


Floods on Drava River Basin November 2012 in Slovenia - Lessons learned


Mrs. Milica Slokar *
Mr. Jože Papež **

* Ministry of Defence of the Republic of Slovenia
Administration for Civil Protection and Disaster Relief (ACPDR)
** HIDROTEHNIK Water management, Ljubljana, Slovenia




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info@alpconv.org www.alpconv.org


Water and Risk Management
facing climate change: towards
the local adaptation
(Brescia, 10.10.2013)



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AND DISASTER RELIEF


FLOODS ON DRAVA RIVER BASIN November 2012



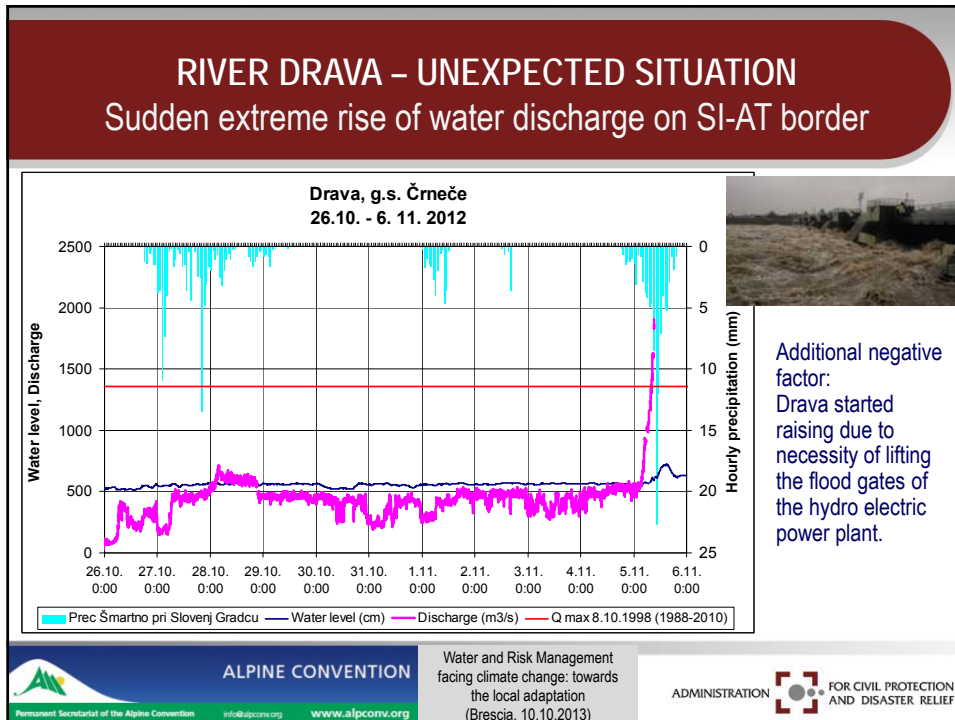
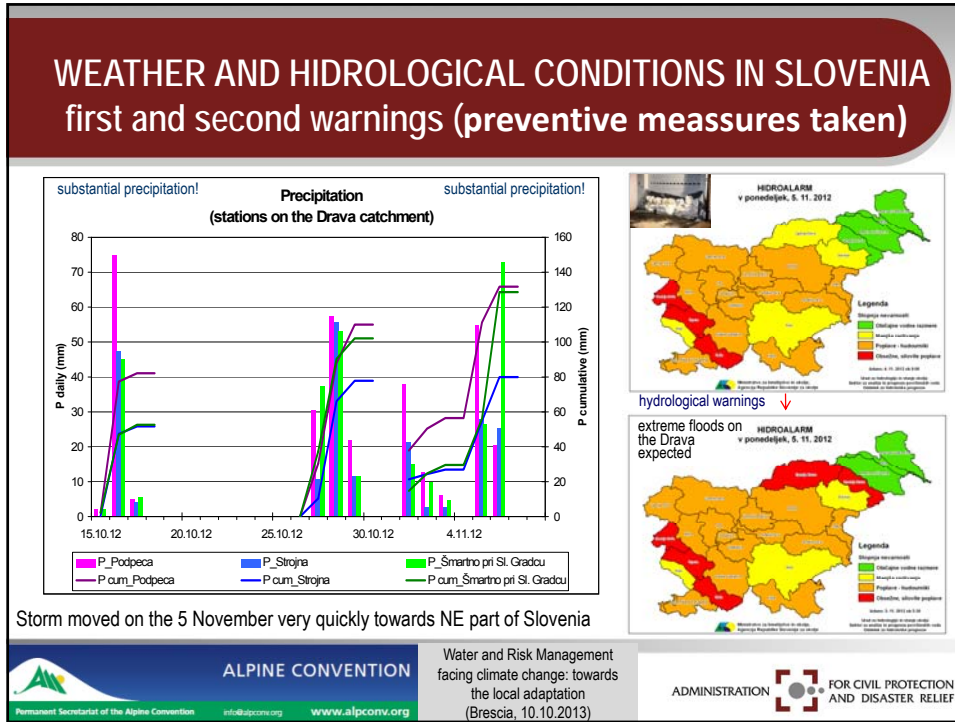


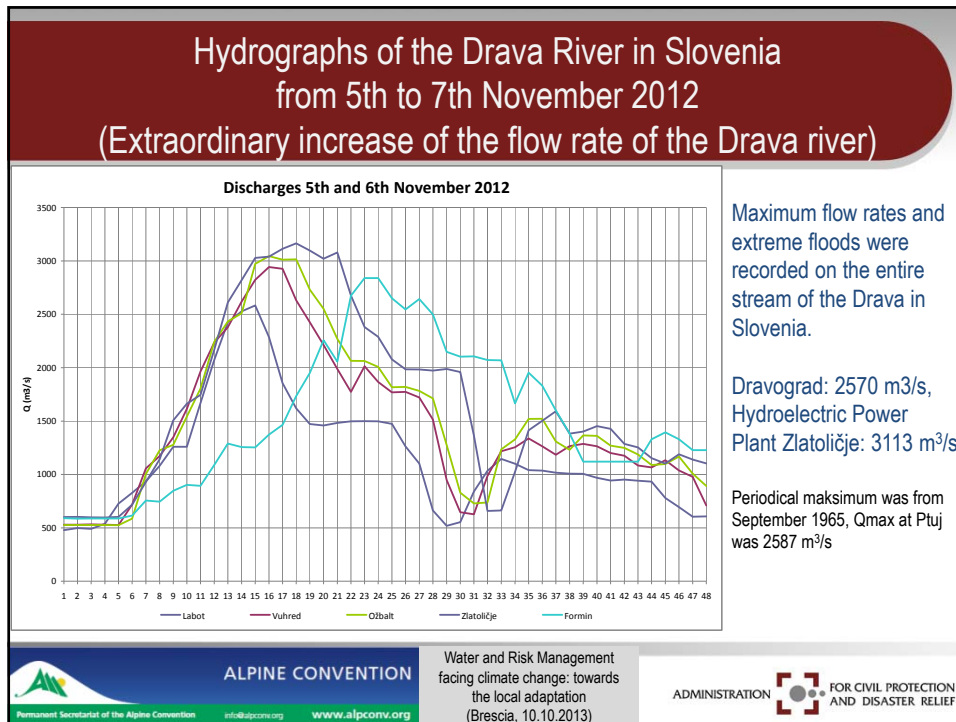
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FLOODED AREAS IN DRAVOGRAD (5 November 2012)

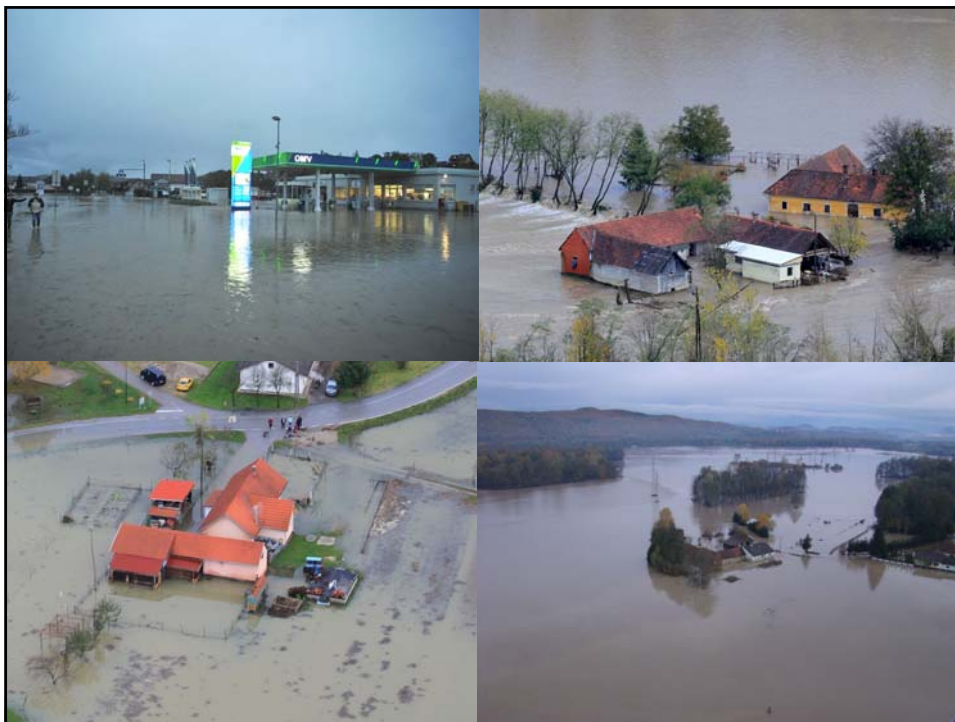




FLOODED AREAS IN THE LOWER STREAM OF THE DRAVA RIVER (5 November 2012)



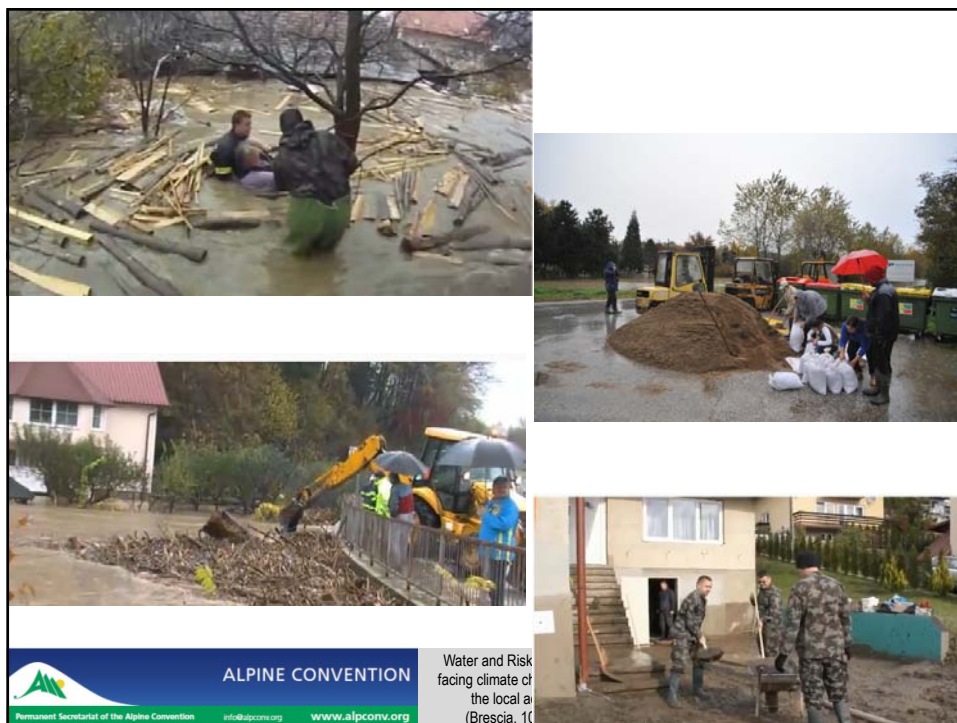
collapse of dyke





ACTIVITIES OF PROTECTION, RESCUE AND RELIEF UNITS

- Professional and voluntary Fire-fighting Units **14.676**
- Civil Protection Headquarters in affected regions and municipalities **1.596**
- Police **548**
- Slovenian Army **1.402**
- Communal and other infrastructure services **1.826**
- Infrastructure management services (Hydroelectric Power Plants, Telekom Slovenia, ELES – Elektro Slovenia etc.)
- Logistical centres



RECOVERY FROM THE FLOOD CONSEQUENCES

- FLOODED LIVING FACILITIES **3,608**



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RECOVERY FROM THE FLOOD CONSEQUENCES

- FLOODED PUBLIC AND INDUSTRIAL FACILITIES **668**



RECOVERY FROM THE FLOOD CONSEQUENCES

- DAMAGED INFRASTRUCTURE



Numerous roads and other infrastructure facilities/structures were damaged. Extremely high quantities of rain **also triggered around 526 landslides and mudslides.** No killed or injured persons!

DAMAGE ASSESSMENT IN SLOVENIA

- Affected municipalities: **112**
- Persons suffering and reporting damage: **7892**
- Damage assessed: **373.090.500,01 EUR**
 - Municipalities along the Drava river: **99.777.595,30 EUR**
- Intervention costs: **12.977.910,47 EUR**
- Delivered by Slovenian Red Cross and Slovenian Karitas: **1.500.000,00 EUR**

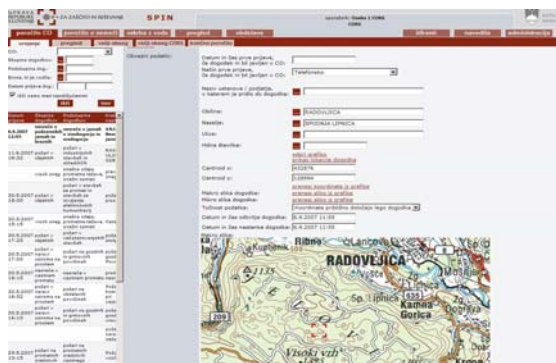
Monitoring, notifying and warning Lessons learned

Mobilisation of Authorities, Expert services, Protection, Rescue and Relief Units at local, regional and state levels, Police Units, Slovene Army and public services:

- were timely, organized and adequate
- successfully mitigated the consequences of a disaster
- promptly ensured basic living conditions

SPIN - Emergency Incident Reporting System

- WEB application for report of interventions:
 - 1st report after 2 hours; prepared by operators from Emergency centers
 - Final report, prepared by leader of intervention (head of primary rescue unit)
- Integrated with:
 - SPU112 - System for Emergency Support – data source
 - eGIS_UJME – location of event



SPIN - Emergency Incident Reporting System

Web access for public: <http://spin.sos112.si/spin2/Javno/GIS/GraficniPrikaz.aspx>

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Administration for civil protection and disaster relief (ACPDR)

The primary task of the ACPDR (established in 1991) is to perform administrative and technical duties within the national disaster management system, especially in the areas of **preparedness** and **response** to disasters.

<http://www.sos112.si/>

PREPAREDNESS:

- assessing risks and drafting national emergency response plans
- organizing and implementing an autonomous system of monitoring, notification and warning
- providing education and training for protection and rescue units and services, as well as for the population
- organizing and equipping the national protection and rescue units and services
- maintaining the national reserves of material assets for protection, rescue and relief purposes

RESPONSE:

- coordinating response to major disasters
- assisting local communities in emergency response
- providing support to the civil protection commander of the Republic of Slovenia and his/her staff during major emergencies
- providing basic conditions for life

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Lessons learned – Preparedness on extreme events (also impact of CC): Consistent and sustained maintenance and improving of measures in all phases of Integral Natural Hazard & Disaster Management!

Some of latest activities on the field of Research & Development (hazard&risk maps and plans, new tools ...)

- WFD – River Basin Management plans 2009 – 2015 ...
- EFD - Hazard & Risk Mapping & Flood Risk Management Plans 2007 – 2015 ...
- Legislations:
 - 2007 Methodology ...
 - 2008 Decree on ...
 - 61 Areas of the Potentially Significant Flood Risk (APFSR) **In progress!**
- Project BOBER (2007-2015) **Monitoring, notifying and warning**
- Project MASPREM (2009-2013)
- Project MONITOR-II (2009-2013) **Contingency planning (scenarios, link to hazard maps, intervention maps)**

Water Management
Forest management
Spatial planning
...

PREVENTION (green hexagon)
PREPARATION (yellow hexagon)
PROTECTION (yellow hexagon)
RECONSTRUCTION (green hexagon)
PROVISION OF BASIC CONDITIONS FOR LIFE (grey hexagon)
RESCUE AND RELIEF (grey hexagon)

Event (red starburst)

Regularly educations and training activities

Slovene system of protection against natural and man-made disasters

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UPGRADE OF THE SYSTEM FOR MONITORING AND ANALYSING THE WATER ENVIRONMENT IN SLOVENIA = Project BOBER

REPUBLIC OF SLOVENIA
MINISTRY OF AGRICULTURE AND THE ENVIRONMENT
SLOVENIAN ENVIRONMENT AGENCY

BOBER
BETTER OBSERVATION FOR BETTER ENVIRONMENTAL RESPONSE

Investing in your future
Slovenian Republic of the Environment

Background
The high costs resulting from flood damage in Slovenia necessitated the implementation of an efficient early warning system. Hence, the Environmental Agency of the Republic of Slovenia is implementing the BOBER (**Better Observation for Better Environmental Response**) project, which aims to achieve the accurate forecasting of extreme hydrological phenomena.

Estimated costs: 32.962.821 EUR.
European Cohesion fund: 85 %
Republic of Slovenia: 15 %

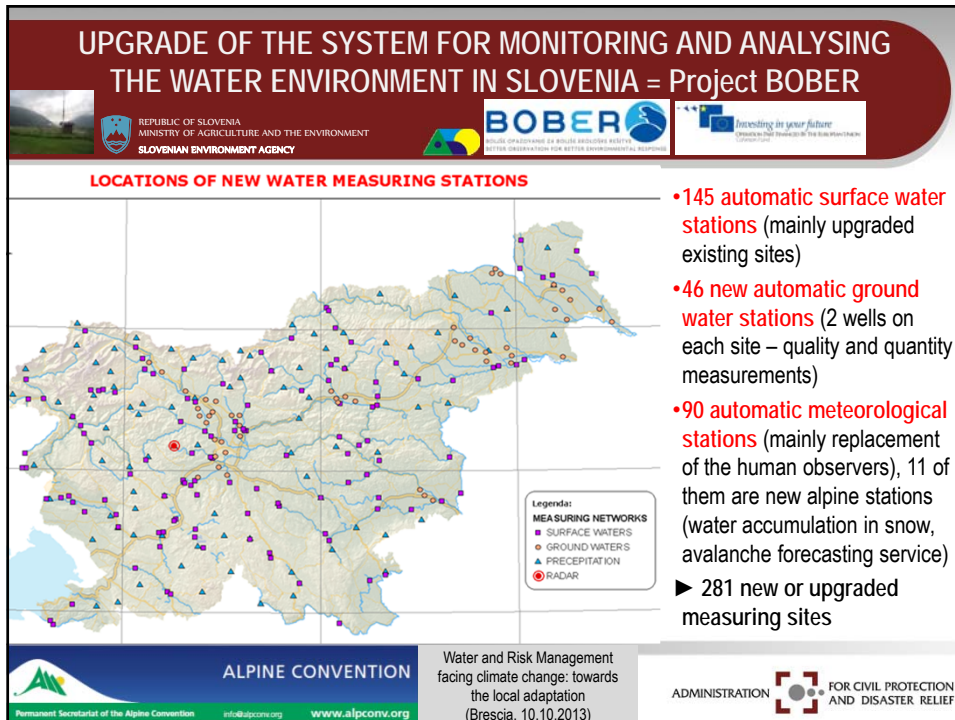
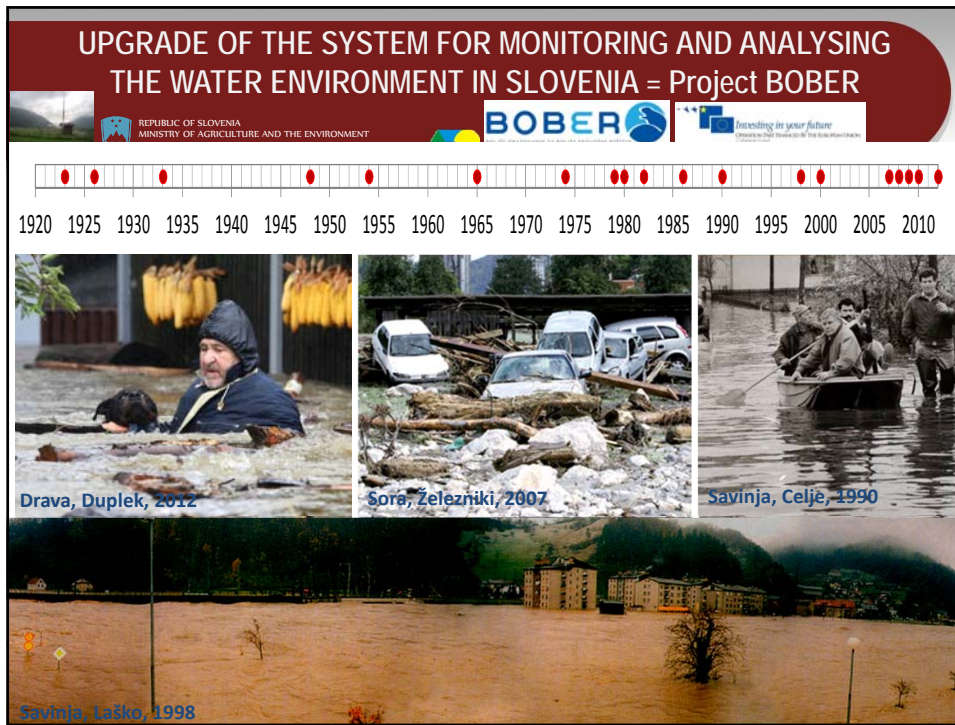
Project duration: 2007-2015 (good progress!)



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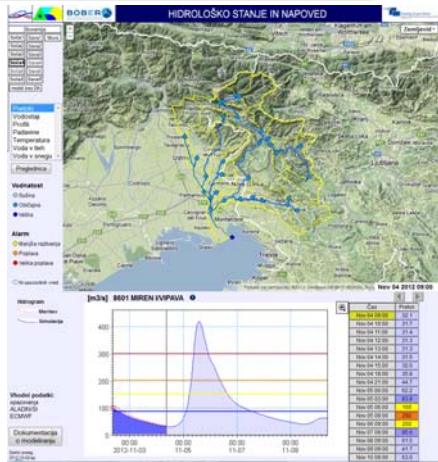
Contribution of PLANALP members from Slovenia on "Water and Risk Management facing climate change: towards the local adaptation" (Brescia, 10.10.2013)


UPGRADE OF THE SYSTEM FOR MONITORING AND ANALYSING THE WATER ENVIRONMENT IN SLOVENIA = Project BOBER

Results of the project


- new premises for the **laboratories** and for the national marine meteorology and oceanography service;
- constructed **second weather radar in Slovenia**, which will cover also the western part of Slovenia;
- upgraded national network of measuring locations** for monitoring the level of surface waters, precipitation, snow cover, and groundwater level;
- new equipment** in the laboratories, new hydrometrical equipment (ADCP) and sea dynamics equipment, upgraded computing centre („**super**“ computer!);
- implemented **software tools** for the **Slovenian sea dynamics forecast**, **groundwater dynamics** on the alluvial aquifers, for **monitoring drought** and **forecasting the waters** in the Sava and Soča basins.








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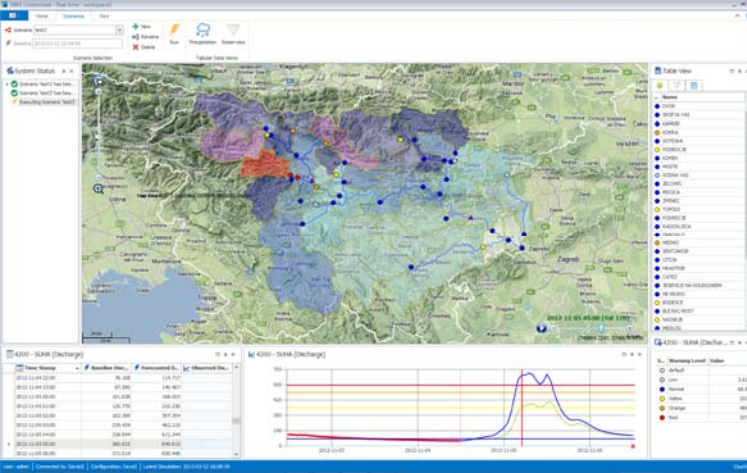



UPGRADE OF THE SYSTEM FOR MONITORING AND ANALYSING THE WATER ENVIRONMENT IN SLOVENIA = Project BOBER

... in progress ..


Development of forecast model for smaller / torrential catchments and incorporating more precise/reliable data/impact of reservoirs and accumulations in forecast's models

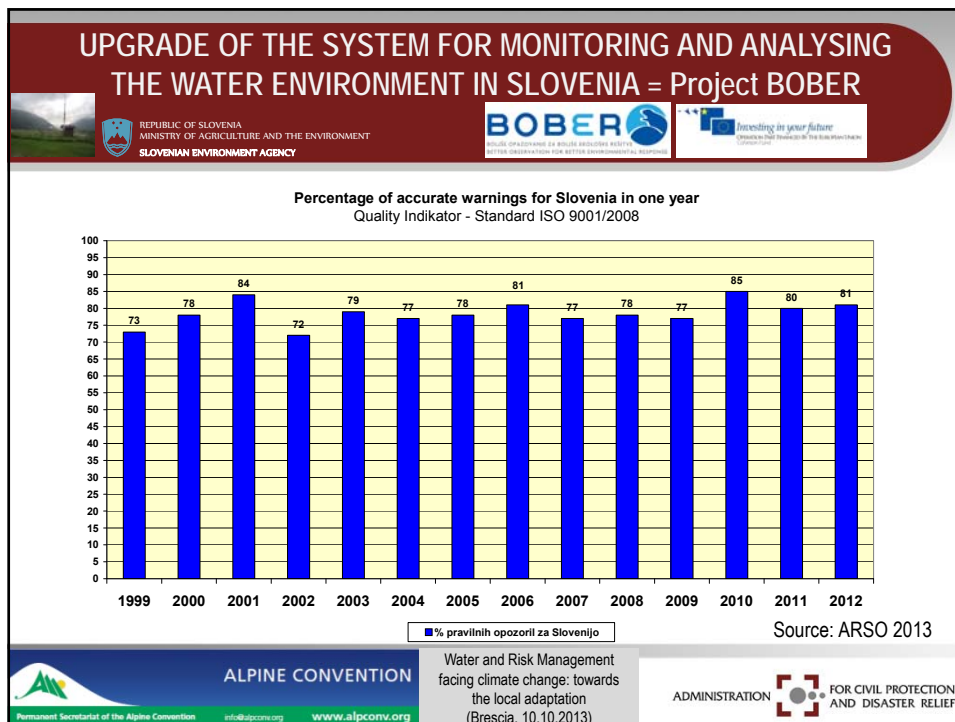




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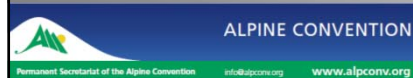
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MASPREM – A PROJECT FOR LANDSLIDE HAZARD FORECAST IN SLOVENIA

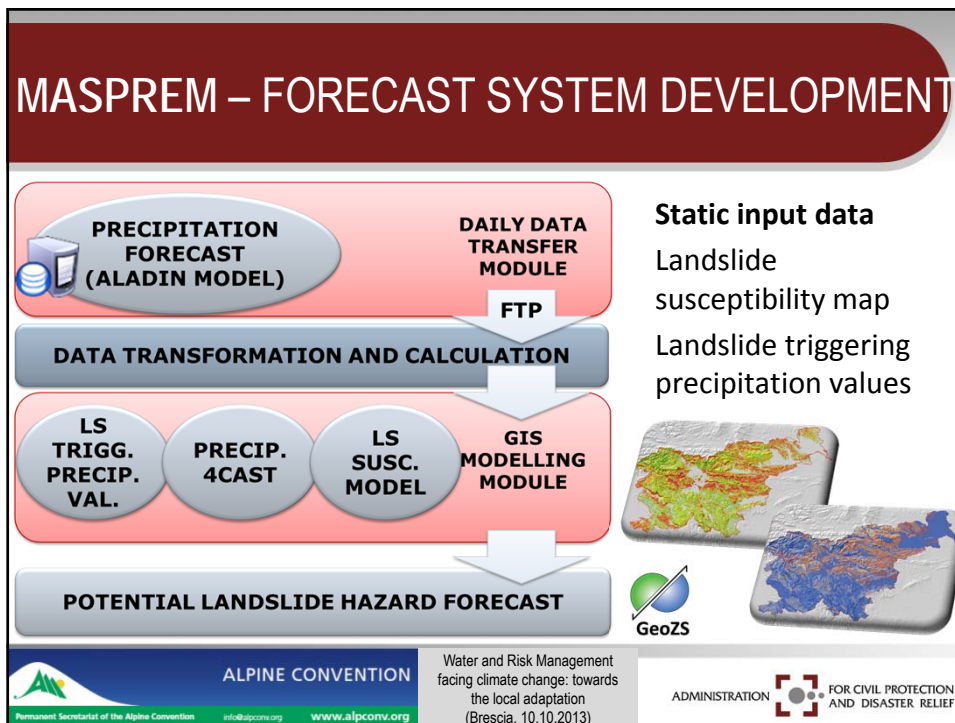
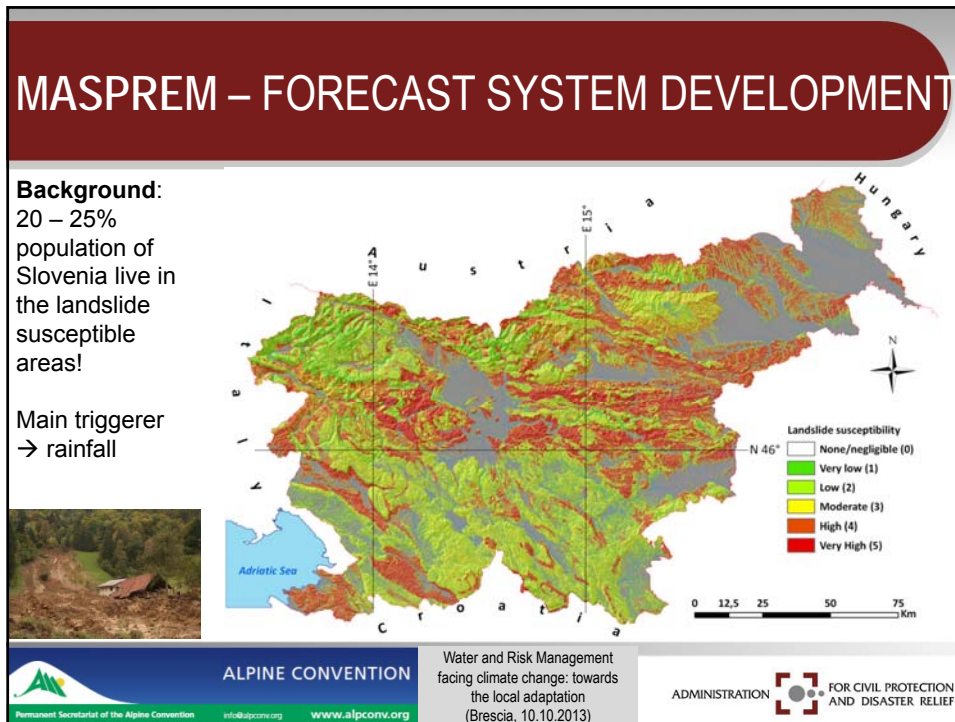
Project goal:

To develop a **landslide forecast system** (and an early warning in later stage) that will, through a web application, inform/warn inhabitants of an increased landslide hazard as a consequence of heavy precipitation that would/could exceed the threshold landslide triggering values.



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MASPREM – FORECAST SYSTEM DEVELOPMENT

Combining static and dynamic data brings many challenges (data transfer, data transformation, data calculation...)

SW and HW are in a stage that allows online real-time potential landslide hazard forecast

Better knowledge of the LS triggering processes would be appreciated, but

The biggest challenge still lies upon meteorologists!

Optimization of model with forecast calculations for known events in the past

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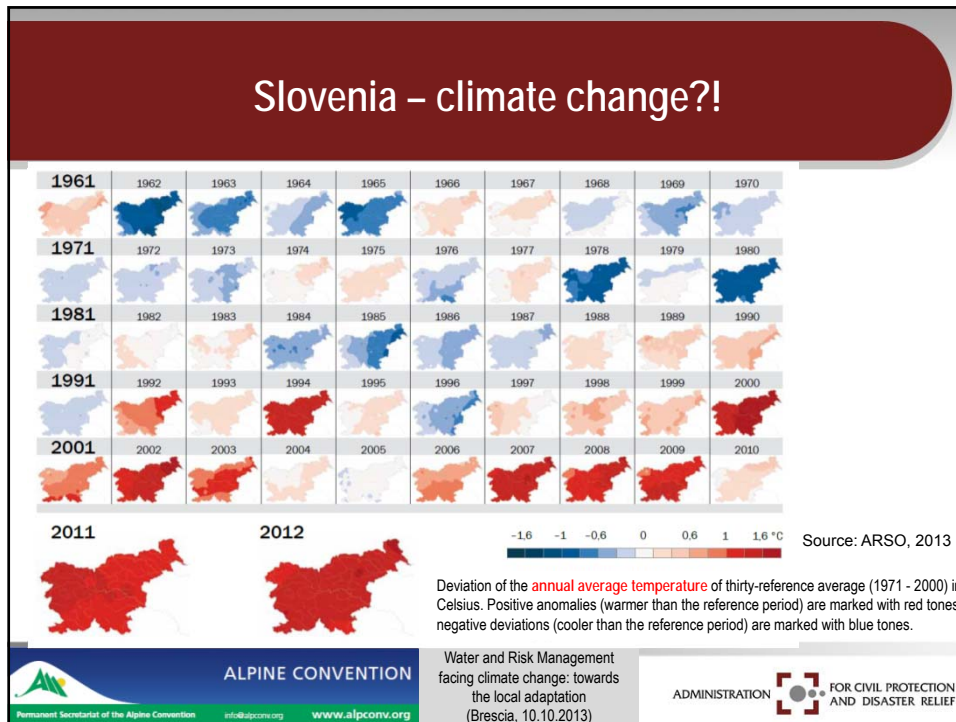
Slovenia – alpine country

Country	% of area	% of population
France	21.42%	16.68%
Schweiz/Suisse/Svizzera/Svizra	13.07%	12.33%
Monaco	0.001%	0.23%
Italien	27.88%	33.79%
Leichtenstein	0.88%	0.22%
Deutschland	5.84%	10.11%
Österreich	28.46%	33.79%
Slovenija	3.55%	2.85%

ca. 720 km² (area)
ca. 58.500 (population)

- It covers 20,273 km²
- population of 2.05 million

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Slovenia – climate change mitigation, adaptation

There are activities in the area of climate change adaptation currently undertaken or planned by the „newly“ formed **Ministry of agriculture and the environment** (2012)

National adaptation strategy	Adopted, completed and submitted for adoption	National Adaptation strategy for forestry and agriculture (2008) Strategy for the transition of Slovenia to a low carbon society by 2060 (1st draft 2010, 2. draft 2012)
Action plans	Adopted, planned	Action plan for 2010 and 2011 of the National Adaptation Strategy for forestry and agriculture
Impacts, vulnerability and adaptation assessments	no nation-wide comprehensive assessment for all sectors exists	Vulnerability of Slovenian agriculture and forestry to climate variability and first impact assessment (2004) Climate variability in Slovenia and its impact on the aquatic environment (2010)
Research programs	Currently being undertaken	Slovenian Research Agency: Target Research Programmes
Climate services / Met Office	Established	National Meteorological Service of Slovenia
Web portal	Online	Slovenian Environment Agency: Climate Change
Monitoring, Indicators, Methodologies	Established, being developed	Indicators of environment in Slovenia – climate change

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THANK YOU FOR YOUR ATTENTION

Additional informations:
Uprava Republike Slovenije
za zaščito in reševanje
(Administration of the Republic
of Slovenia for Civil Protection
and Disaster Relief)

Milica.Slokar@urszr.si

www.sos112.si



Additional informations:
Hidrotehnik d.d.,
Slovenčeva 97, Ljubljana

Joze.Papez@hidrotehnik.si

www.hidrotehnik.si



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