# Variability of hydraulic parameters in a braided river – a case study from the Białka River, Poland

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**Study goal:**

Determine how closely the hydraulic geometries of different cross sections over time reflect the average hydrodynamic conditions.

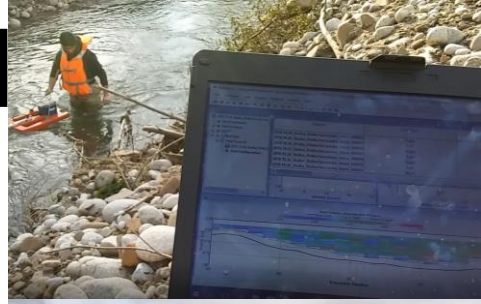
# Study site and methods

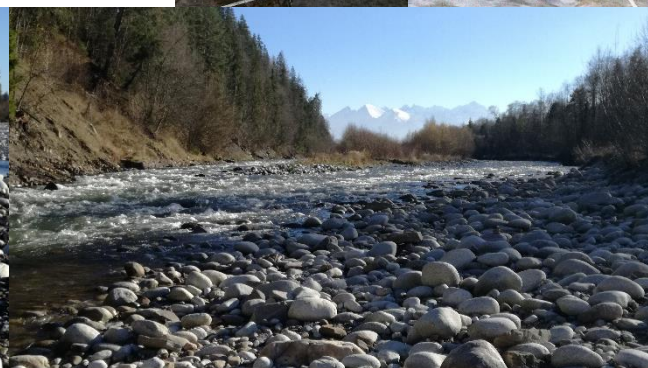

Measurements:
ADCP StreamPro/ FlowTracker ADV

Parameters:

- depth averaged velocities ($v_{av}$)
- shear velocities (U*)
- shear stresses ($\tau$),
- Froude (Fr) and Reynolds (Re) numbers

Downstream hydraulic geometry (HG) relations between width (W), depth (H), velocity (V) and discharge (Q).





# Results

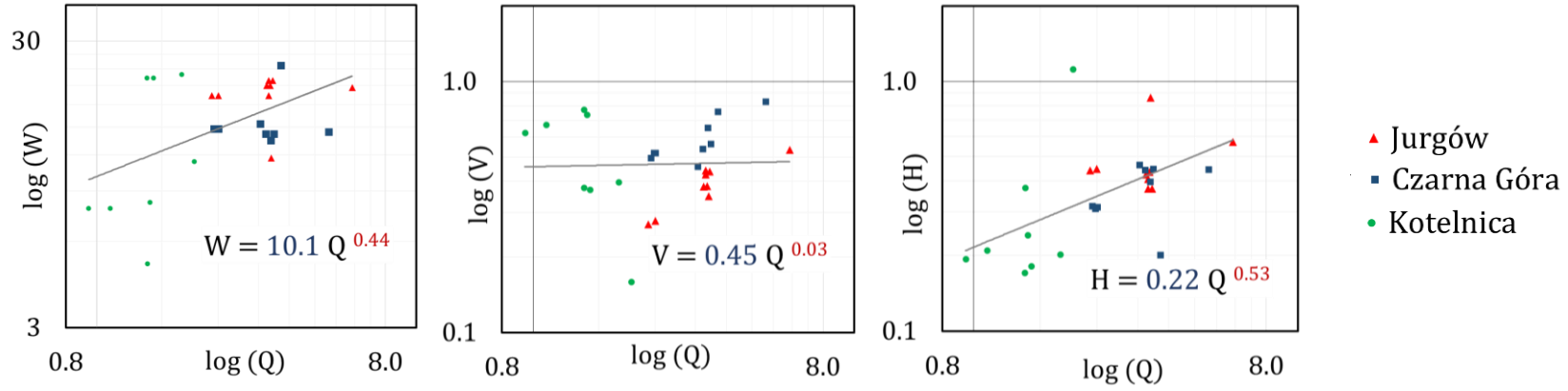



Fig. 1 Width, depth and velocity in relation to discharge in cross-sections.

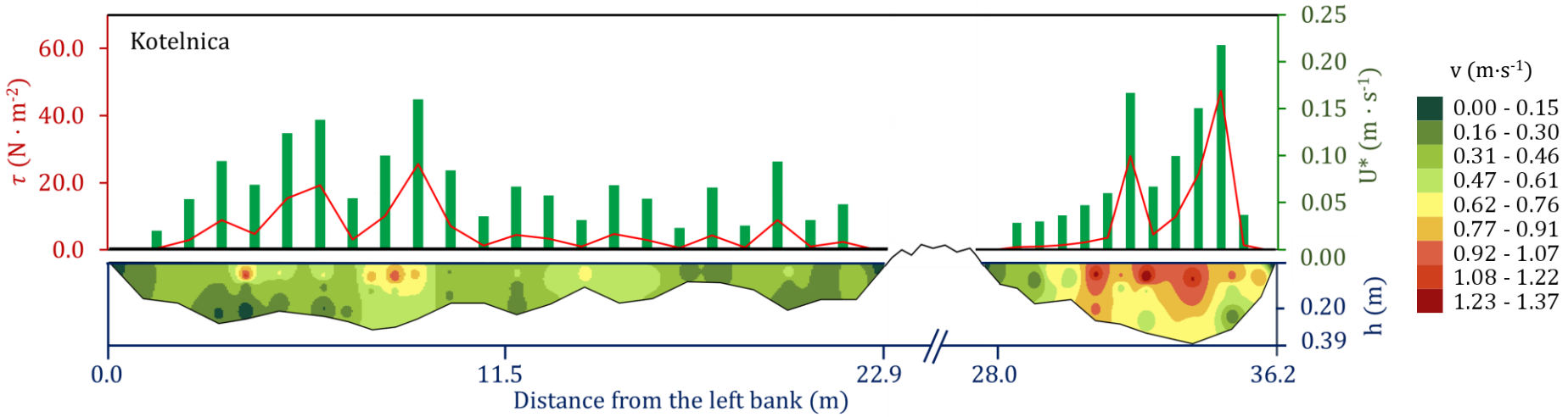



Fig. 2 Velocity field and variability of shear stress and shear velocity in cross-sections.

# Conclusions

- U*, τ, Fr number tend to increase downstream with increasing cross-section complexity.
- The river aims to recreate its natural braiding character despite local human impact.
- Floods cause reconfiguration of the riverbed. Low flows cause deactivation of braided channels, rather than the change in their morphology.