The role of hydraulic analysis in the development of Flood Risk Management Plans

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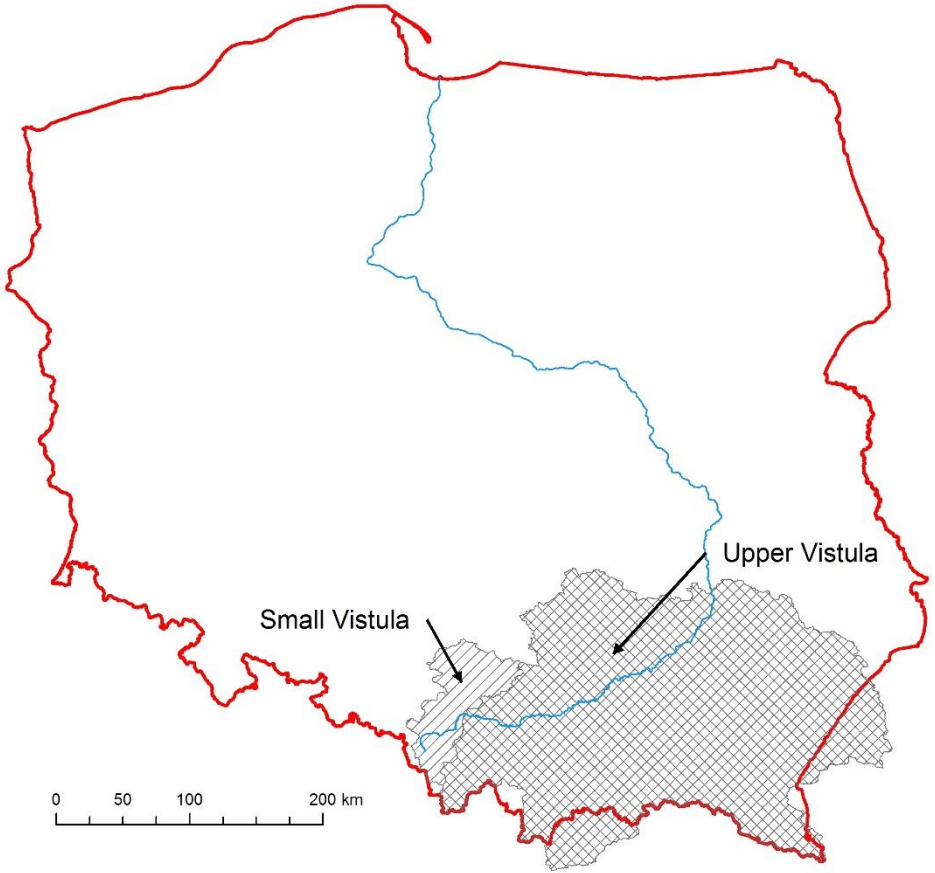
Agenda

- Introduction – DHI involvment in FRMPs in Poland
- Case study
- Role of hydraulic modelling

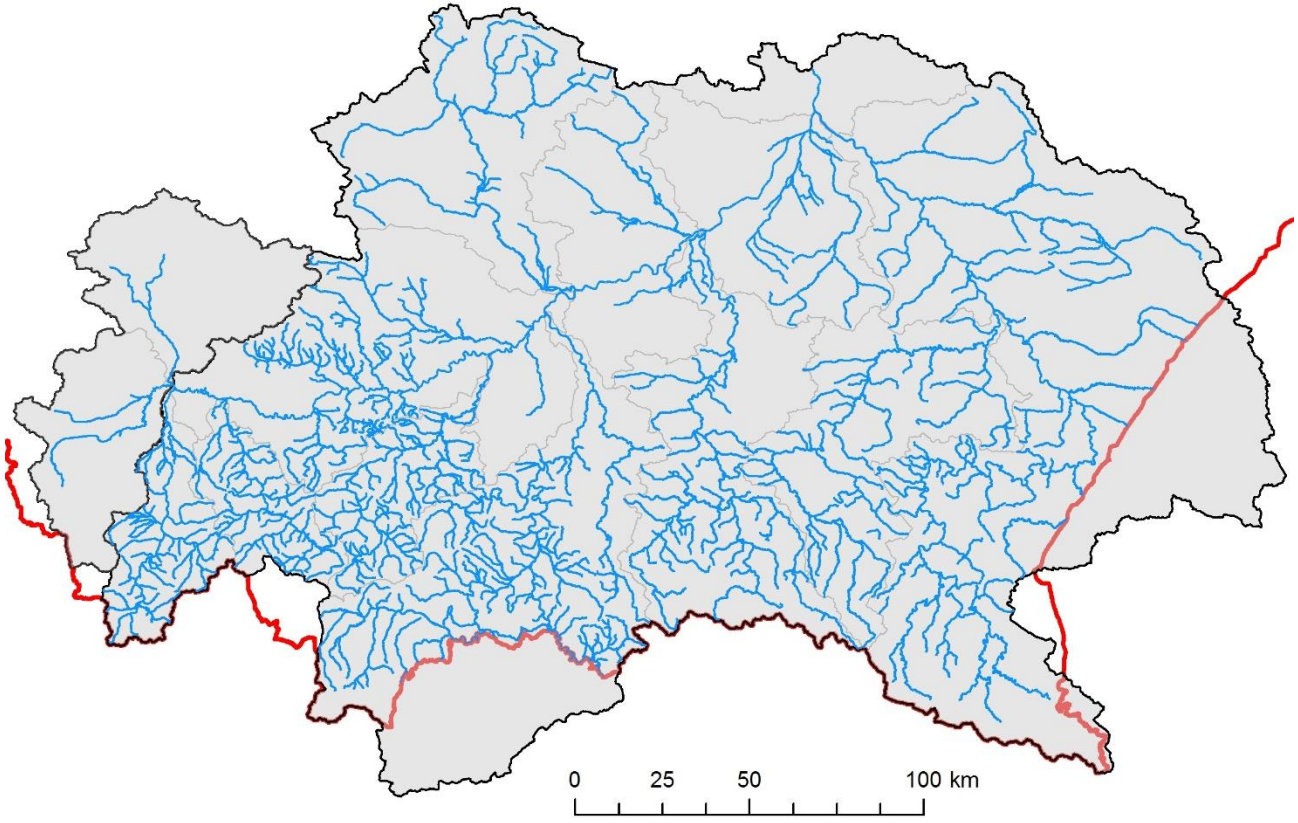
Introduction

DHI involvment in FRMPs:

- One of the contractor
- Responsibility – Small and Upper Vistula water regions
  - 620 rivers - total length of approx. 8330 km
  - Several calculation scenarios

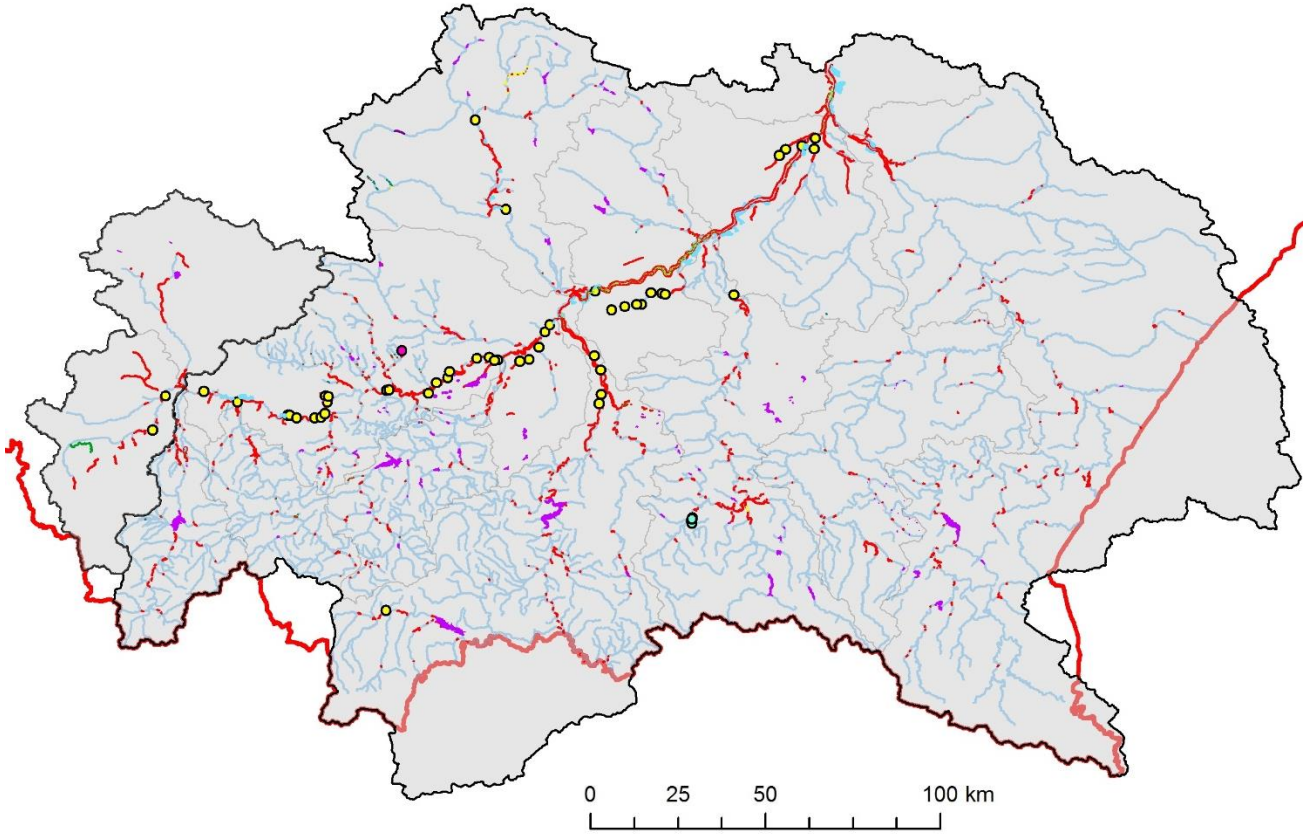


Area of interest



Flood protection measures

- Polders
- Dikes
- Pumps
- Dry dams
- …



Analytical steps

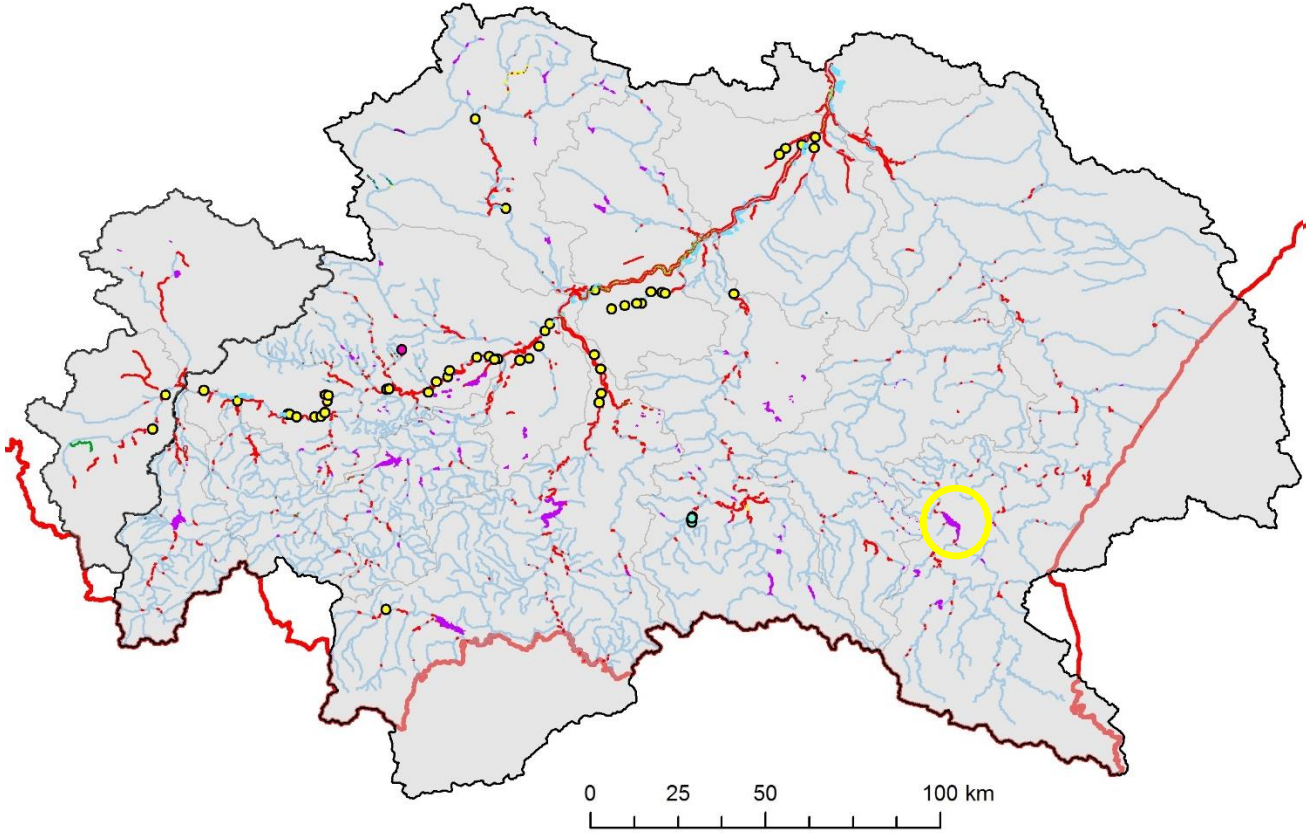
Hydraulic modelling

Flood damage analysis

Flood risk analysis

Cost benefit and multi-criterial analysis

Case – Temeszów reservoir



Case – Temeszów reservoir

Variant - WP++

Parameters:

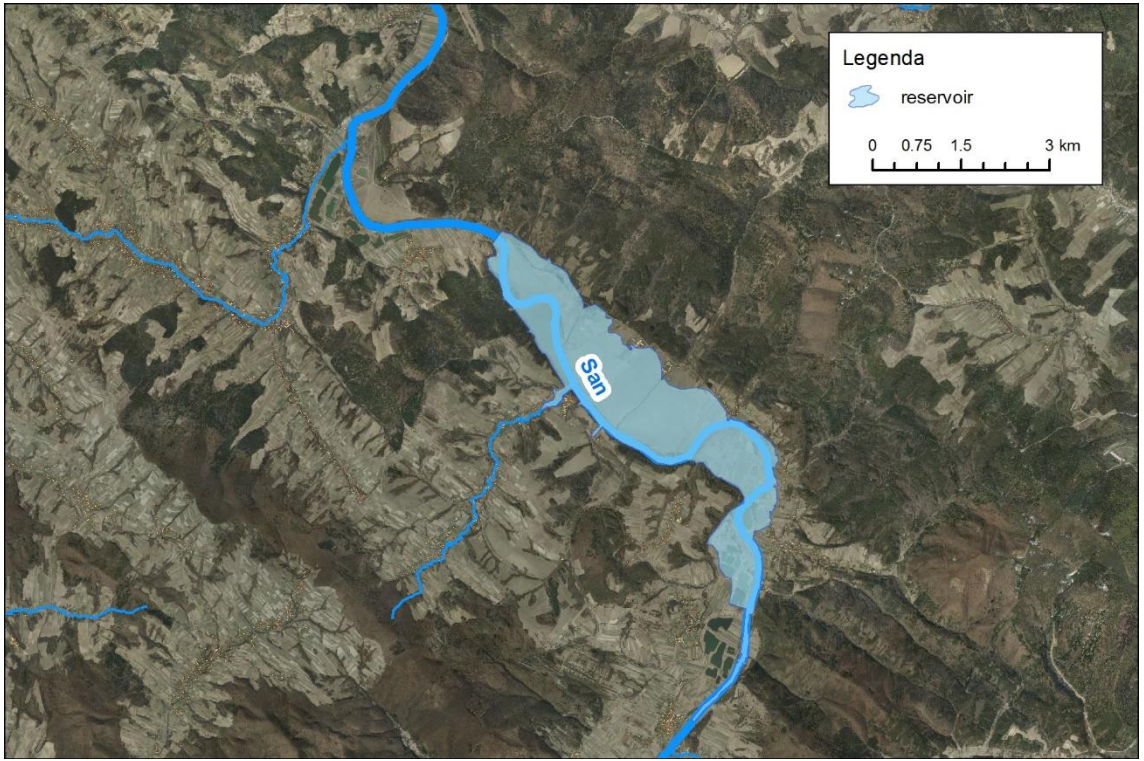
- Crest level 267 m a.s.l
- Dam height – 13.9 m
- Dam length – 450 m
- Active volume – 92.42 mln m3
- No. of buildings for relocation - 242

Case – Temeszów reservoir

1st alternative - A1

Parameters:

- Dry dam
- Crest level 266 m a.s.l
- Active volume – 35.3 mln m3
- No. of buildings for relocation - 16

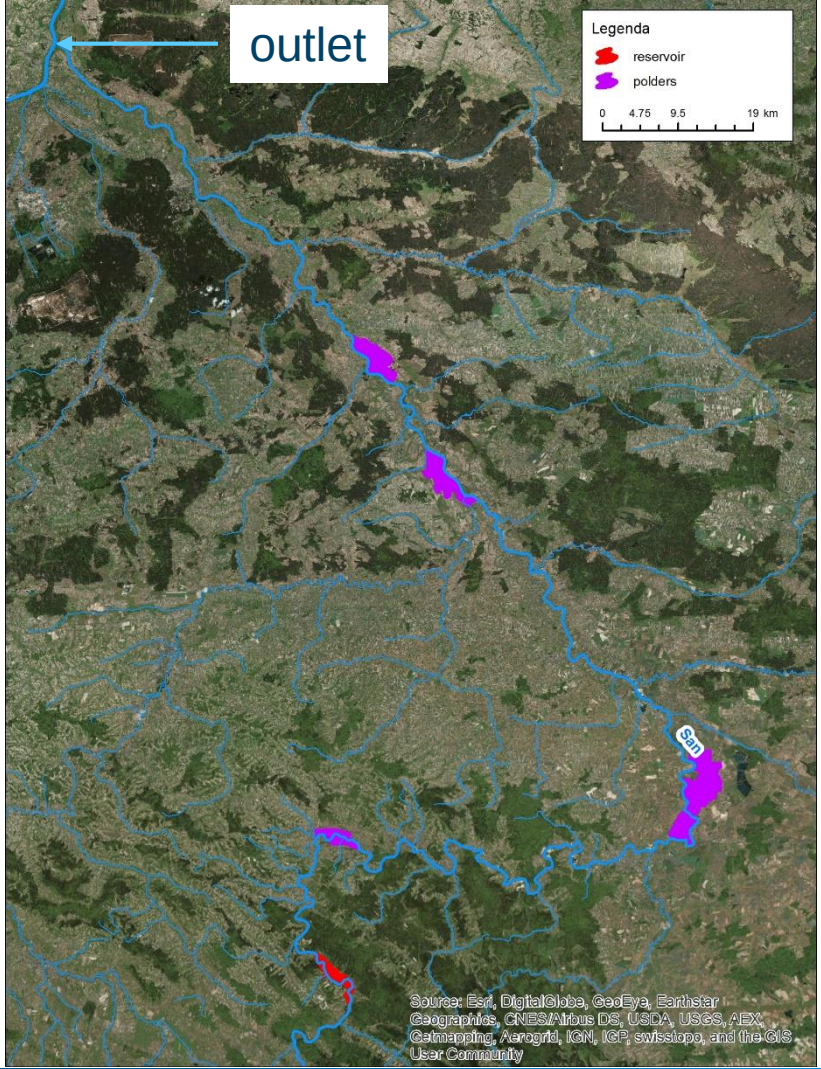


Case – Temeszów reservoir

2nd alternative – A2

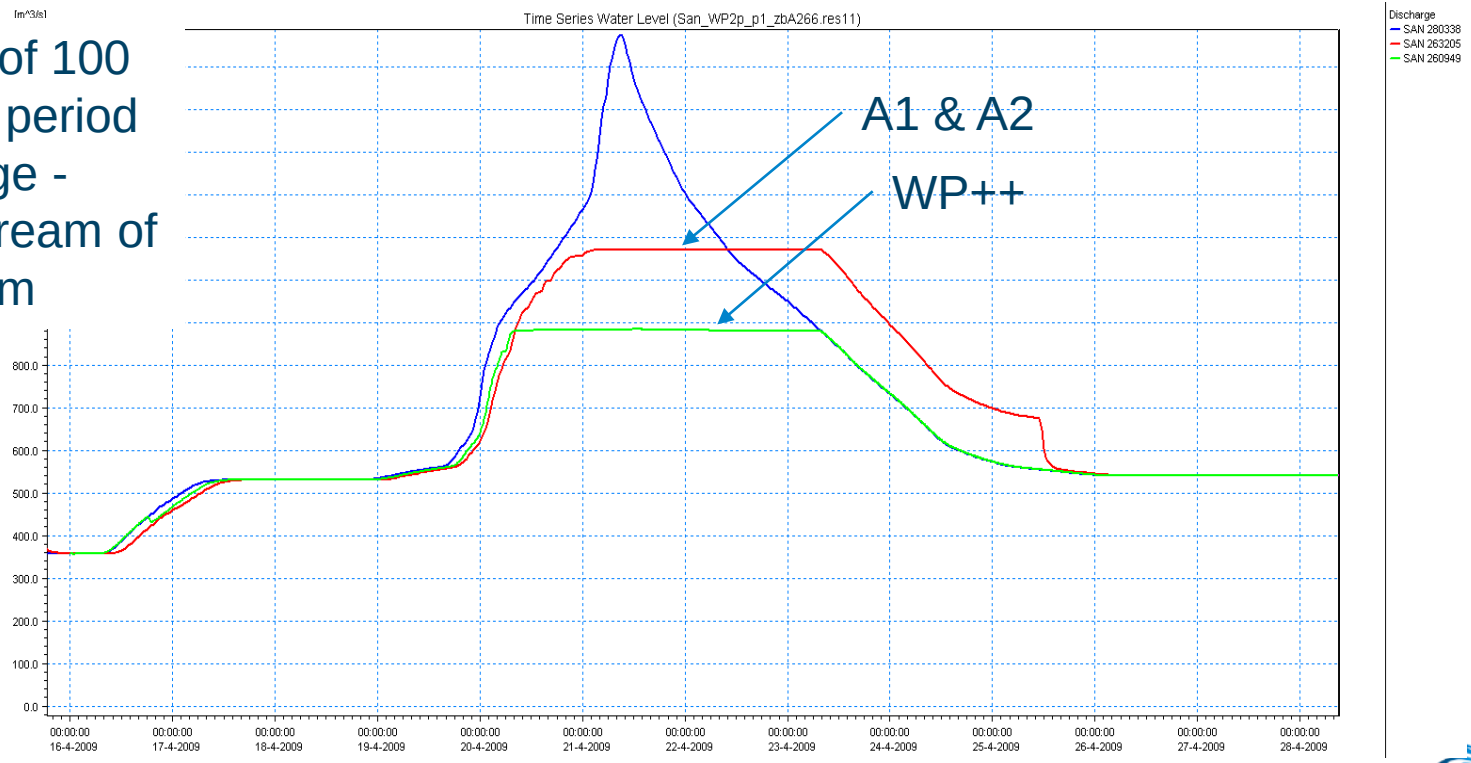
Parameters:

- Dry dam as in 1st alternative
- 6 polders located along San river



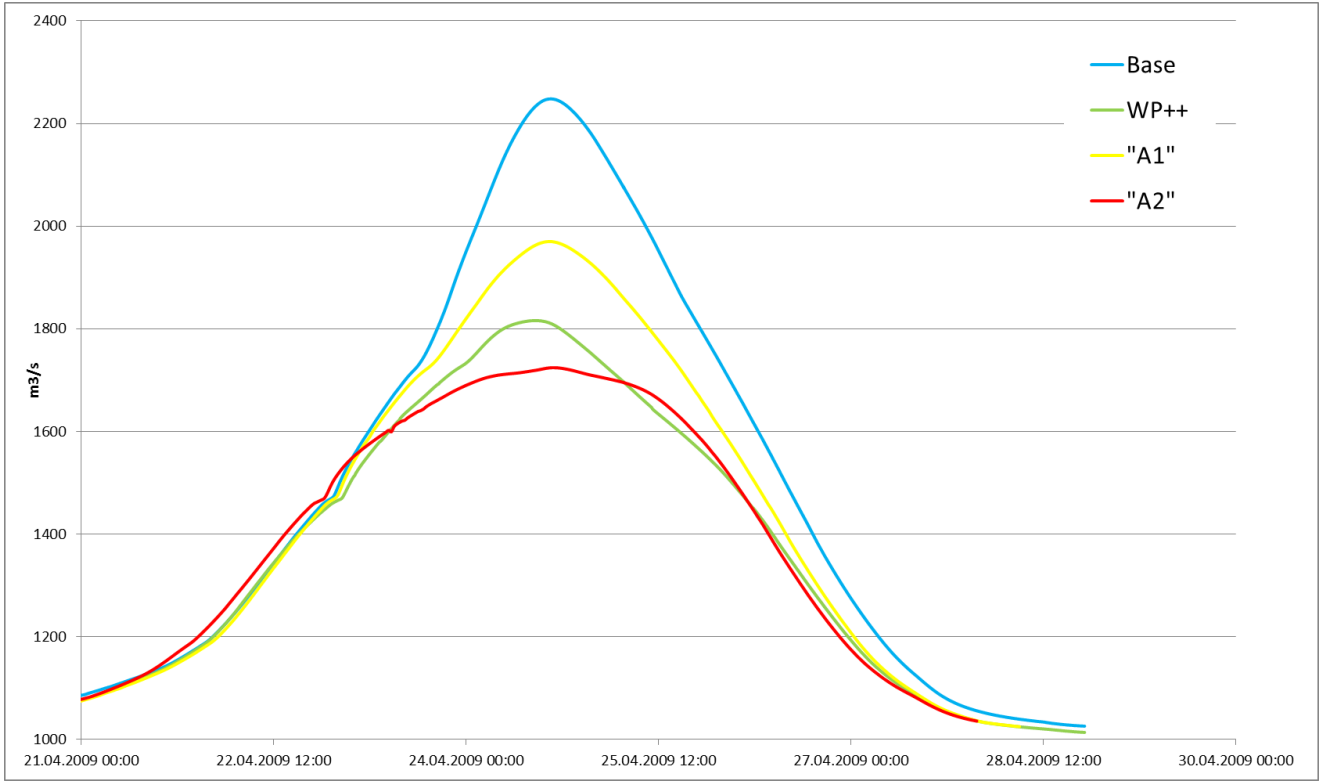
Case – Temeszów reservoir

Reduction of 100 year return period discharge - just downstream of the dam



Case – Temeszów reservoir

Reduction of 100 year return period discharge – at the outlet of San river to Vistula



Case – Temeszów reservoir

Final recomendation:

- Dry dam + 4 polders along San river + few dikes

Role of hydraulic modelling

Hydraulic modelling

- Analysis of variants
- Tests of different sets of measures
- Finding the best solutions

- Input data for flood damage and flood risk analysis

- One of criteria in multi-criterial analysis

Conclusions

- Hydraulic modelling plays a crucial role in FRMPs development
- Existing models as a base for new alternative scenarios
- Results of analysis as support for decision making
- Hydraulic modelling helps to specify the most appropriate flood protection measures

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