

Optimalization of Water regimes on man-modified landscape impacted by hydrology extremes

(Case Study on the Morava River)

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▶ PROJECT

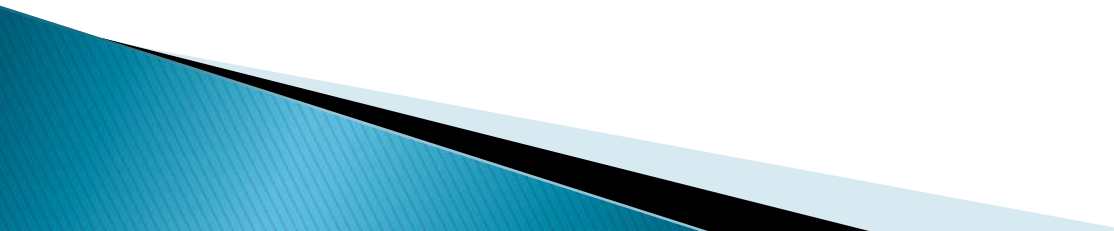
is focused on agriculture and forestry along rivers and flood plains to manage water resources and mitigate impact in flood and dry seasons.

▶ PURPOSE

is to elaborate a clear methodology of water regimes required for arable land, permanent grassland and forest.

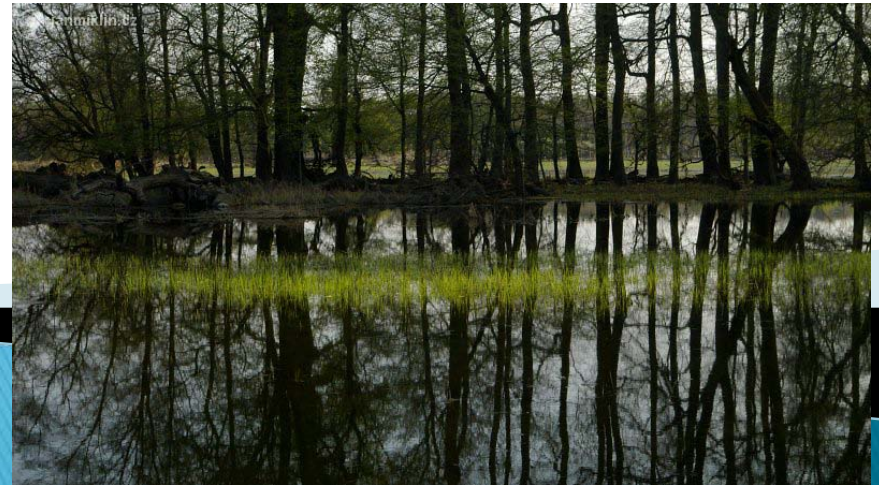
▶ AIM

is to apply a water balance model(s) for the proposal of biotechnical measures to optimise water regimes for growing crops and planting forest. Case study: The Morava river basin.



Forest mead and riparian vegetation

Norwegian Funds: 2. Environment
c. Aquaculture and Water Protection
vii. Water Interaction in Natural and Man-modified Landscape
with Particular Focus in Agricultural Landuse



The Morava river (Mikulcice – Lanzhot)

(flatter bows, deeper bottom, wider banks)



Gate to the Lanzhot polder (flood mitigation measure)



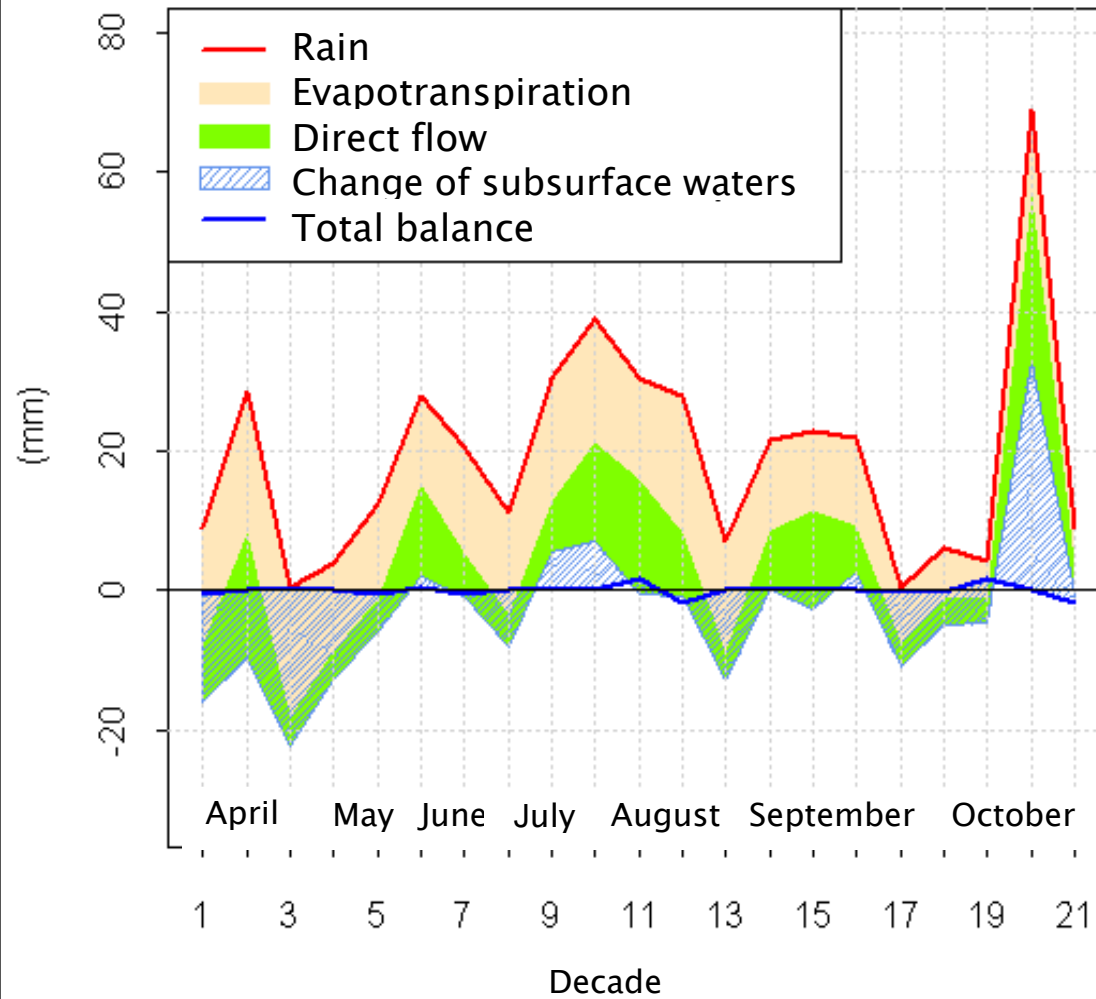
Gate system for water management



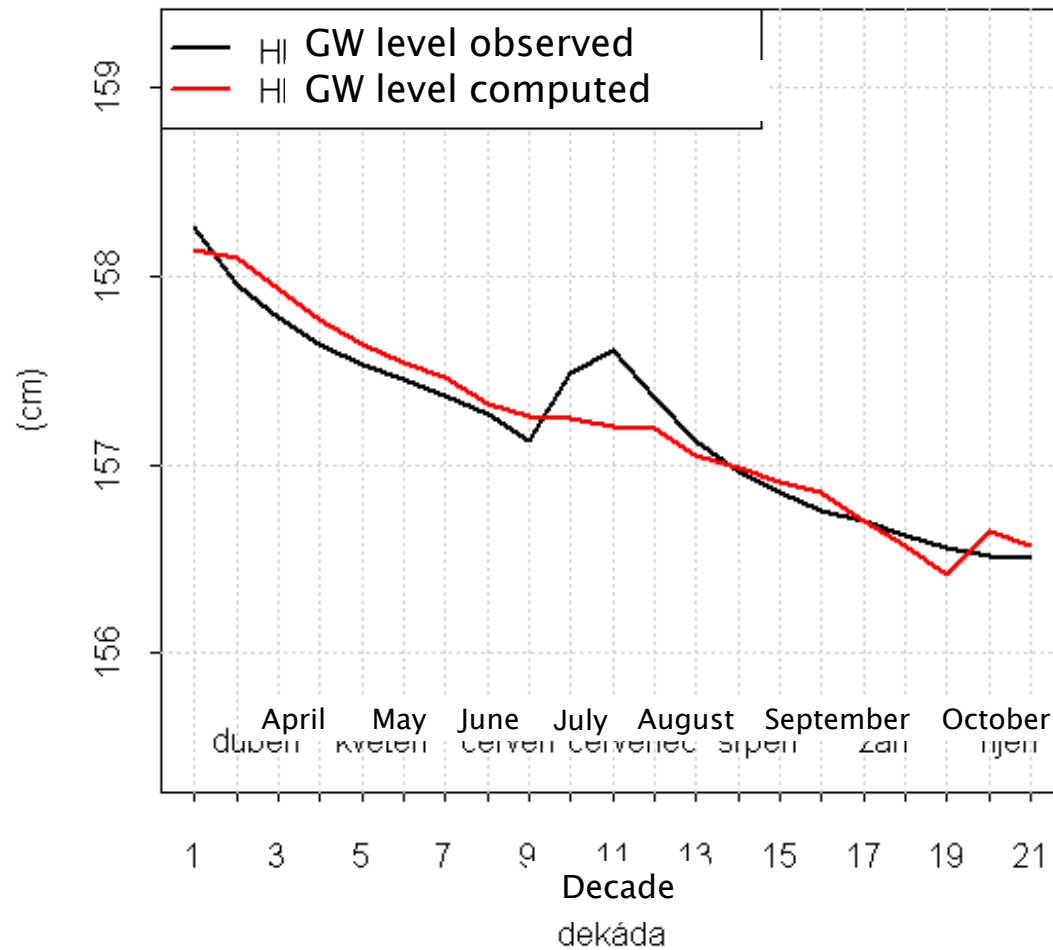
Water balance (WBCM model) 2009 (Mikulčice)

Water balance component $SP = SQ + SAE + (ASM + SNGWR)$	1. 4. – 31. 10. 2009 (mm)
Precipitation SP	407,3
Total runoff SQ	184,6
Direct flow STF	105,9
Potential evapotranspiration SPE	448,7
Actual evapotranspiration SAE	287,7
Interception SAIR	160,9
Infiltration recharge SRECH	183,1
Soil moisture in unsaturated zone ASM	-24,5
Groundwater in saturated zone SGWR	39,9
Net groundwater recharge SNGWR	-38,8

WATER BALANCE: Mikulcice 2009



GROUNDWATER LEVELS FLUCTUATION (WBCM)



Conclusions:

- ▶ The Morava river regulation has been **deepened by dredging in its bottom** (along the longitudinal profile) of the river significantly (1.0 to 1.2 m in the years 1970–80).
- ▶ The average **trend of groundwater hydrographs** in the years 1970– 2010 (in the CHMI borehole VB0241 Lanzhot) **is decreasing** (the graph above illustrates it well).
- ▶ Hydrological database of the catchment is not complete and therefore not convincing. The next observation and water balance computations are needed **to provide better proofs** and applicability conditions.
- ▶ According to these conditions the **new system of biotechnical measures should mitigate the impact of hydrological extremes** and manage optimal water regime.