



Coordinating and integrating state-of-the-art
Earth Observation Activities in the regions of
North Africa, Middle East and Balkans
and Developing Links with GEO related initiatives
toward GEOSS

GEO-CRADLE Workshop

9th of May, 2017, Bucharest, Romania

PhD Ratko Bajcetic

PWMC Vode Vojvodine & Torrent Society of Serbia

GEO-CRADLE Workshop
9th of May, 2017, Bucharest, Romania





PWMC 'Vode Vojvodine'

- Water law – Water management:

- Mgmt of water

(water use, water consumption/discharge, WM plans,...)

- Mgmt of water structures

(cannals, sluices, PS, ship-locks, syphons,...)

-PWMCs Established by Water Law:

- PWMC 'Srbijevode'

- PWMC 'Vode Vojvodine'

- PWMC 'Beogradvode'



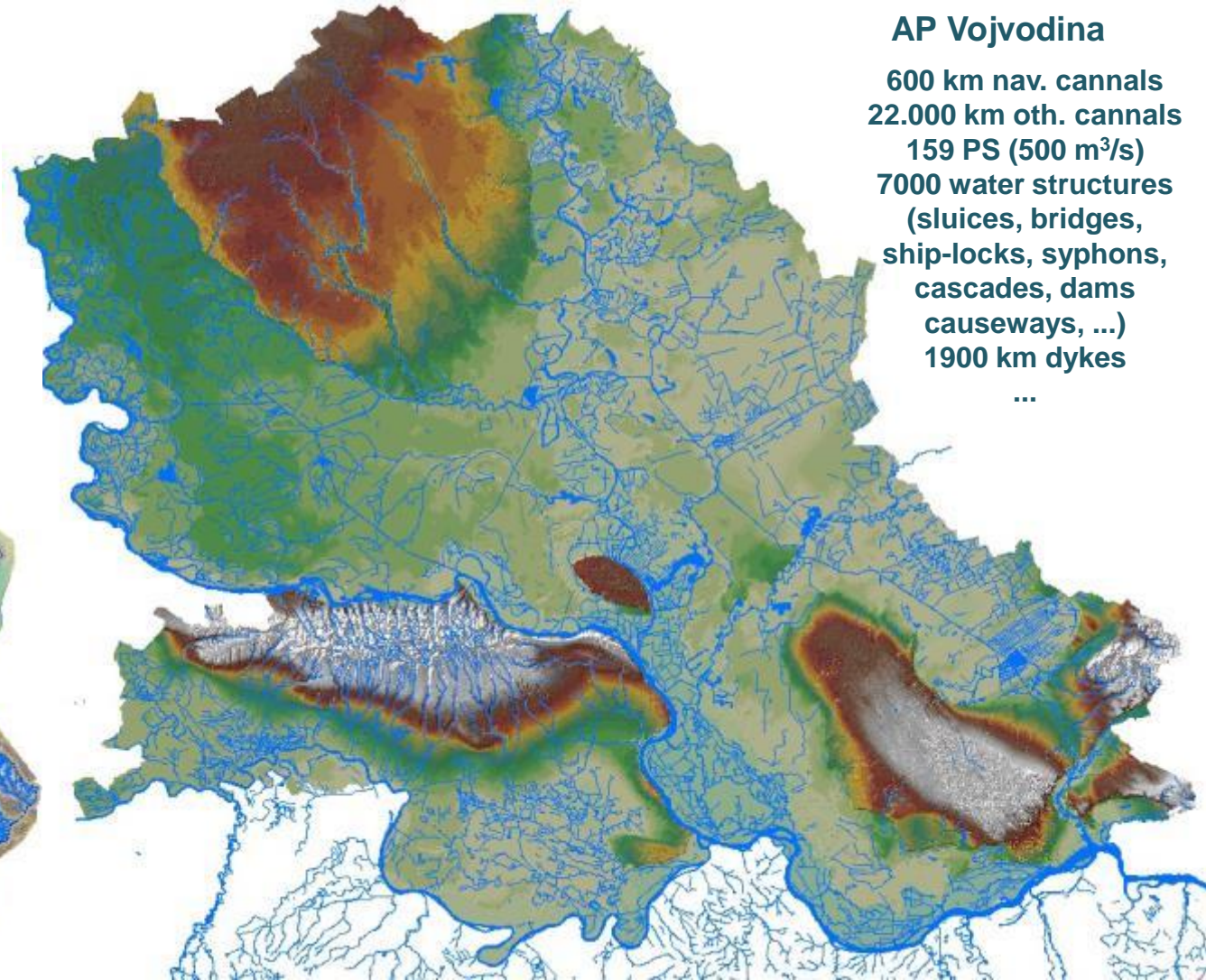
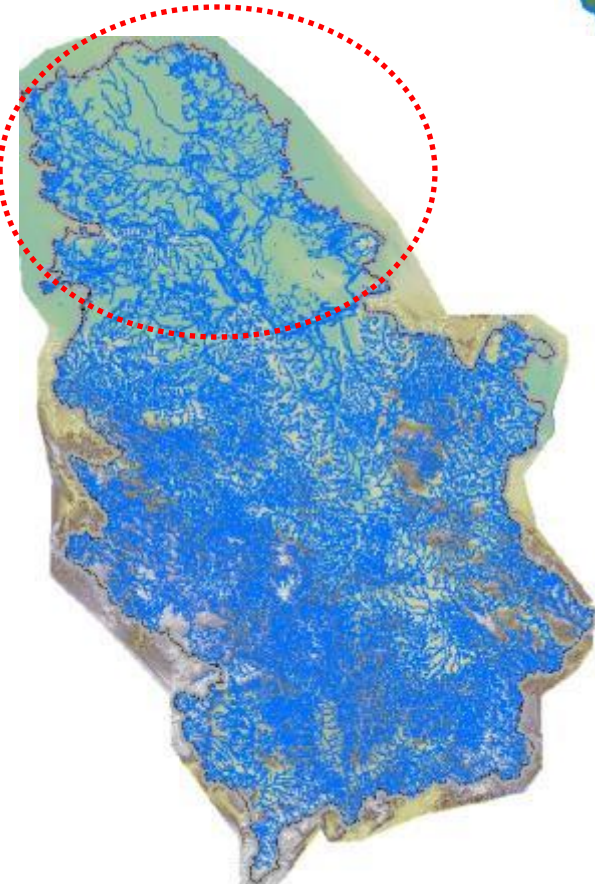


PWMC 'Vode Vojvodine'

AP Vojvodina

600 km nav. canals
22.000 km oth. canals
159 PS (500 m³/s)
7000 water structures
(sluices, bridges,
ship-locks, syphons,
cascades, dams
causeways, ...)
1900 km dykes

...





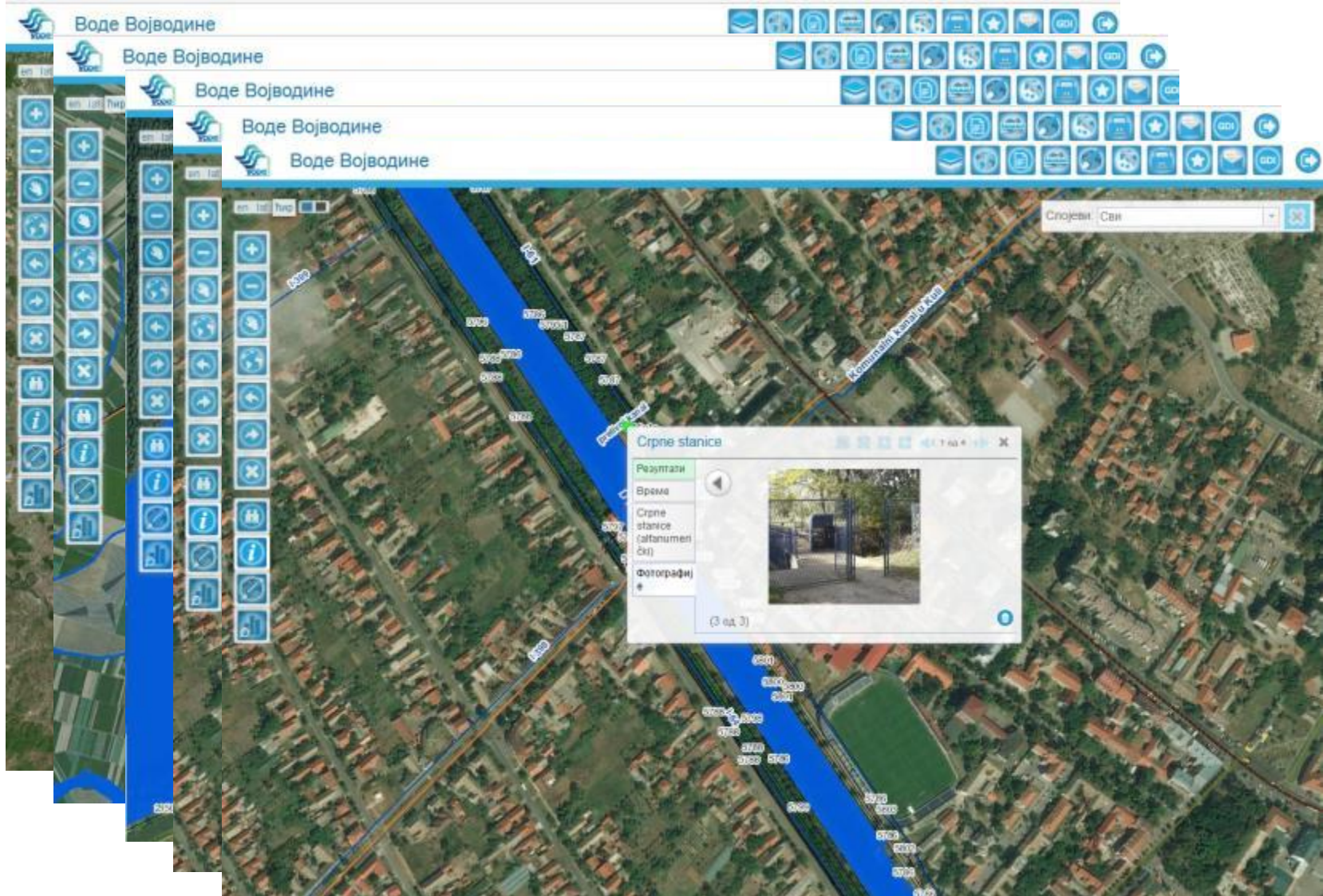
PWMC VV - WMIS

- WMIS has 3 separated part:
 - WMIS S (by Water Law)-INTRANET
 - Arc GIS – Arc SDE (10,4)
 - Oracle 11g
 - Main server (WD) 4 servers (3 PWMC & 1 HM Service)
 - Web Gis Application VV (by needs of PWMC users, APV,...) - INTERNET
 - Arc GIS – Arc SDE (10.4)
 - Oracle 11g (PostgreSQL)
 - Visios – Localis Platform
 - Web services and portals (APV, Geodetic Auth.)
 - Internal (editable, review), External and Appl. for Managing Users
 - Alphanumerical system (Oracle 11g) - INTRANET





PWMC VV - Web Gis Application VV





PWMC VV – Web services

- Established Web services:

- ESRI – Const.
- Water Directorate of Serbia – Const. (or D FTP)
- Rep. Geodetic Auth. (raster) – Once in a while

- Web services in the establishing process:

- APV – (web portal / web services) - 2017/2018
- Rep. Geodetic Auth. (vector) –cooperation with Water Directorate - 2018
- Hydrometeorological Service of Serbia – early warnings – 2017/2018

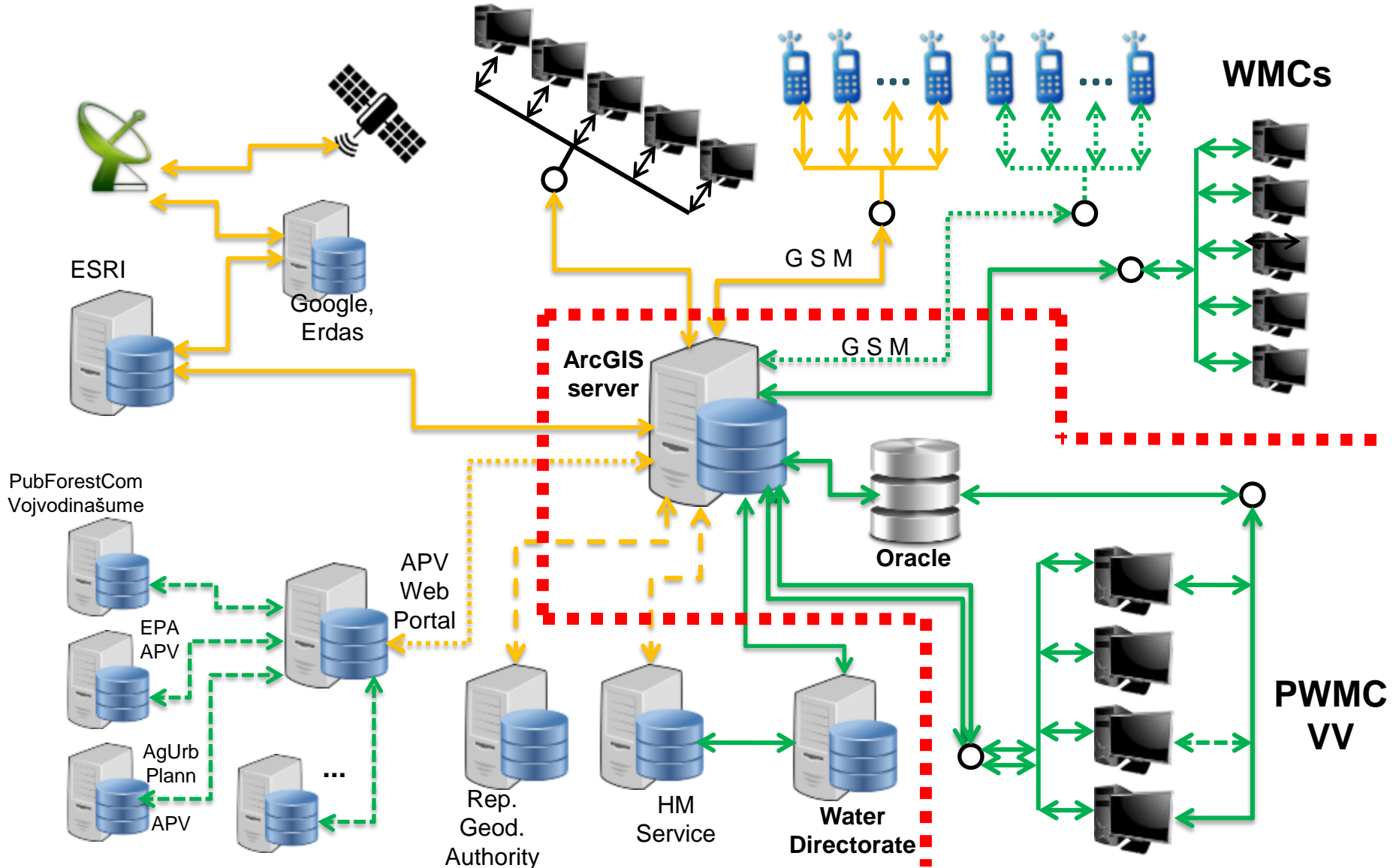
- Web services or FTP in the future:

- other companies, local authorities, agencies , maybe your company (?)





PWMC VV - WMIS

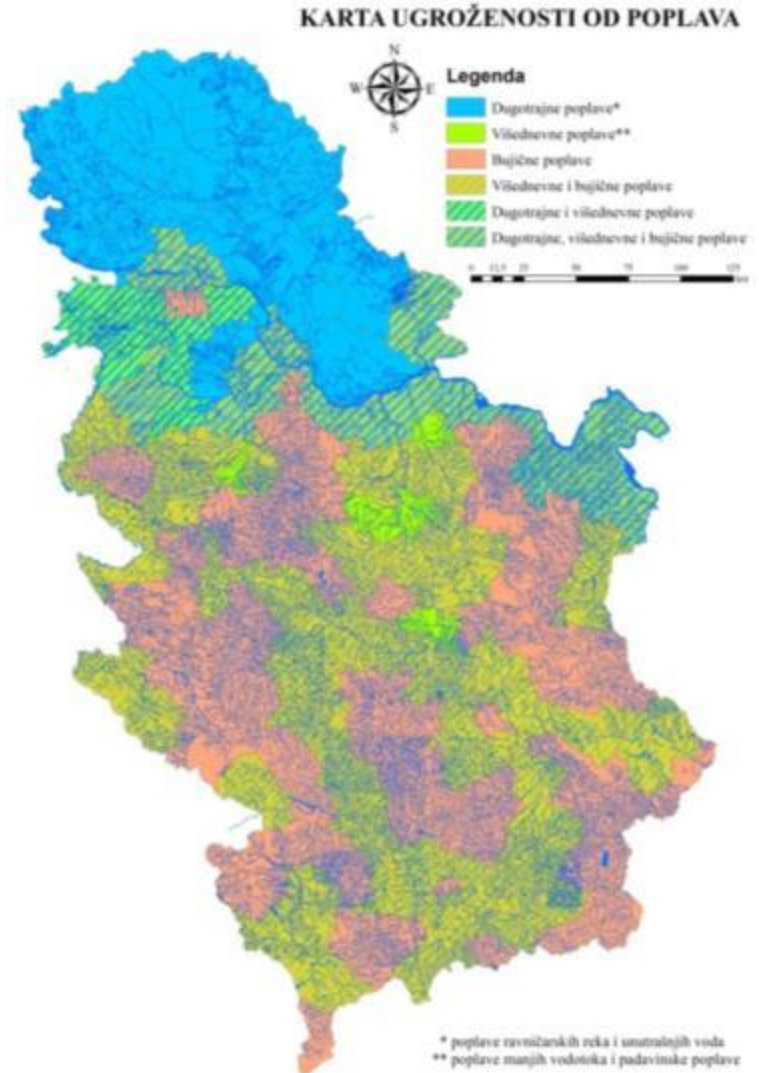
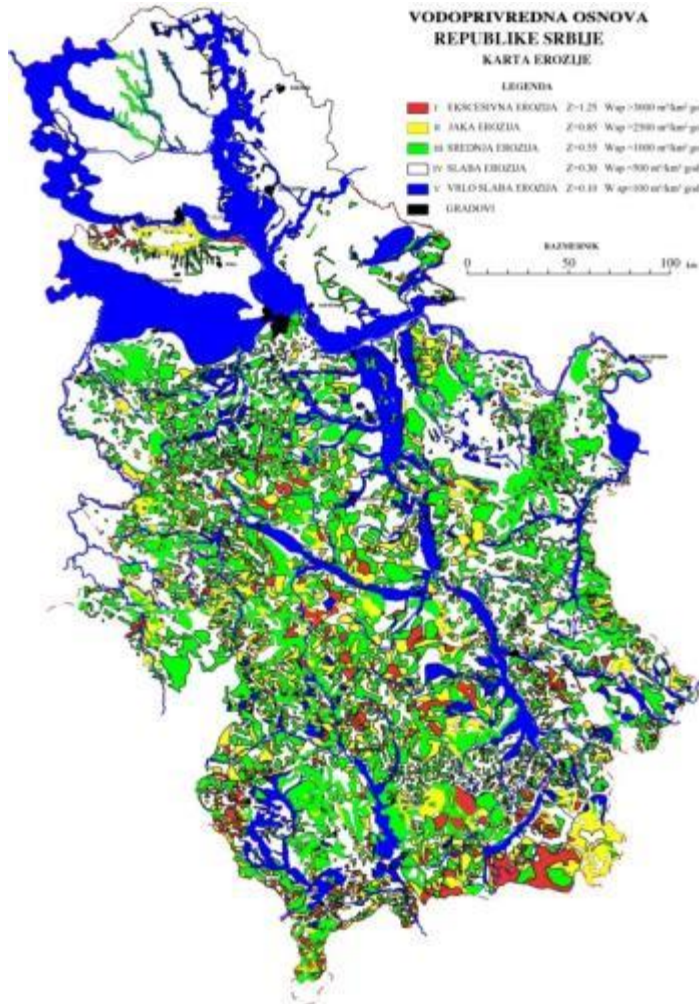




Torrent Society of Serbia

- Established as professional NGO's, providing:
 - Policy of torrent flood risk prevention;
 - Torrent flood protection;
 - Early warning systems;
 - Landslides
 - Erosion (all kind of)



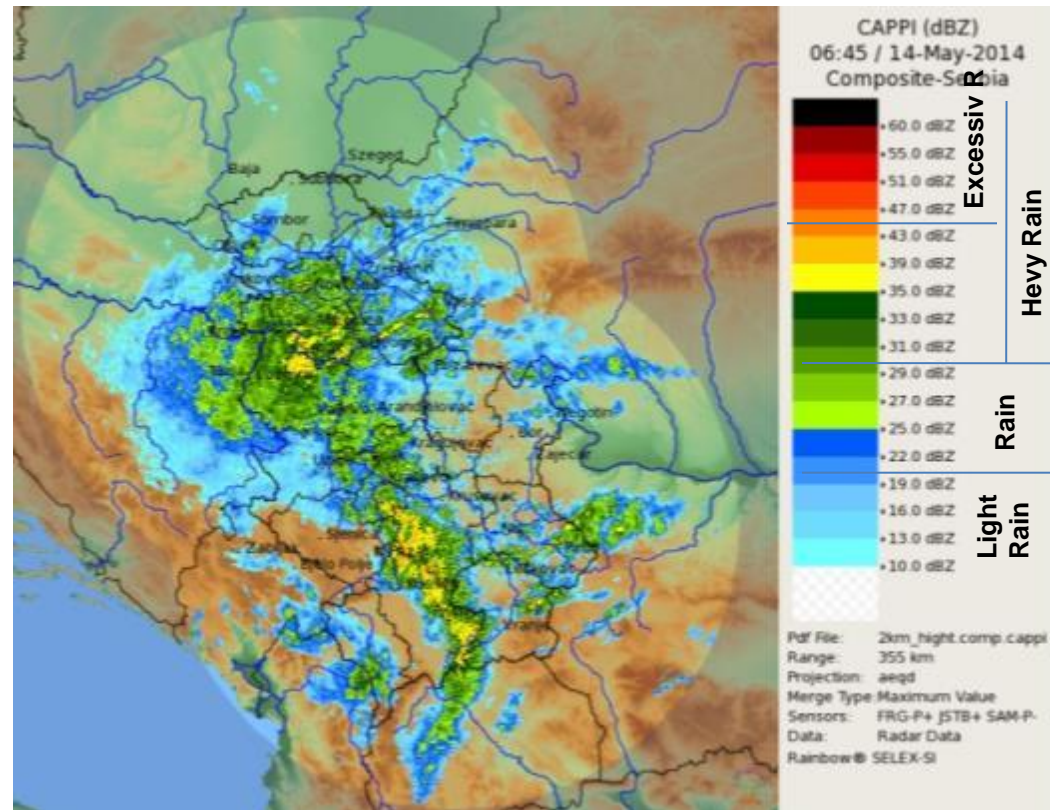
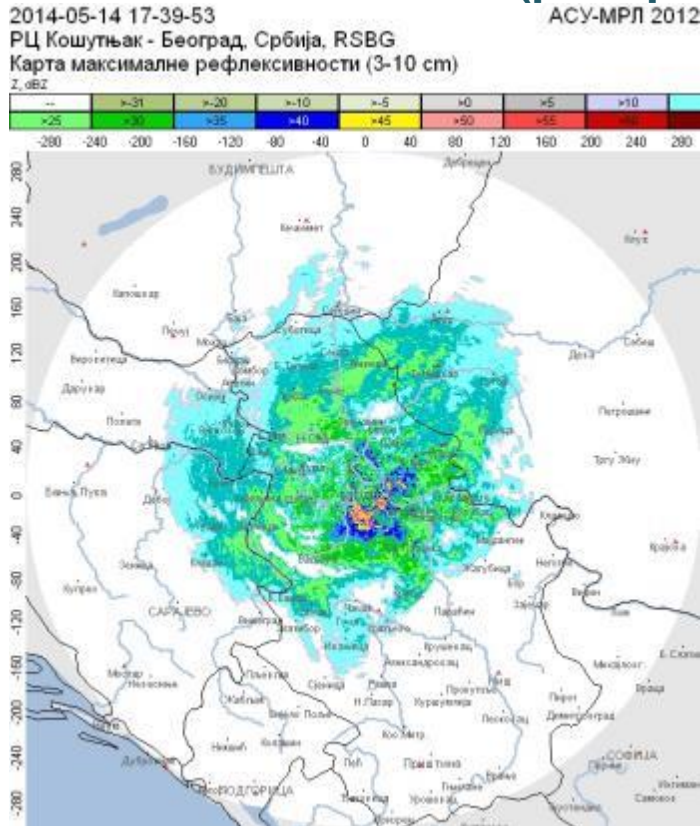




Torrent Society of Serbia

Early Warning System Inputs Required:

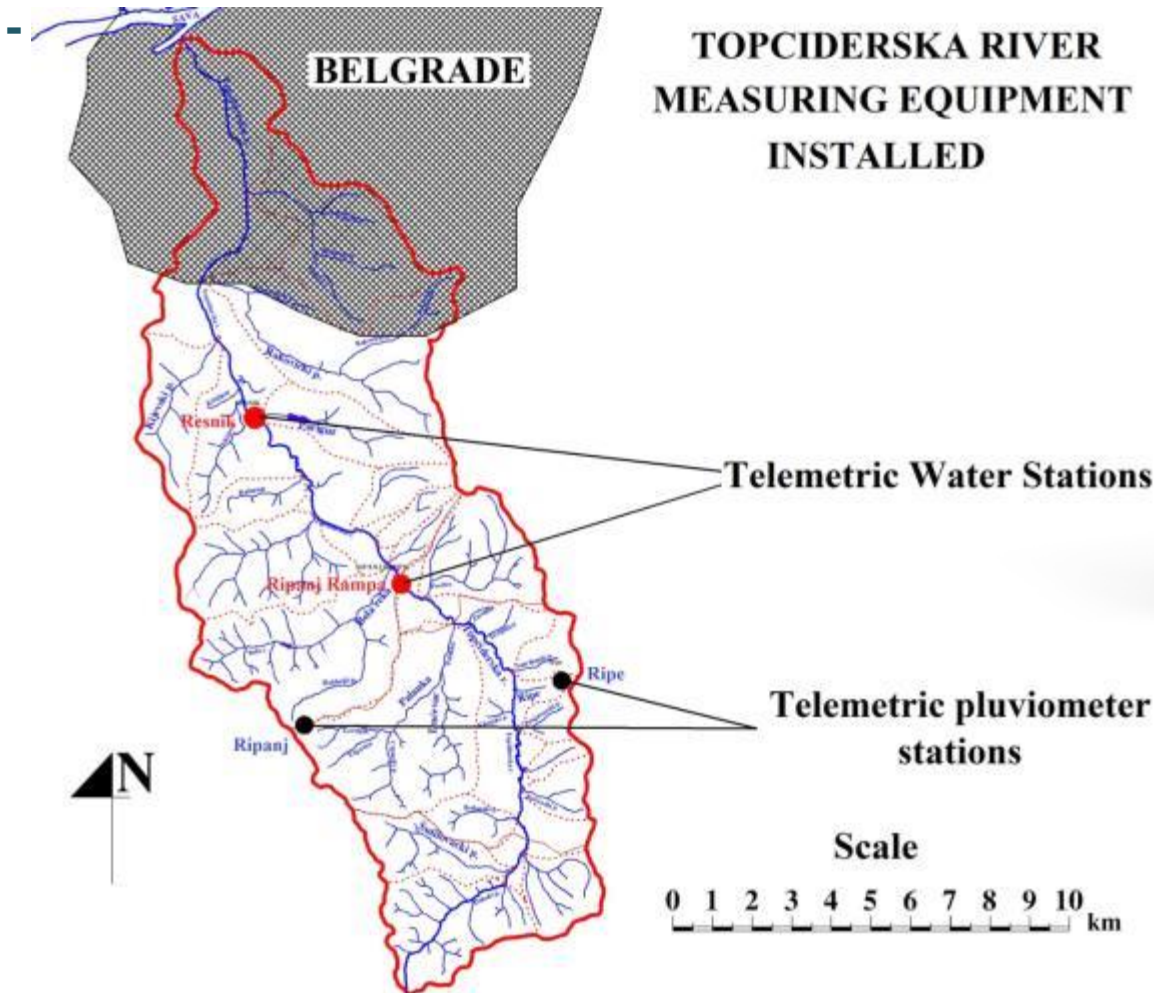
- Radar images in real time (cloud reflection, speed, course, ...)
- Measuring stations on the ground in real time (real values)
- Calibrated models (precip-runoff) (land cover, hydrology, hydraulics,...)





Torrent Society of Serbia

Pilot Project: Early Warning System 'Topciderska river' (A \approx 160 sq km; 150,000 ctz))

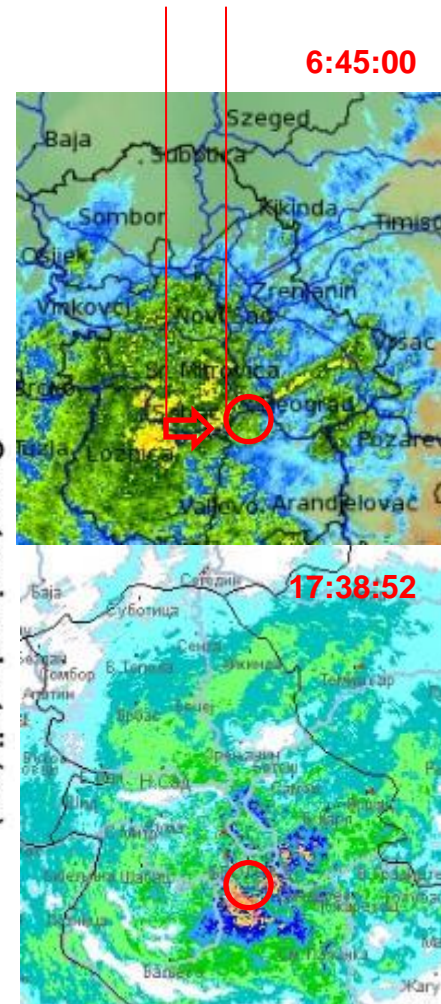
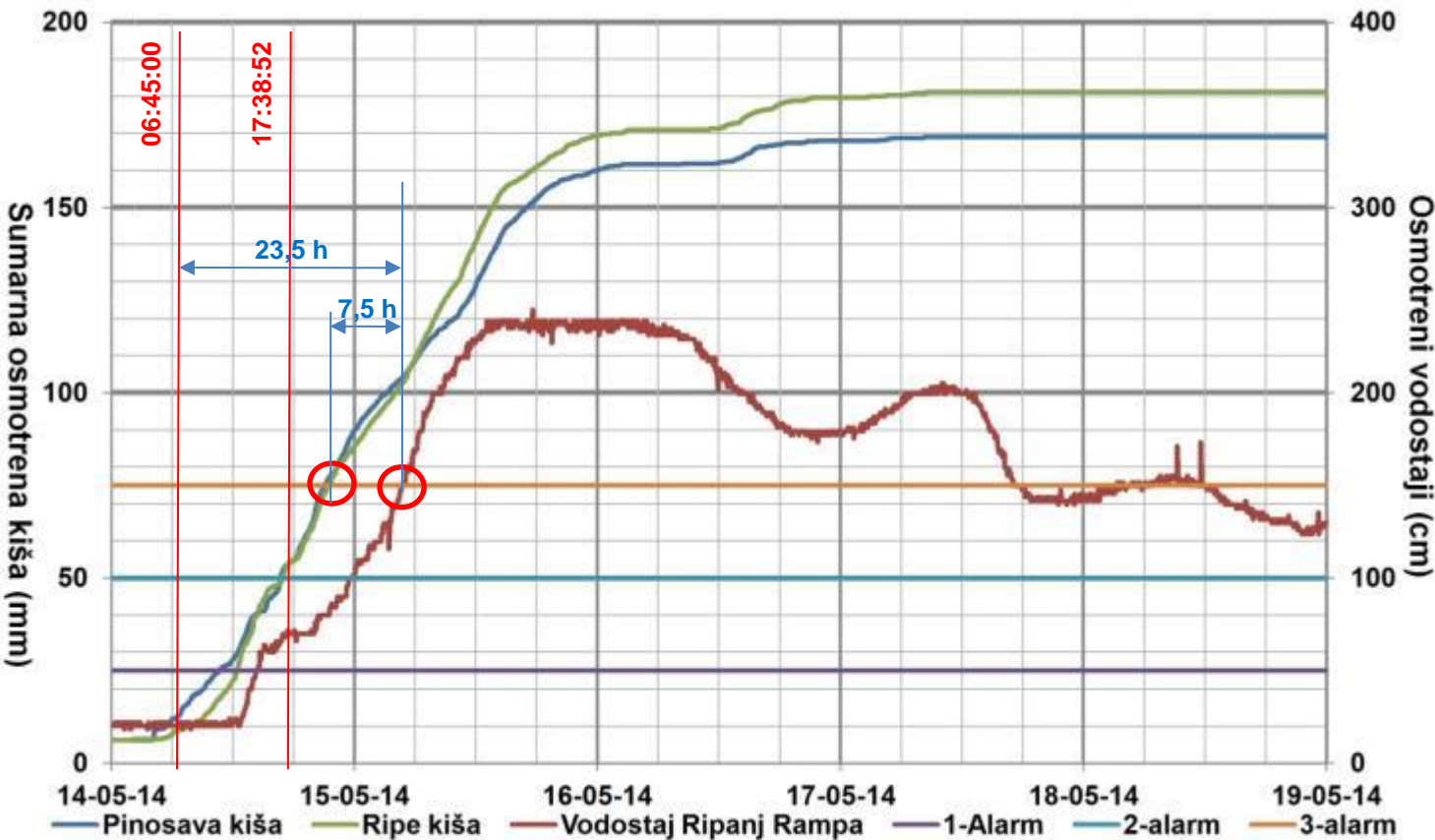




Torrent Society of Serbia


Pilot Project: Early Warning System 'Topciderska river' - Implementation of ground measuring

BUJIČNI TALAS TOPČIDRESKE REKE OSMOTREN OD 14-19 MAJA 2014.GOD.





What now?

- **Development of river basin management plans:**
 - **Establish effective Web services with other institutions**
 - **Develope more occurate DTM (± 10 cm)**
 - ...
 - **Develope GIS based android applications for monitoring**
- 
- **Raise the capacity of the sector for emergency situations (Ministry of internal affairs):**
 - **Forecast, using and reading of radar images - employ meteorologists**
 - **Develope GIS based Runoff Models in Potentially affected areas**
 - **Develope protection and local evacuation plans for Pot. Aff. Areas**



Thanks



PhD Ratko Bajcetic
bajcetic@mts.rs