



Analysing, monitoring and modelling hydrological extremes: water scarcity and excess water

Department of Physical Geography and Geoinformatics
(DPGG)

University of Szeged, Hungary

We take the floor – partner search

György Sipos – gysipos@geo.u-szeged.hu



INSTITUTIONAL POTENTIAL

Academic staff: 14, PhD

PhD candidates, postdocs: 10-15

Number of research groups: 6

Publications: 50-60 pcs/year, if: 20-25/year



Number of projects: 5-6 pcs/year

Background: University of Szeged



PROPOSALS IN WATER MANAGEMENT

Drought and excess water monitoring, **novel solutions**

Modelling to locate vulnerable areas, **strategic planning**

Runoff modelling on lowland catchments, **enhance management**

Quantitative assessment of water resources, **enhance irrigation**

Water quality (irrigation, ground water), **environmental safety**

Structural analysis of rivers and floodplain, **decreasing flood risk**



Interreg



Danube Transnational Programme

MOST IMPORTANT FIELDS OF ACTIVITY

Climate change and drought research

Hydrological modelling

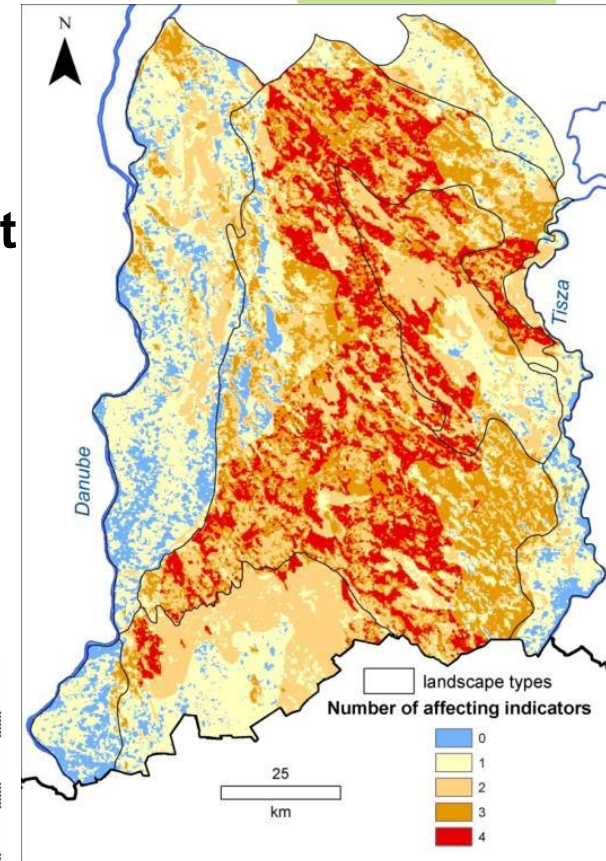
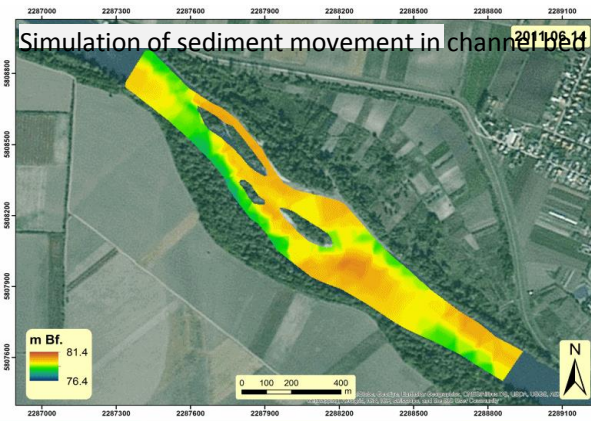
Environmental protection, risk assessment

Applied geomorphology

Landscape and urban ecology

GIS solutions

Geo and cultural heritage assessment





THANK YOU!

Contacts:

**Department of Physical Geography and Geoinformatics
University of Szeged**

**project@geo.u-szeged.hu
gysipos@geo.u-szeged.hu**

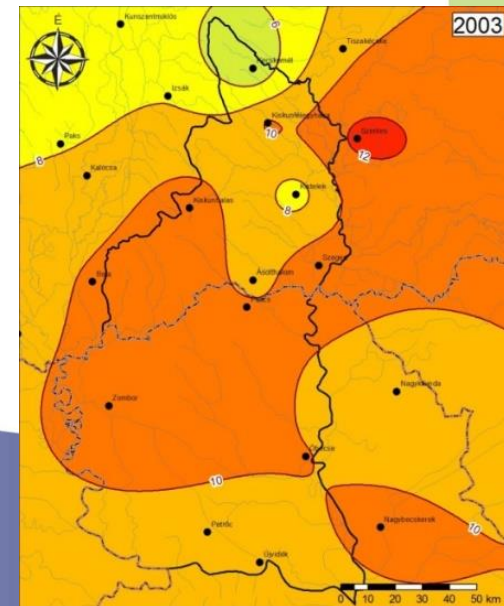
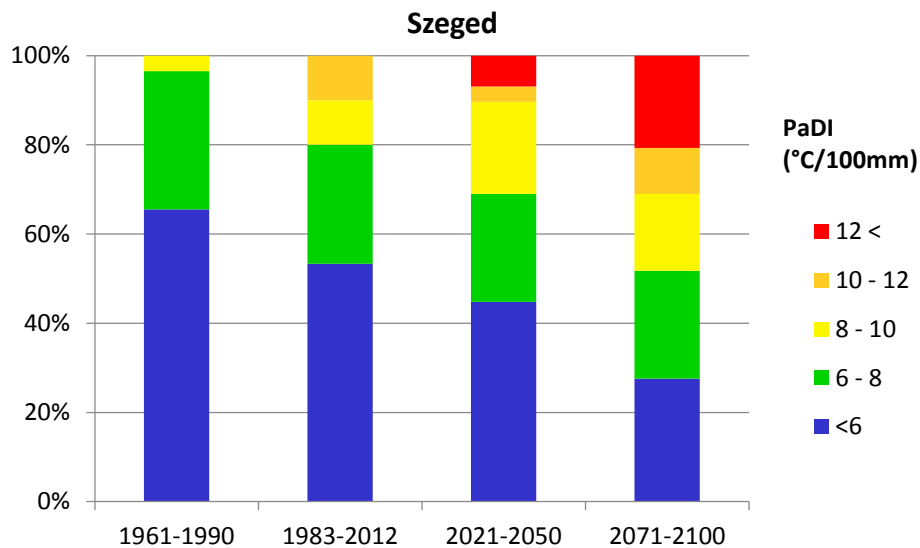
**<http://www.geo.u-szeged.hu/english>
<http://www.geo.u-szeged.hu/meriexwa/>
<http://wahastrat.vizugy.hu/>
<http://www.geo.u-szeged.hu/futumar>**

See thematic proposals below

THEMATIC PROPOSALS

Drought Early Warning System:

planning and elaboration of an integrated monitoring and forecasting system in the region which is able to assess the severity and risk of droughts to improve agricultural response to climatic extremes.



THEMATIC PROPOSAL

Drought Early Warning System:

- landuse optimisation
- improving vegetation indices
- soil moisture assessment via remote sensing and monitoring
- water retention and recharge, 0 runoff strategy
- irrigation by cleaned sewage waters
- environmental conflicts related to climate change
- soil transformation



THEMATIC PROPOSALS

Floodplain management, ecological corridors, wetlands:

Rehabilitation plans for larger and smaller waterflows in order to facilitate ecological continuity and diminish barriers.

- rehabilitation and restoration plans
- pilot projects
- flood modelling
- modelling of lowland small catchments
- ecological water retention

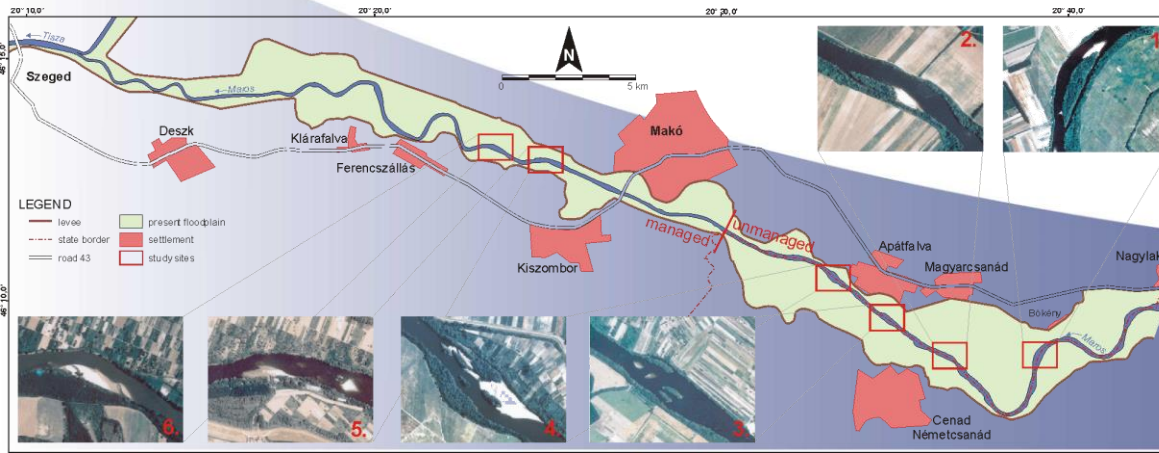


THEMATIC PROPOSALS

River sediment monitoring:

assessment and modelling of sediment delivery in order to evaluate processes affecting river management (e.g. navigation, sustainable extraction, engineering structures)

- sediment discharge quantification
- monitoring activity
- issues related to flood conductivity and water quality



THEMATIC PROPOSALS

Ground water hydrodynamics and quality:

assessment of groundwater flow, quality and quantity issues and opportunities by installing smart monitoring system and modelling groundwater level changes and available quantities at different climate and agricultural scenarios.

- water quality issues
- water quantity issues concerning irrigation
- ground water in urban space

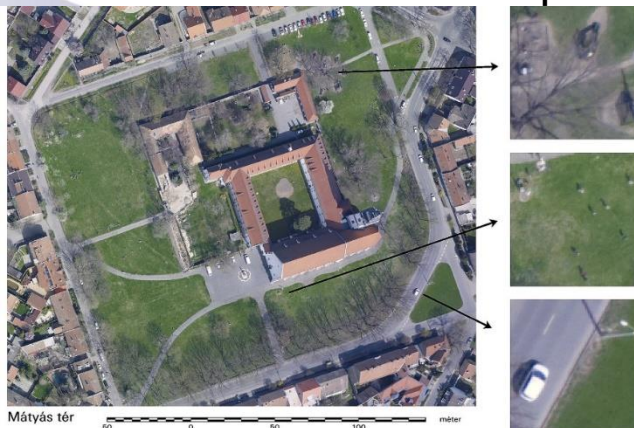


THEMATIC PROPOSALS

The urban landscape:

Investigation of urban areas with state-of-the-art remote sensing and geophysical methods to enhance municipal tasks such as sewage, vegetation, built up infrastructure management and city level climate strategy.

- high resolution and thermal imaging systems
- modelling urban runoff during extreme events
- utility mapping and utility GIS
- water quality issues
- water retention in the urban space, pilot projects



THEMATIC PROPOSALS

Cultural and geoheritage mapping:

Mapping and protecting underground cultural heritage and geoheritage: applying state of the art methods for surveying potential archaeological sites, developing predictive models for archaeological prospection, visualising and interactive dissemination of built heritage, increasing touristic potential. Thematic routes.

