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Session V. Transboundary & international cooperation

# TOWARDS SUSTAINABLE RIVER BASIN MANAGEMENT IN THE SAVA RIVER BASIN

**Deputy Secretary of the ISRBC** 

Jovana Rašeta Bastić





International Sava River Basin Commission -in brief-



1 International multilateral agreement

4 Countries

National/entities' institution responsible for FASRB implementation

4 Protocols covering specific issues

11 Expert groups (permanent, ad-hoc, task)

162 Experts involved in group works

FRAMEWORK AGREEMENT ON THE SAVA RIVER BASIN

PROTOCOL ON THE
NAVIGATION REGIME TO THE
FRAMEWORK AGREEMENT
ON THE SAVA RIVER RASIN

PROTOCOL ON FLOOD PROTECTION TO THE FRAMEWORK AGREEMENT

PROTOCOL ON PREVENTION
OF THE WATER POLLUTION
CAUSED BY NAVIGATION TO THE
FRAMEWORK AGREEMENT

PROTOCOL ON SEDIMENT MANAGEMENT TO THE FRAMEWORK AGREEMENT



**Objectives of the FASRB** 

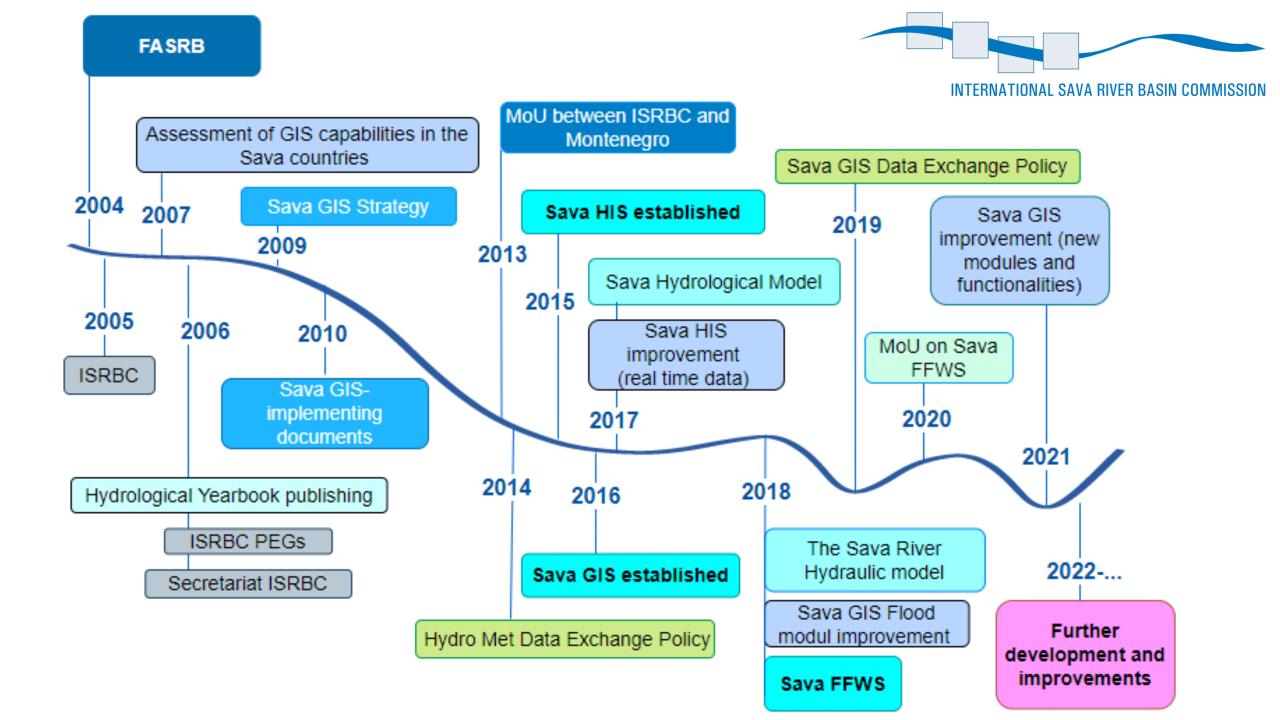
AIM OF THE **FASRB** IMPLEMENTATION

Sustainable development of the region through transboundary water cooperation

**Safe navigation** 

Sustainable water management

Accidental and hazard prevention, management and control





## **Geographical Information System of the Sava River Basin – Sava GIS**

#### Common platform for information and knowledge about WRM in the basin sharing and dissemination

#### Sava Geoportal www.savagis.org

- Public users:
  - Overview of public spatial data
  - Viewing attributes and features
  - Filtering by attributes or spatial data
  - Exporting areas of map to PDF or PNG format
- Registered users
  - Data upload & download (relevant authorities and institutions)

#### Sava Metadata Catalogue <a href="https://www.savagis.org/metadatacatalogue">www.savagis.org/metadatacatalogue</a>

Currently available data and metadata:

- RBM related datasets
- FRM related datasets







## Hydrological Information System of the Sava River Basin -Sava HIS

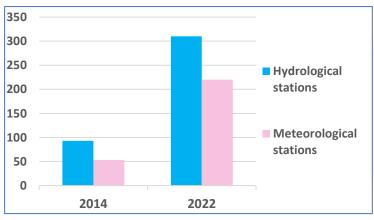
Common platform for sharing and dissemination of HM data and information in the basin and the channel for exchanging and viewing HM data and information in emergency situations (e.g. floods)

#### Data base

- Historical (processed) HM data
- Real-time HM and SED data
- Hydrological Yearbook (2000-2018)
- Joint H-measurements at border sections (since 2013)

#### Standards

- INSPIRE
- WMO resolutions
- WaterML 2.0



Hydrological	ВА	HR	ME	RS	SI	Total
		131	11		32	310

Parameter	Temporal Resolution		
River, Lake or Reservoir	Daily (Mean)		
Level/Stage	Hourly		
River Discharge	Daily (Mean)		
River Discharge	Hourly		
Water Temperature	Daily (Mean)		
Suspended Sediment Discharge	Daily (Mean)		
	Hourly (Turbidity)		
Ice Condition	Daily		

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Meteorological	BA	HR	ME	RS	SI	Total
Stations	78	49	5	12	76	220

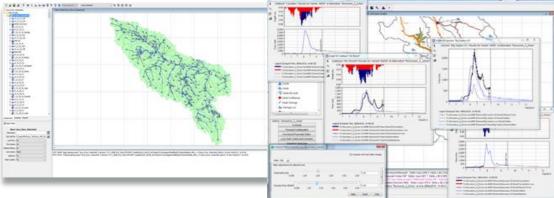
Parameter	Temposal Resolution		
	Annual (Total)		
	Monthly (Total)		
Precipitation	Daily (Total)		
	6/12 Hourly (Total)		
	Hourly (Total)		
Air Tompovoturo	Daily (Mean)		
Air Temperature	Hourly		
Balanius Humidias	Daily		
Relative Humidity	Hourly		
Mind (Grand and Divertion)	Daily		
Wind (Speed and Direction)	Hourly		
Snow Depth	Daily		
Evaporation	Daily (Total)		
Solar Radiation	Daily		
Sunshine	Daily (Total)		
Atmospheric Pressure	Daily		



# Hydrological and hydraulic modelling

Hydrologic model (HEC-HMS) of the Sava River Basin (2010, 2014, 2016, 2020)

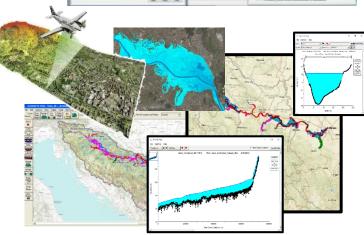
- 19 sub-models integrated in 1 model
- 17 for the main tributaries
- calibrated and re-calibrated
- 22 dam locations for the reservoirs analysis



## **Hydraulic model (HEC-RAS)**

of the **Sava River** (2012, 2018, **2021**)

- Accurate terrain model (LiDAR)
- 1D/2D simulation possibilities
- Levee breach analysis



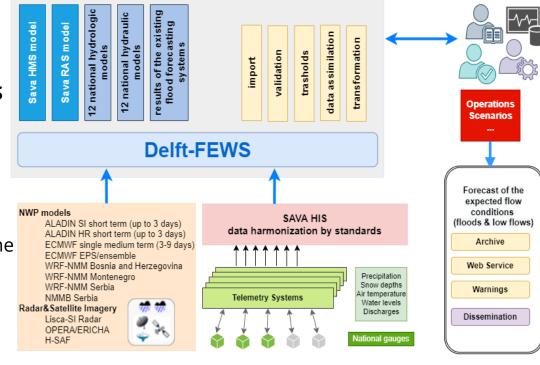


### Sava FFWS

#### MoU on cooperation on regular functioning and maintenance of Sava FFWS

- Joint hosting and maintenance
- Using and forecasting (with individual warnings per countries)
- Evaluation and assessment of the work performed
- Joint financing (by contribution of the countries, on equal basis)
- Real costs of all activities at the international level in accordance with the System roles and responsibilities
- Further developments, regular training of the engaged personnel

#### **Organizational structure**



# TECHNICAL GROUP

International Forecasting Team (9 members)

International Support Team (9 members)

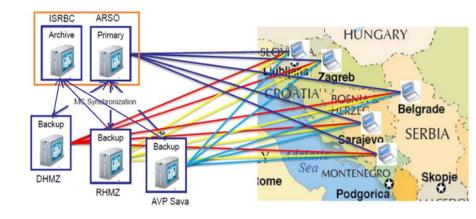
International Development Team (10 members

STEARING GROUP

10 members

Assess, evaluate and approve all activities performed ISRBC 8 members

Decision making, final approval





## **Ongoing Projects**

Sustainable Historic Environments hoListic reconstruction through Technological Enhancement and community-based Resilience (SHELTER)

#### **Local objective**

- Improvements of Sava GIS and
- integration of CHH
- dataset into the system

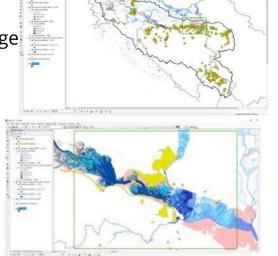


Development of the methodology for assessment of flood hazard risk on the cultural-historical and natural heritage

Sava GIS Geoportal

Sava GIS Geoportal

Account of the Management State and south conditions and the Management State of the M



#### all relevant sector involved

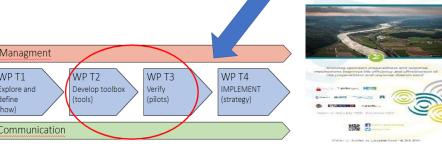
- 2 pilot areas analysed
- 2 scenarios
- flood extent & depths
- 3D visualization

## **Wa**ter **Co**ntingency **M**anagement in the Sava River Basin (**WACOM**)

Main objective: reduction of environmental risks related to accidental pollution and floods, especially those which have or might have transboundary impact in the Sava River Basin by developing

**Scope**: activation of Protocols on Flood Protection, Prevention of Pollution Caused by Navigation, and Emergency situations to the FASRB

WACOM toolbox-system design **SAVA GIS Upgrade**-development of data framework for the accidental pollution and navigation



Interreg I



# Sava Drina Integrated Development Programe -future steps-

- GEF grant
- Based on the Joint Plan of Actions for the Sava River Basin (2017)
- 2 phases 10 years
- National and regional (basin-wide) component
- ISRBC- regional component facilitation and implementation

#### Planned activities:

- a new hydrological study
- climate change adaptation strategy
- sediment study as well as preparation of the first Sava SM plan
- regional strategy for ecotourism development
- further improvements of Sava GIS /HIS and Sava FFWS (Flood impact analysis, Water resources modeling, Navigation purposes)
- updates of the Sava RBM and FRM plans

Increased economic growth and regional integration Impact Improved Sava Waterway Established platform for Medium nd climate change mitigated, connecting people, increase ransboundary collaboratio term romote investments in critical results investment in the corridor businesses and services Short Improved flood forecasting and management capacity Upgrading capacity of Sava waterway, connectivity, logistics and services term Environmentally sustainable re development of river courses attractive for tourism results Enhanced management of Drina cascade of dams (energy vs floods vs drought) Enabling regional economic integration, institutional support and project management · Studies and dialogue for economic integration · Institutional support and project management Tourism Development in Sava/Drina Corridor Component 2:

Sustainable Management of

Environmental Assets and Cascade of Dams in Drina Corridor

Improving management of

multipurpose dams for sustainable

Basin planning

hydro power Flood and drought

Integrated Development of

the Sava River Corridor

· Port Modernization and Services

· Upgrading of Sava Waterway and

· Flood monitoring & Risk mitigation

development (more room for the

Environmental protection and

Basin planning



# Thank you !!!

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