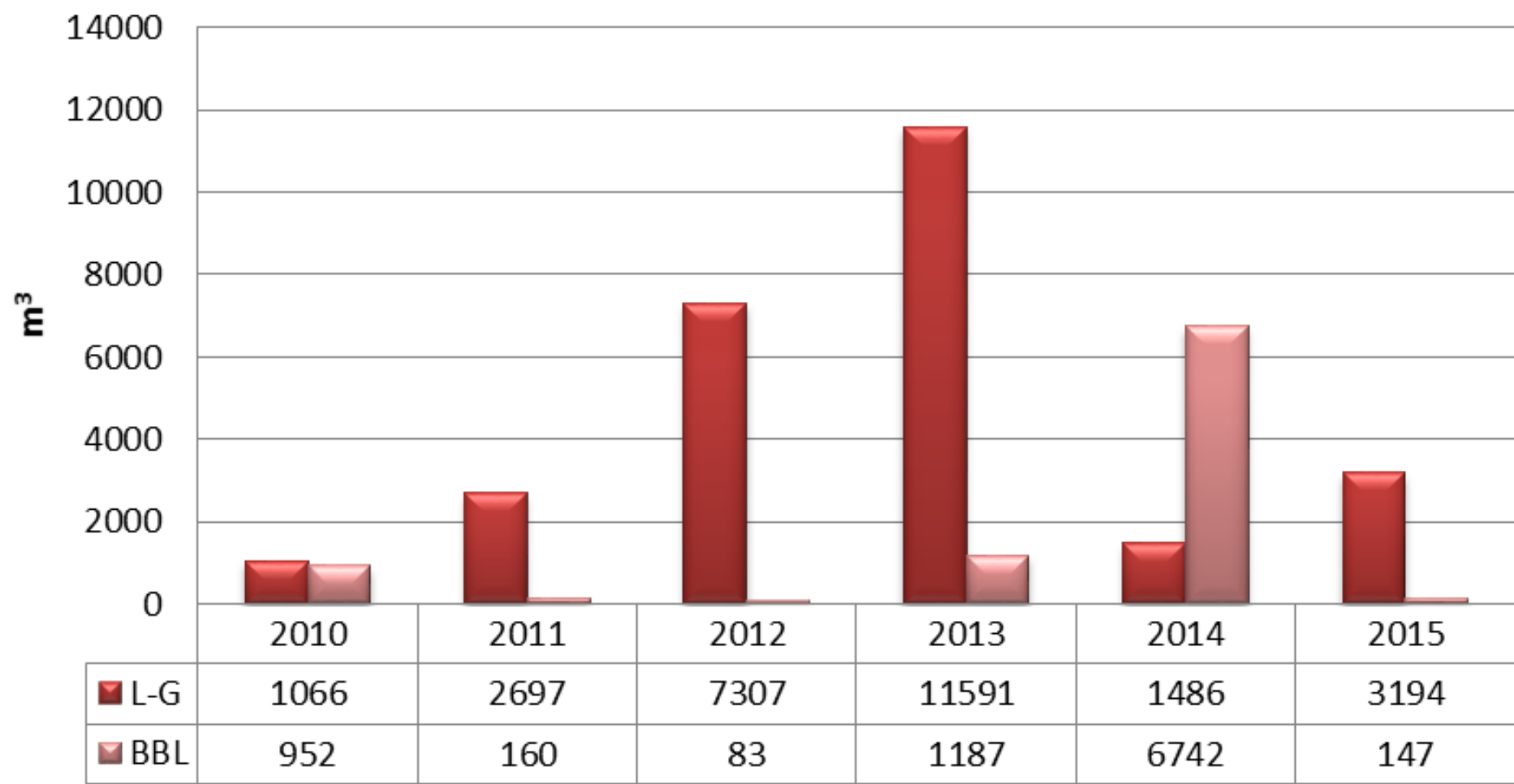


# MINIMALNI VODOSTAJI PODZEMNIH VODA U UŠP NAŠICE





## Slučajni prihod - sušci





# Goals through Oak protection project

## Ciljevi kroz projekt Oak protection

- Modernization of groundwater monitoring
  - Availability of the data obtained
  - Water Management in the Forest - Proposed Measures
  - Mapping of invasive species
- 
- Modernizacija praćenja stanja podzemnih voda
  - Dostupnost dobivenih podataka
  - Gospodarenje vodama u šumi – prijedlog mjera
  - Kartiranje invazivnih vrsta





***Köszönöm a figyelmet!***

***Thank you for your attention!***

***Hvala na pažnji!***