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Assessment of measures for adaptation to present changes in climatic conditions in a central Bohemia catchment

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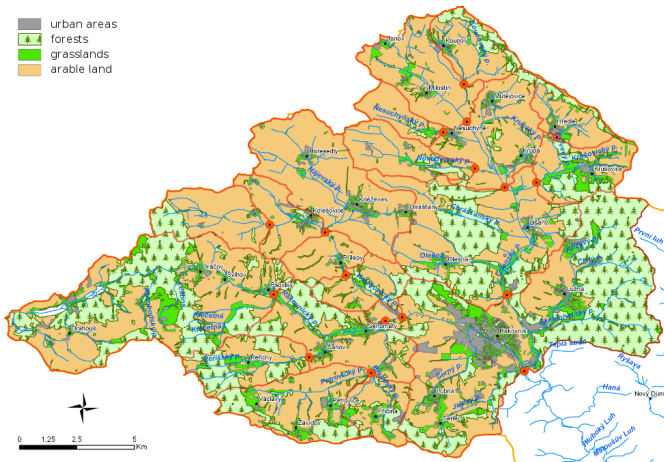
Overview

- ▶ catchment description
- ▶ methodology for catchments affected by climate change
- ▶ present and future hydrological conditions
- ▶ assessment of adaptation measures

- ▶ central Bohemia, outlet Rakovník, 302 km²
- ▶ low precipitation region (500 mm), runoff 80 mm



- ▶ agriculture, hopfields – irrigation demands
- ▶ water supply and industrial demands

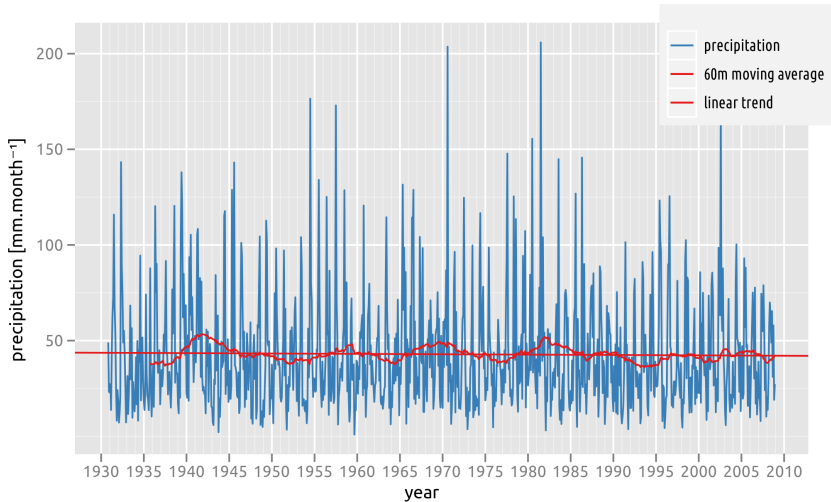


Methodology

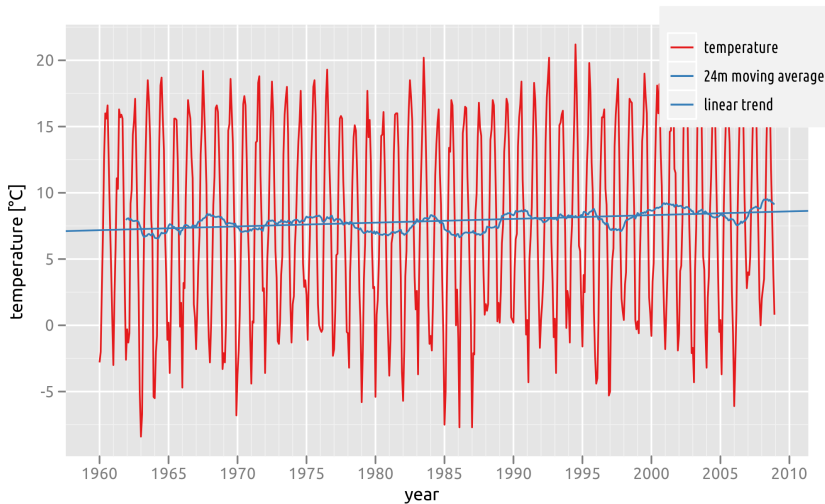
- ▶ description of current conditions
- ▶ detailed information about runoff and groundwater
- ▶ trend analyses of relevant variables
- ▶ modelling of hydrological balance
- ▶ estimation of future conditions
- ▶ design and assessment of adaptation measures

Present conditions

Precipitation amount

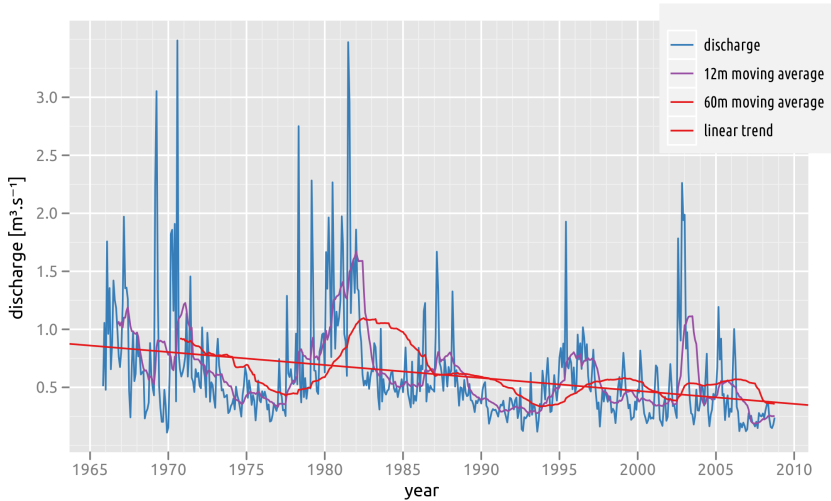


Air temperature



Present conditions

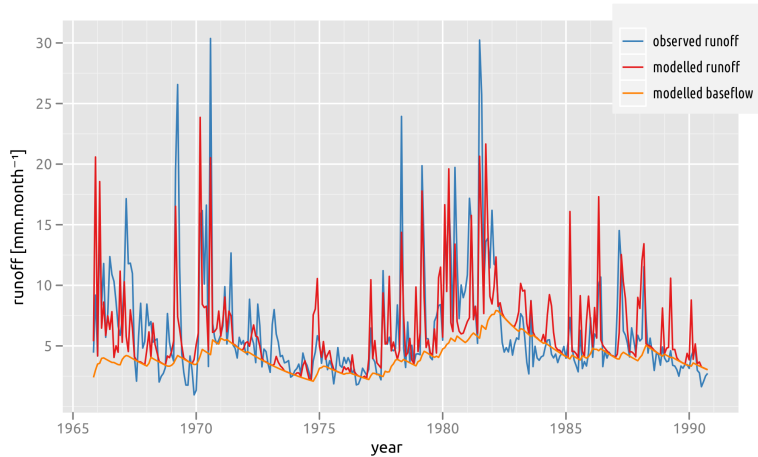
Catchment runoff



Present conditions

Hydrological balance modelling

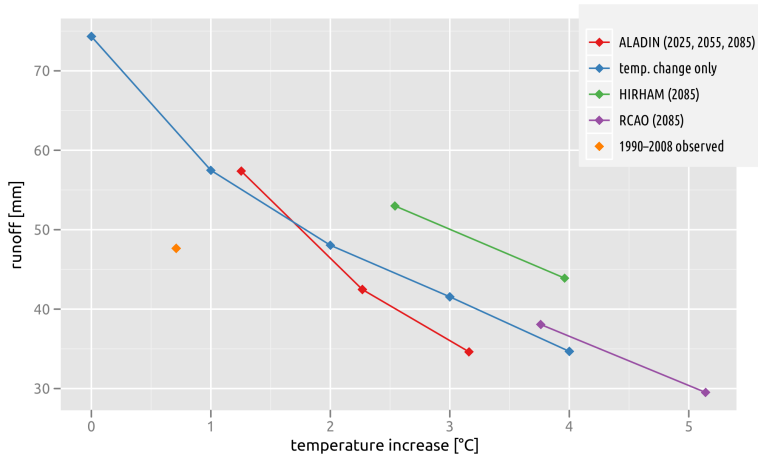
- conceptual model Bilan, period 1966–1990



Future conditions

Climate change scenarios

- PRUDENCE models, ALADIN-CLIMATE/CZ, temperature increase



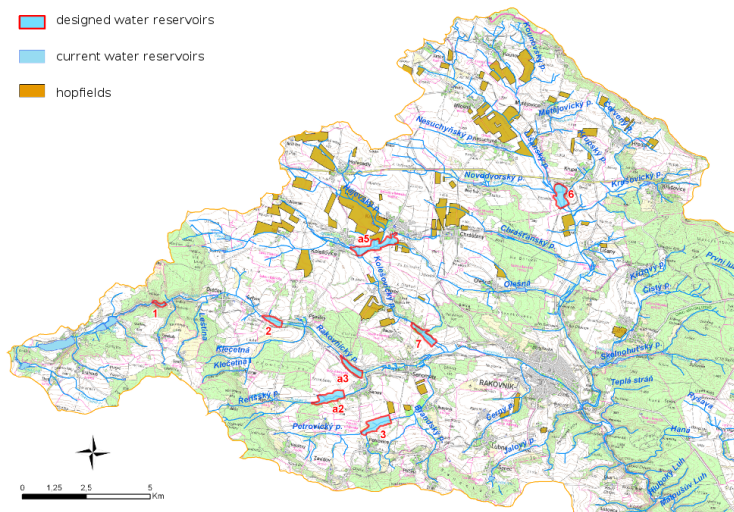
Designed measures

- ▶ agriculture measures
- ▶ river restoration
- ▶ set of small water reservoirs
- ▶ water transfer

Estimation of measures effect

- ▶ hydrological and hydraulic modelling
- ▶ increase of river discharge
- ▶ flood wave transformation

Design of small water reservoirs



Effect of measures

- ▶ agriculture, river restoration – no substantial runoff increase
- ▶ water reservoirs – operative, significant effect, unreliable for high temperatures
- ▶ water transfer – not operative, most reliable

Recommendations

- ▶ most suitable reservoir
- ▶ agriculture measures for soil conservation
- ▶ observations in catchment

Conclusions

- ▶ methodology for catchments affected by climate change
- ▶ application for the Rakovnický brook catchment
- ▶ analyses of current or future conditions
- ▶ water reservoirs and transfer as suitable measures

Thank you for your attention

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