INFORMATION SYSTEMS FOR WATER RESOURCES MANAGEMENT

MOZAIKA

space4water
Stakeholders Meeting

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72% of all water withdrawals are used by agriculture, 16% by municipalities for households and services, and 12% by industries.

2.3 billion people live in water-stressed countries, of which 733 million live in high and criticallywater-stressed countries.

1.42 billion people – including 450 million children – live in areas of high or extremely high water vulnerability.

https://www.unwater.org/water-facts/scarcity/

A SIGNIFICANT CAUSE OF THESE CHALLENGES IS CLIMATE CHANGE.

NO COUNTRY – DEVELOPED OR DEVELOPING – IS IMMUNE.

Water is the primary vehicle through which we feel the impacts of climate change.

To effectively address both water and climate challenges,

we must bring climate change and water to the same table – into the same conversation:

Tackling them as one.

https://public.wmo.int/en/media/press-release/water-related-hazards-dominate-disasters-past-50-years

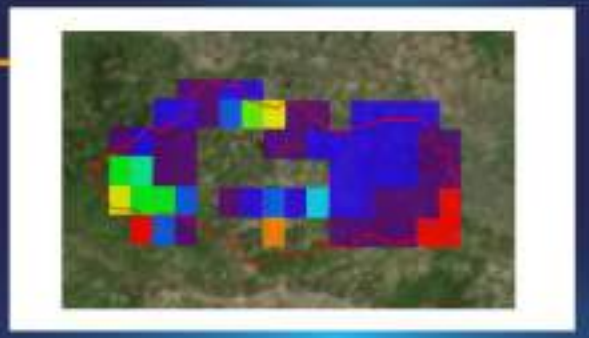
PUBLIC AND PRIVATE WATER MANAGERS NEED TO MAKE CRITICAL DECISIONS

- for sustainable development
- prevention of water scarcity
- handling hazardous situations
- energy generation potential

THE PROBLEMS

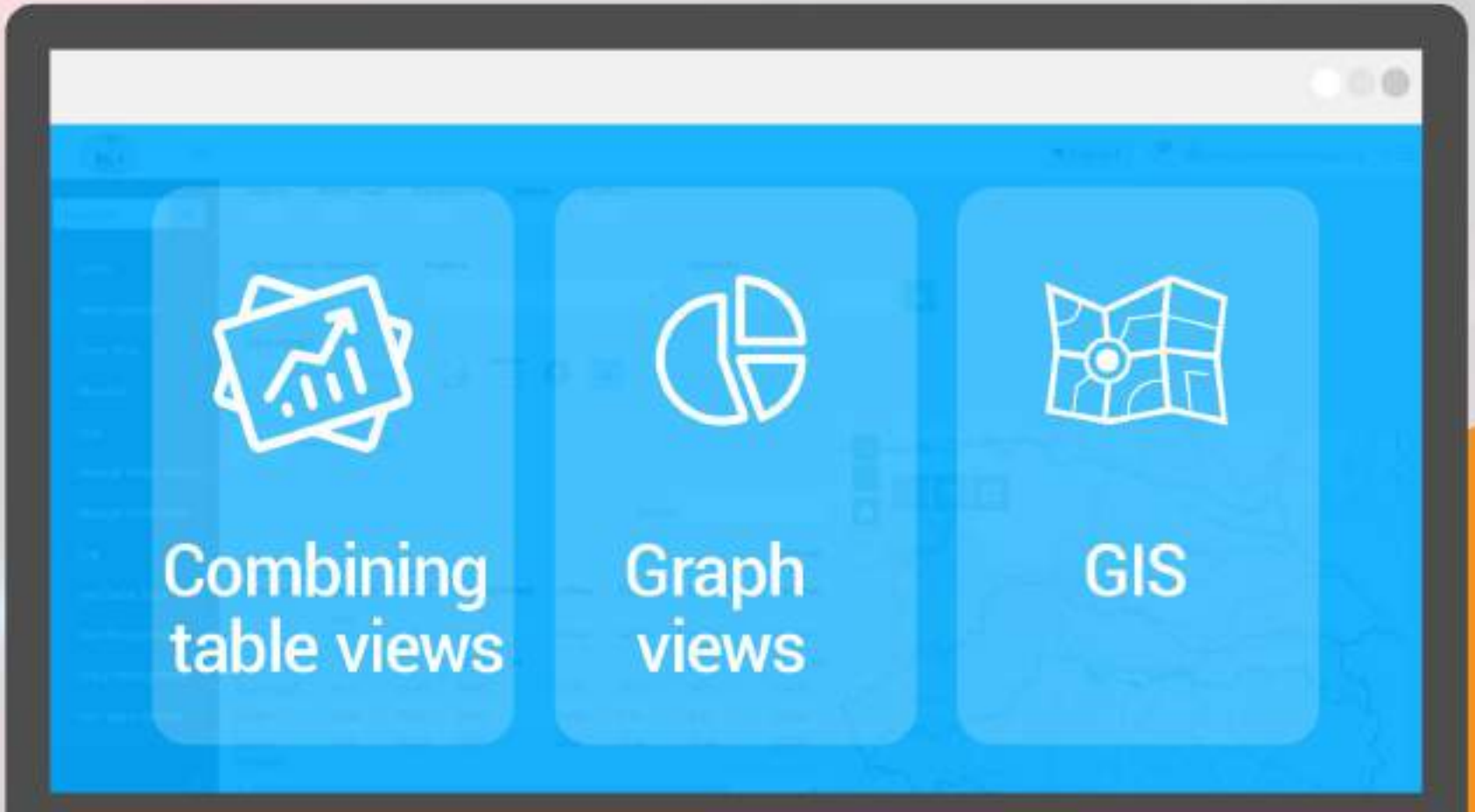
1. Difficulties decision making due to disjointed data sources
2. Increased risk of overflow or drought due to inaccurate projected water levels from traditional models
3. Avoidable management issues caused by lack of input data validation
4. Time consuming reporting to keep management informed of the dam status

WATER RESOURCES MANAGERS DAILY RESPONSIBILITIES

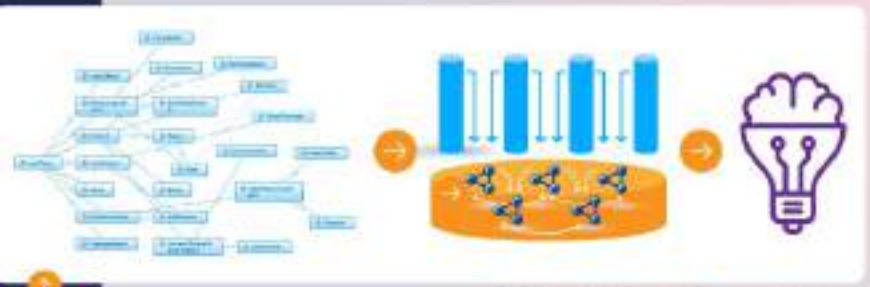


AUTOMATING ROUTINE TASKS AND DE-RISKING COMPLEX TASKS

ISME-HYDRO IMPROVES OPERATIONAL EFFICIENCY



SEMANTIC INFRASTRUCTURE FOR WATER MANAGEMENT



INFORMATION INFRASTRUCTURE

- Easy interlinking
- Efficient storage
- Interoperability
- Easy extendibility

NETWORK OF CONNECTED OBJECTS

NEURAL NETWORKS

METEOROLOGICAL AND ENVIRONMENTAL FACTORS

Turbidity

Surface reflection

Precipitation

Snow cover

Soil moisture

Wind

Vegetation index

Solar radiance

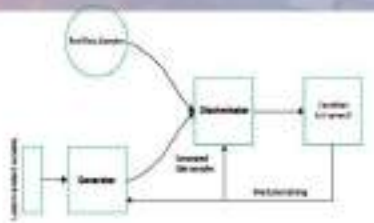
Velocity

FORECASTING METHOD – EO4GEO

Satellite data

Geospatial position

In-situ measurements



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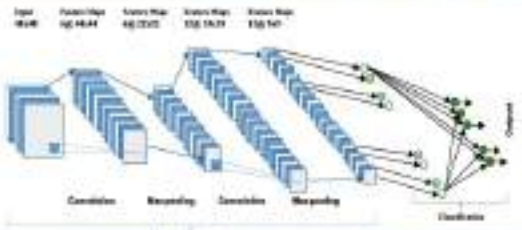
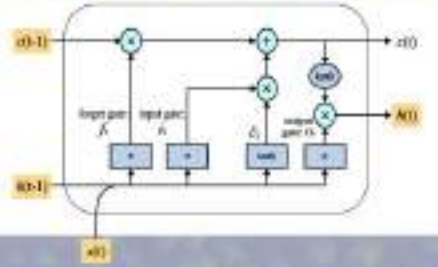
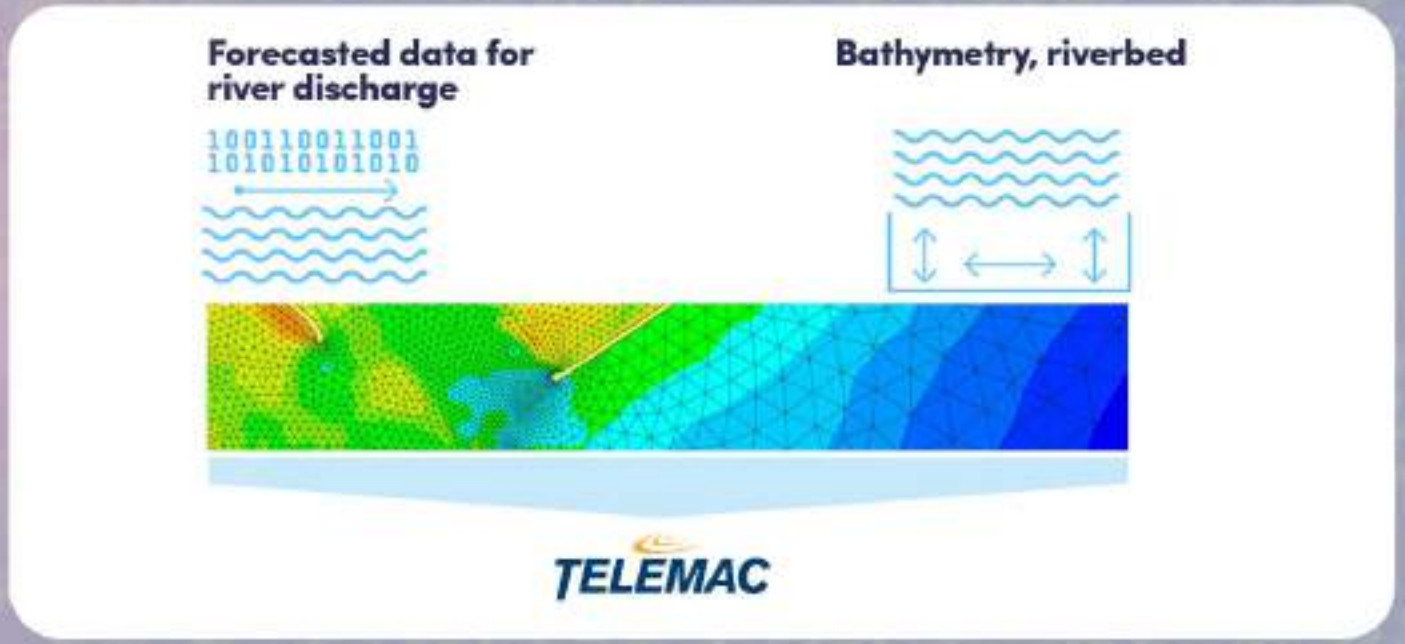


CNN

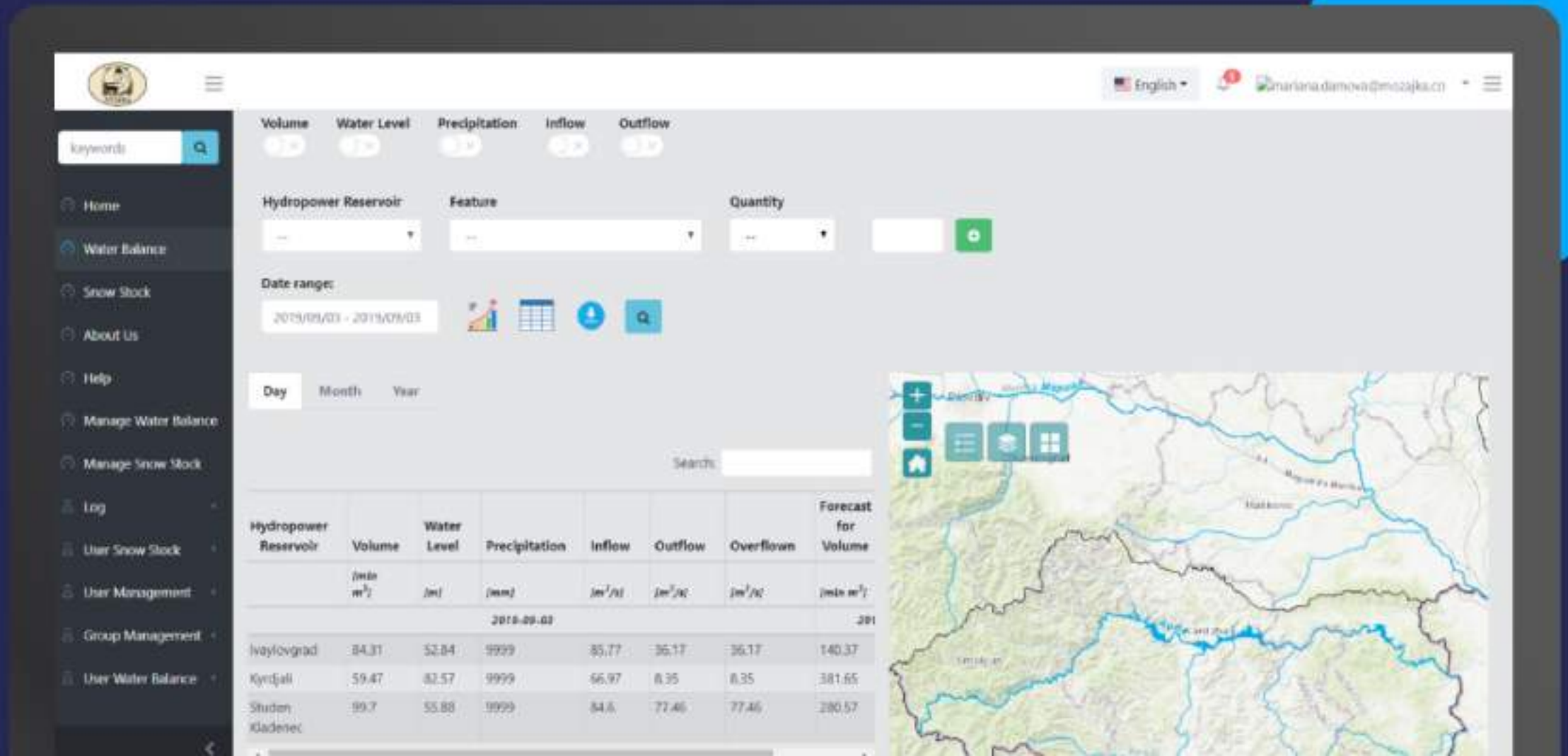


LSTM

FORECAST OF RIVER DYNAMICS



THE APPLICATION – ISME-HYDRO



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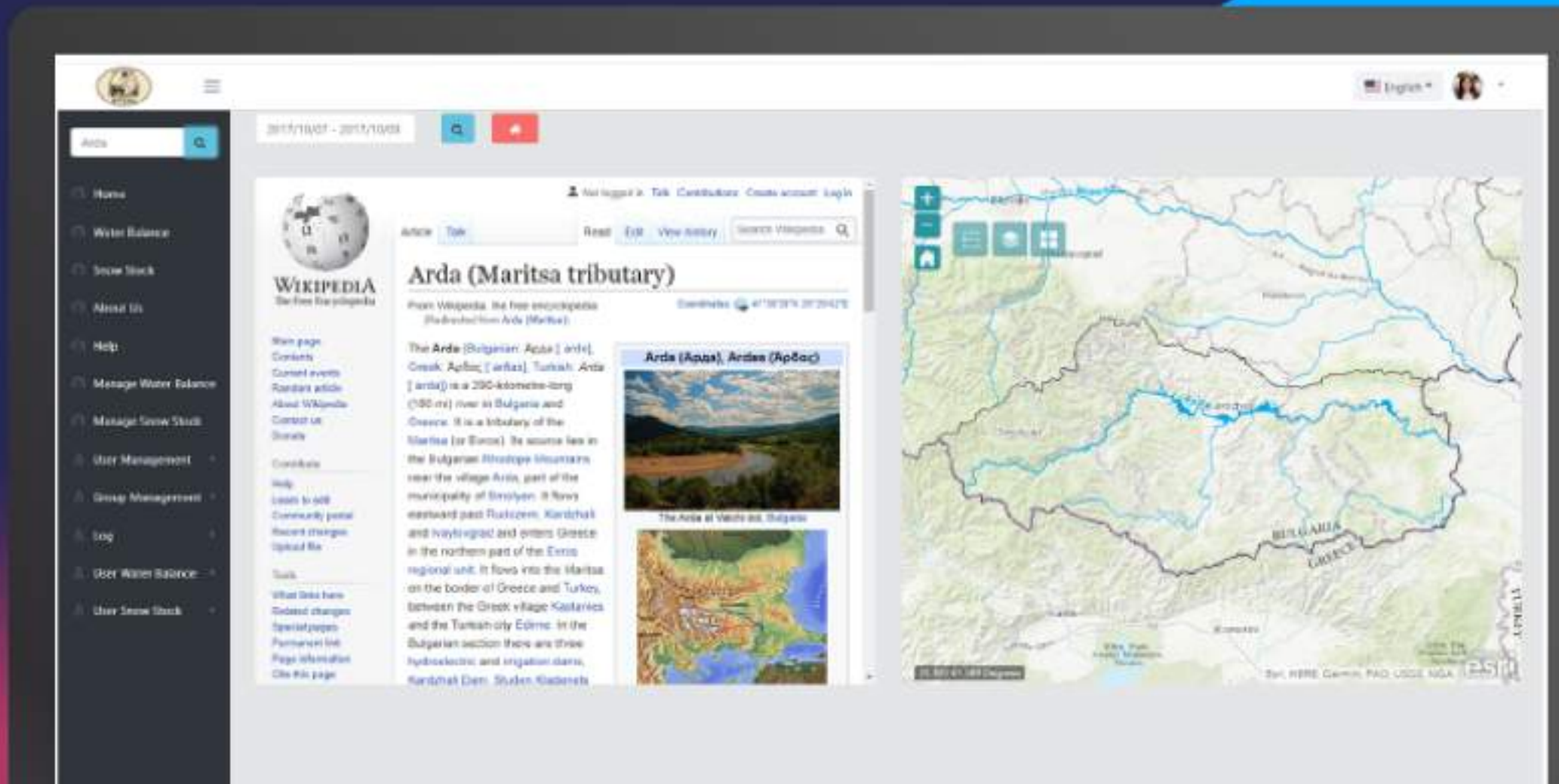
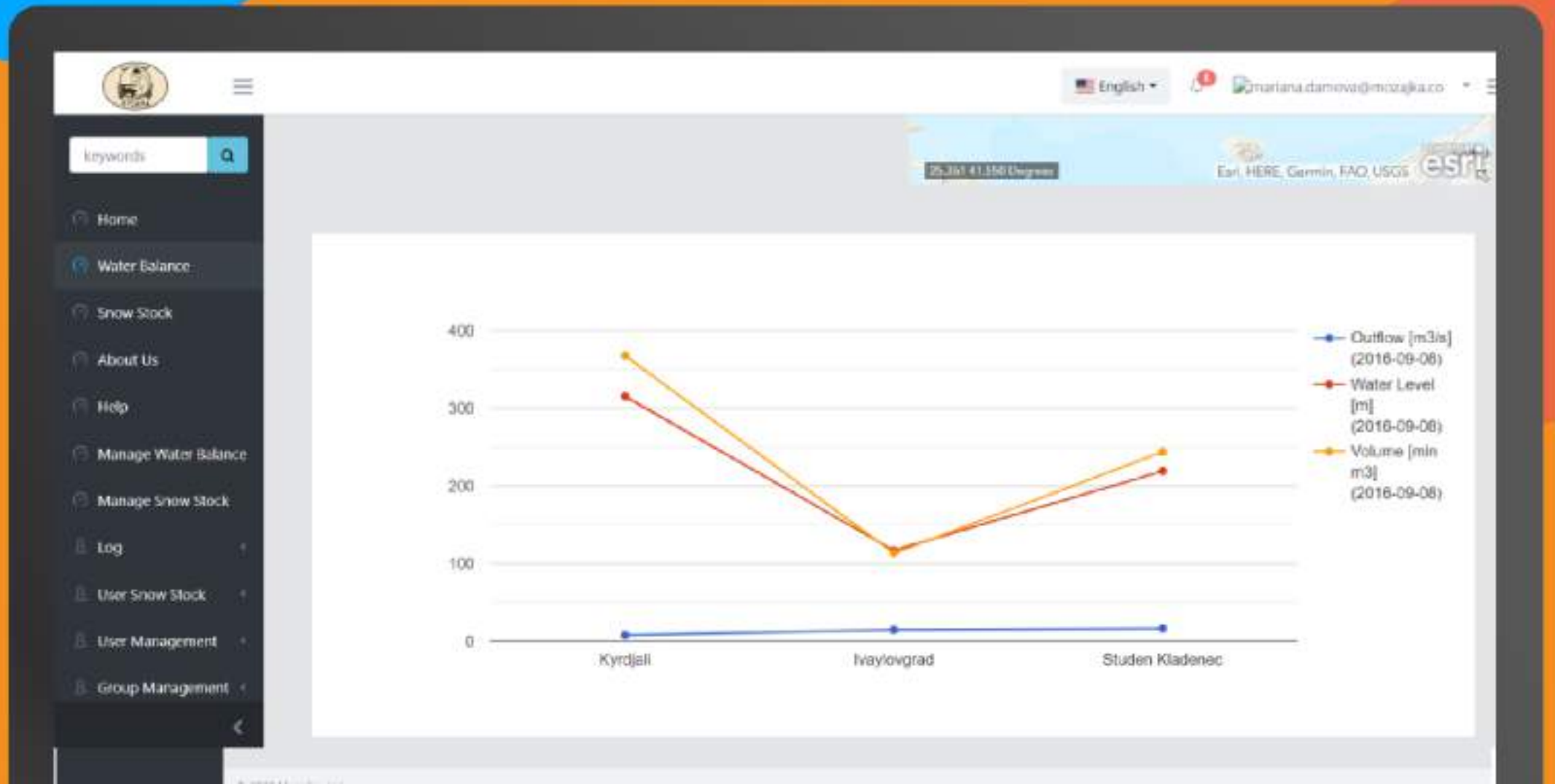
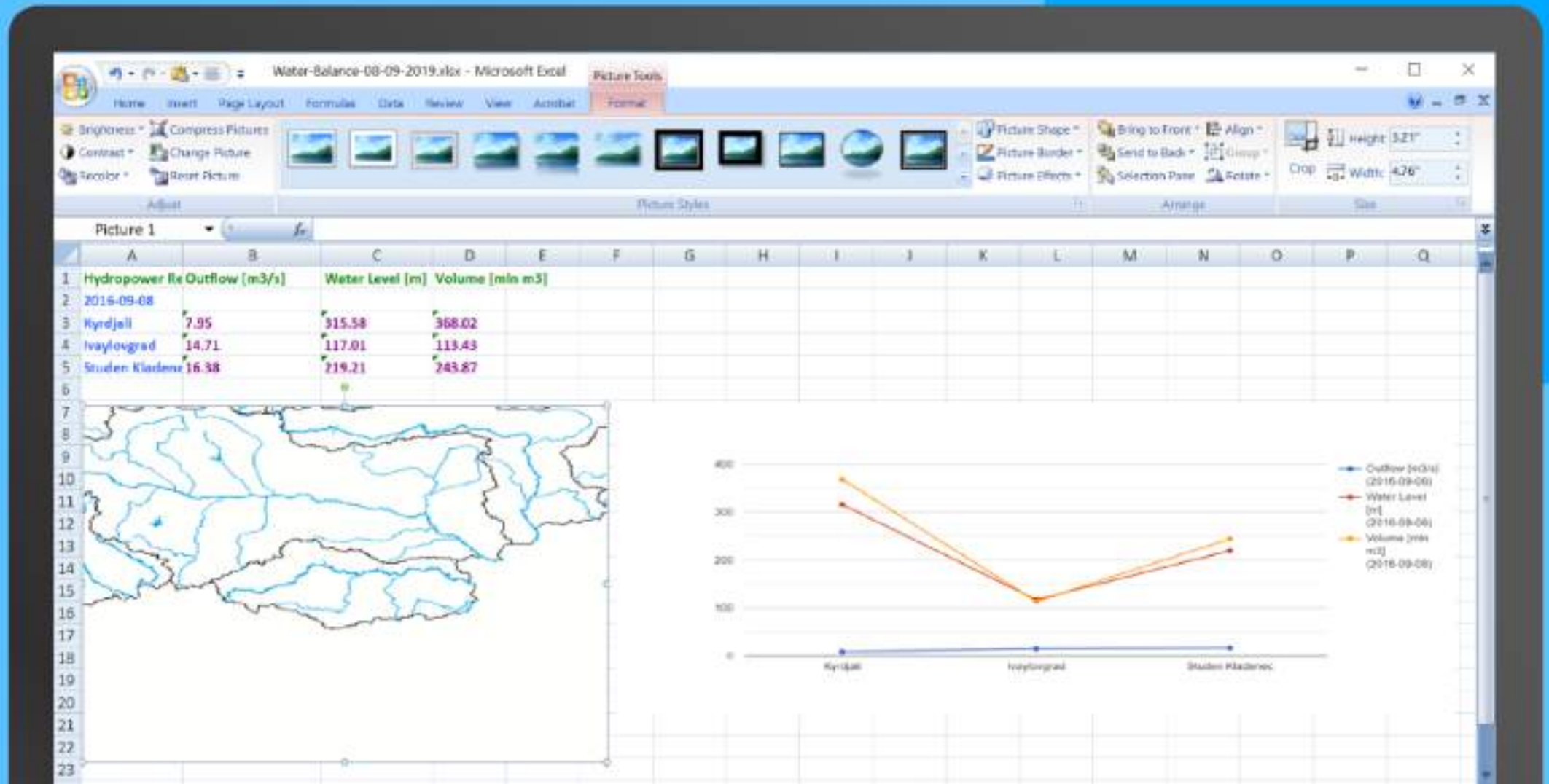


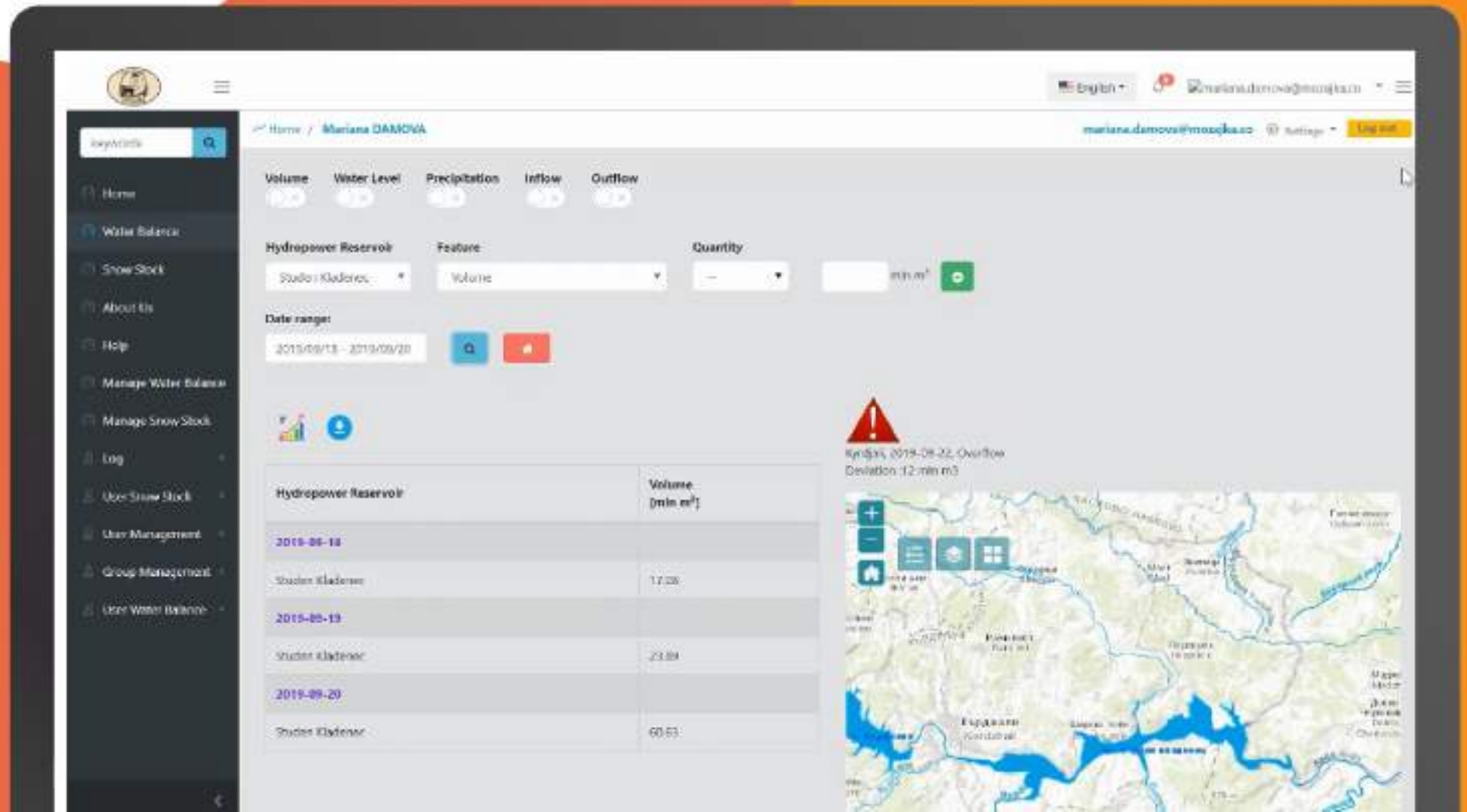
RESULTS IN GRAPHVIEW



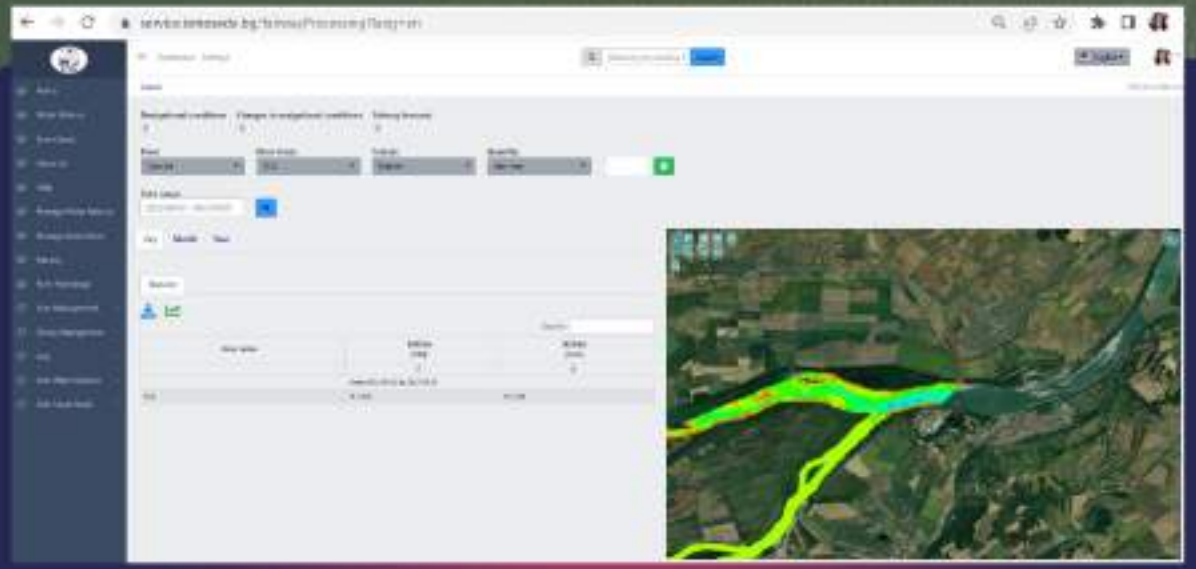
RESULTS DOWNLOADED INTO EXCEL FILE

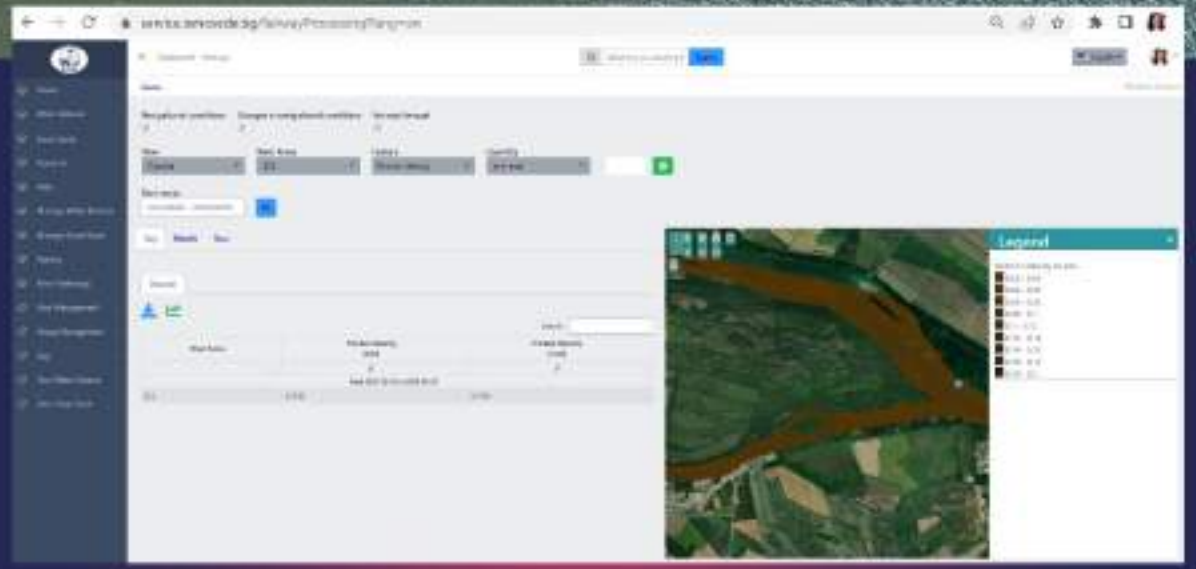


ALERTING

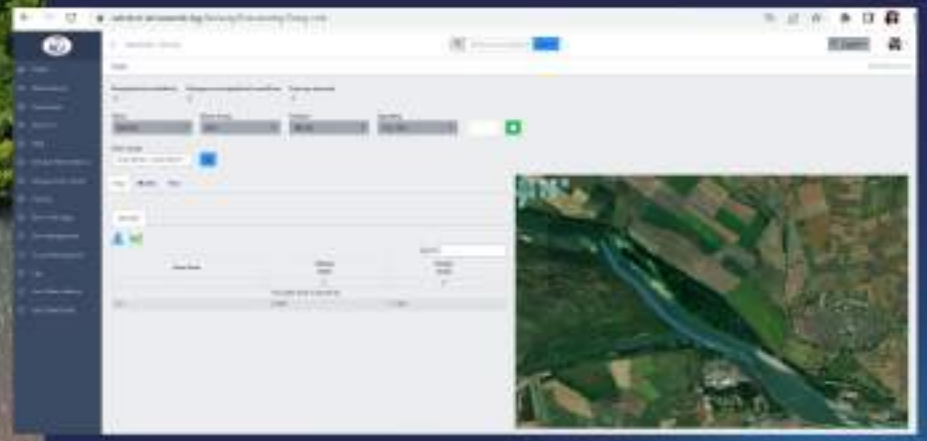

Home / Mariana DAMOVA
Volume
Water Level
Precipitation
Inflow
Outflow
Hydropower Reservoir
Feature
Quantity
Date range:
Home
Water Balance
Snow Stock
About Us
Help
Manage Water Balance
Manage Snow Stock
Log
User Snow Stock
User Management
Group Management
User Water Balance
Hydropower Reservoir
Volume [mln m³]
2019-09-18
2019-09-19
2019-09-20

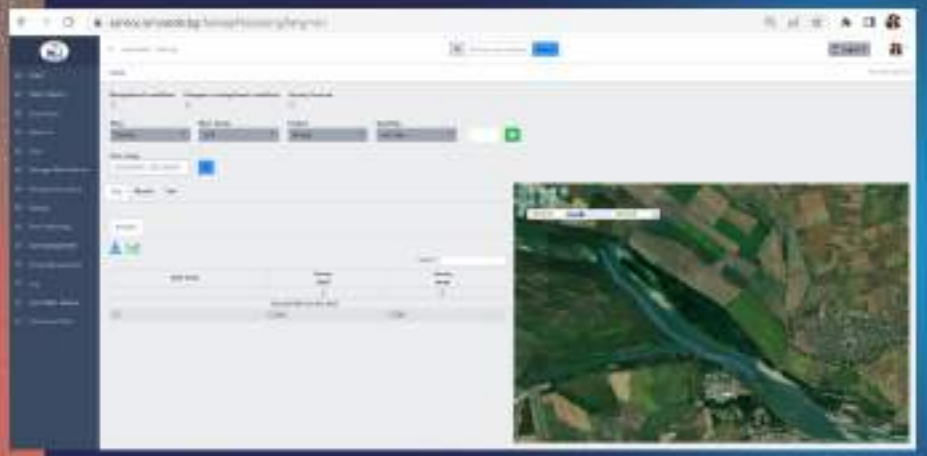
INTEGRATION OF THE FORECASTED HYDRODYNAMIC MODEL INTO A WEB-BASED WORKFLOW BASED ON LINKED DATA E-INFRASTRUCTURE





FAIRWAY MODIFICATION VISUALIZATION





A NOVEL WAY TO PROVIDE INFORMATION

The forecasts are integrated into the linked data infrastructure and are made available for further use such as

- querying
- alerting
- reviewing
- analysing

USER INTERFACE LEVEL

Data Consumer

Data Auditor

Admin

ISME-HYDRO – AN INTEGRATED INFORMATION SYSTEM FOR THE BENEFIT OF WATER RESOURCES MANAGERS

a disruptive web-based workflow

that makes use of a combination of AI methods

and delivers a viable and hands-on solution

WE ARE READY TO ASSESS & DEPLOY ALL AROUND THE WORLD.

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http://www.isme-hydro.com