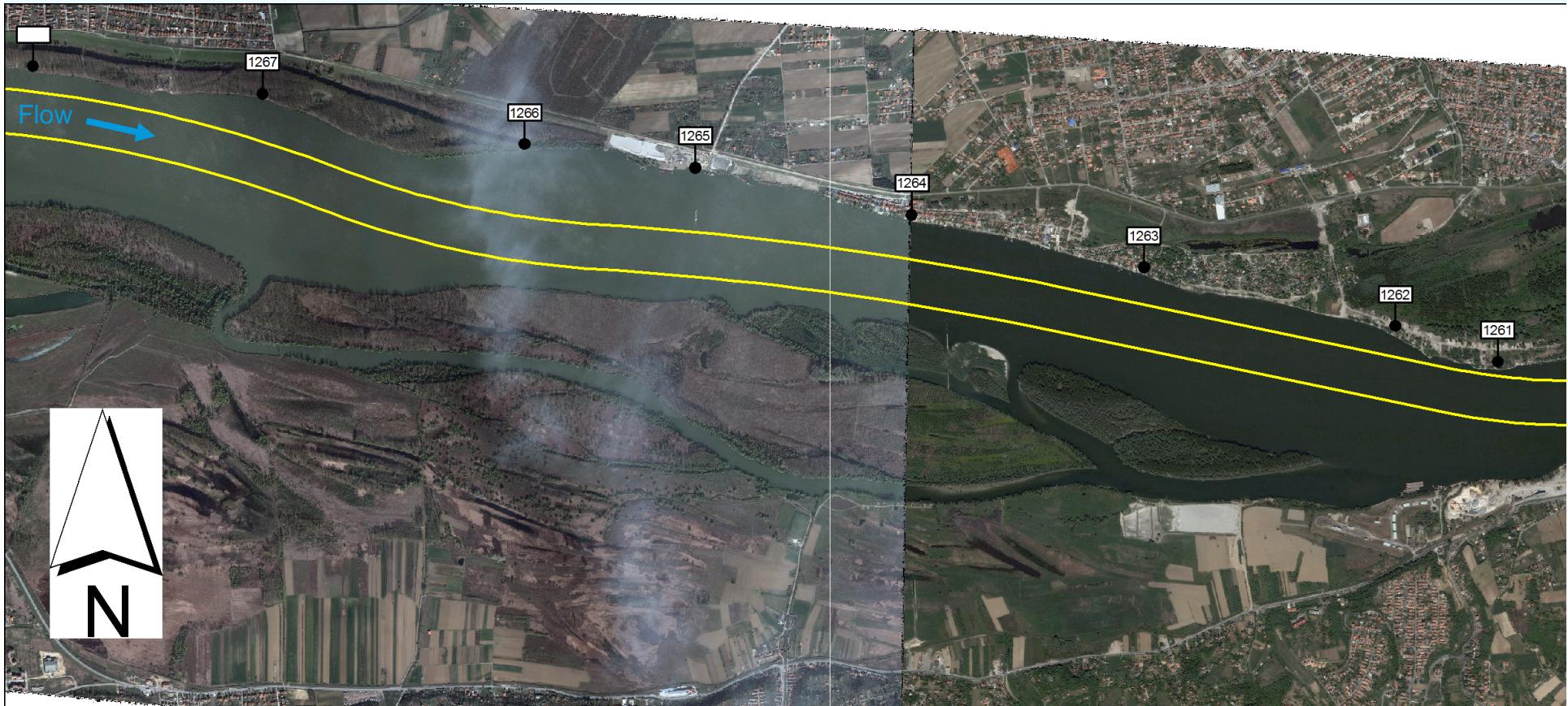


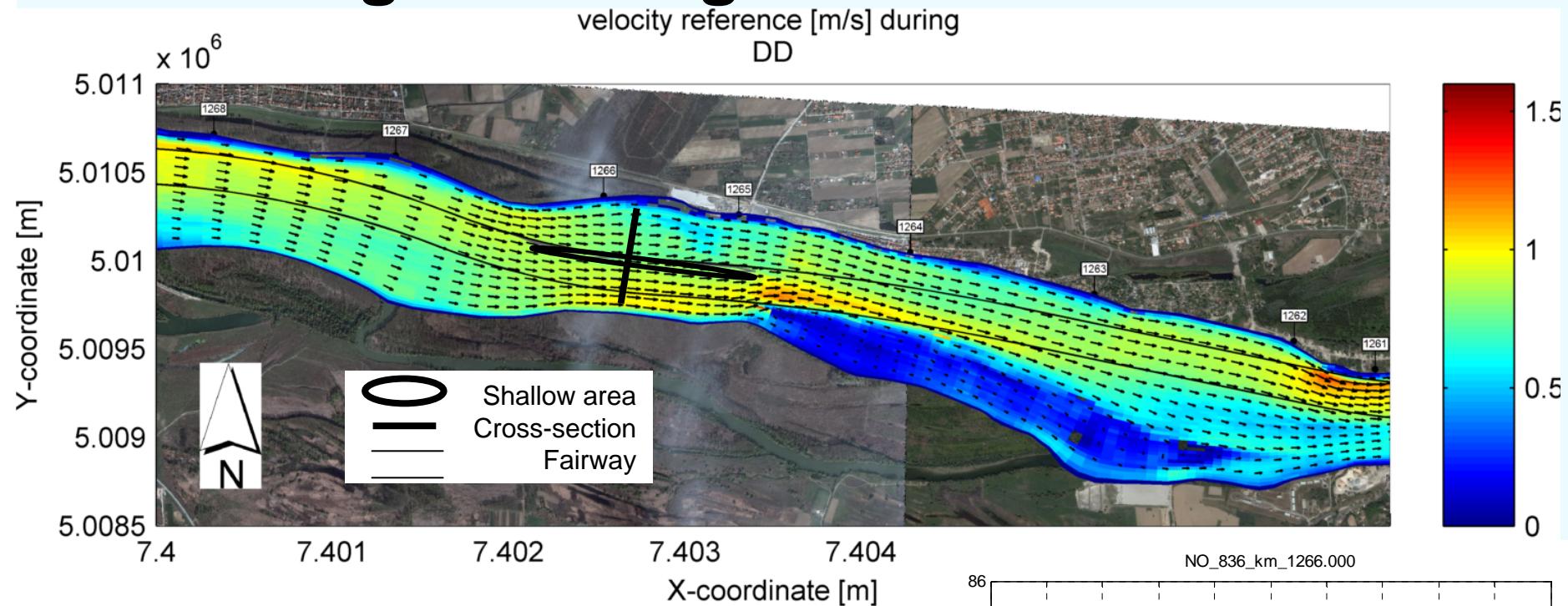
# 19. Sector – Futog (km 1,267.4 – 1,261.6)



# 19. Futog – Existing situation

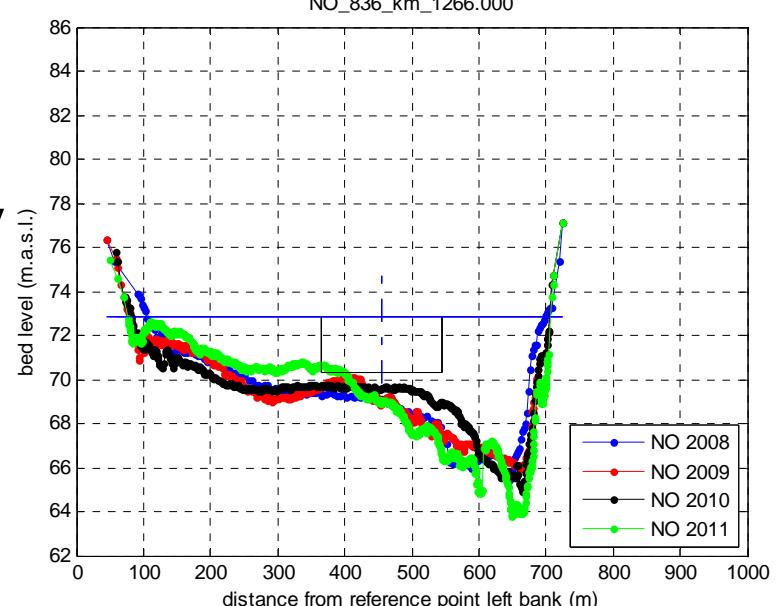


# 19. Futog - Existing situation

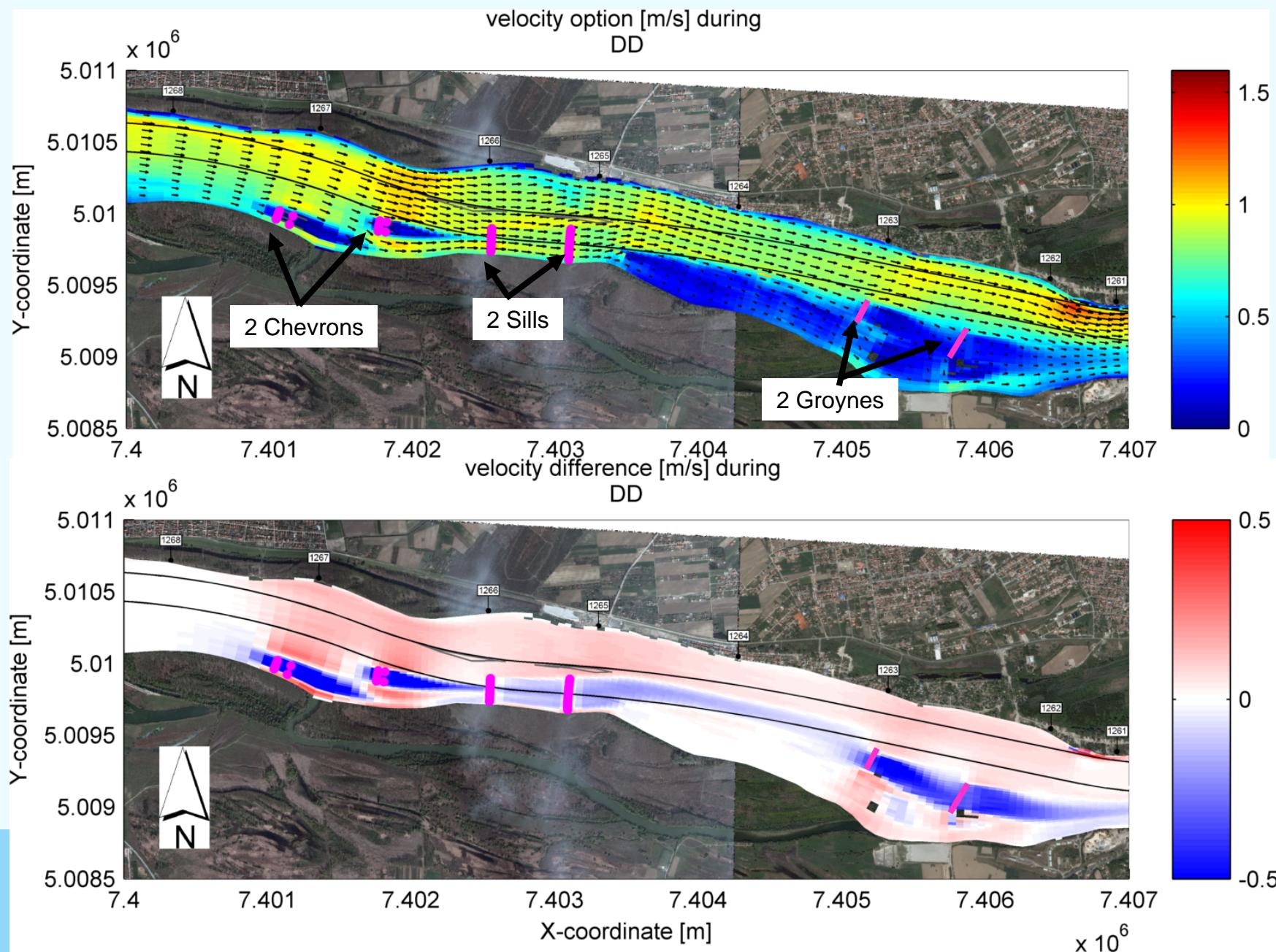


Navigation problems:

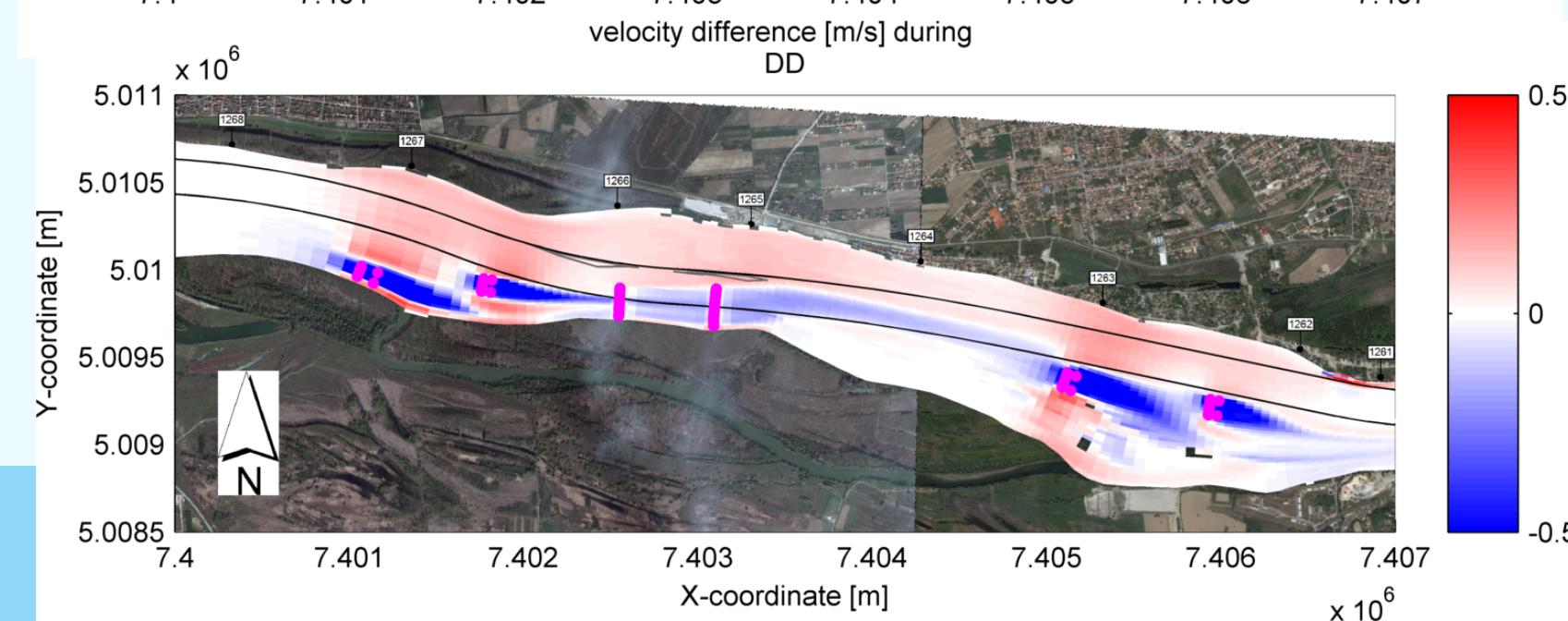
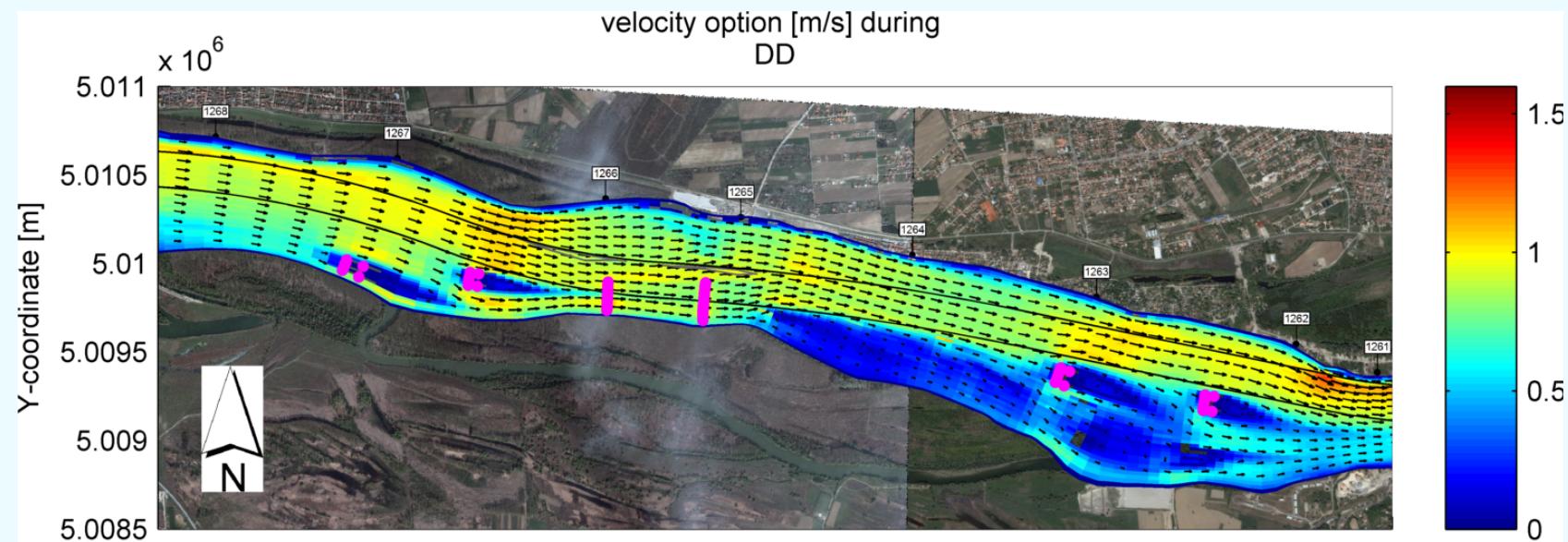
- Upstream: bar protudes into fairway along left side of fairway;
- Downstream: unstable river bed



# 19. Futog - option 1: Chevrons, sills, groynes



# 19. Futog - option 3: Chevrons, sills, chevrons



# 19. Futog – options 1 and 3

- Navigation:
  - Increased flow in the fairway channel;
- Environment:
  - Flow in side channel is maintained
- Cost:
  - Chevrons are about 80 m wide and 5 m high;
  - Sills are 180 - 230 m wide and 2 m high;
  - Groynes are 100 and 160 m wide and 2 m high
- Optimization of:
  - Crest levels of structures;
  - Exact location of structures;
  - Downstream facing groynes, flow openings.

# 19. Futog - MCA

Options	Effectiveness	Environment	Cost
Option 1 – chevrons, sills, groynes	Effective	Limited	High
Option 3 – chevrons, sills, chevrons	Effective	Limited	High