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Seegers, Christina; Brudy-Zippelius, Thomas; Wahrheit-Lensing, Andrea Sedimentation upstream the Iffezheim barrage on the river Rhine, Germany

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to be examined. Before sedimentation can be analysed, a good representation of the hydrodynamic situation must be simulated. Currently, a k-ε model is being used to model turbulence.

A triangular mesh (see fig. 4) of the required resolution was built using the existence of high resolution areal echo sounding measurements. The time for computation must be small enough to model the morphological changes, but the resolution must be high enough to give unambiguous and readily applicable results. Hydrodynamic situations which critically influence deposition are to be identified and the influence of the fifth turbine on the sedimentation is to be analysed.

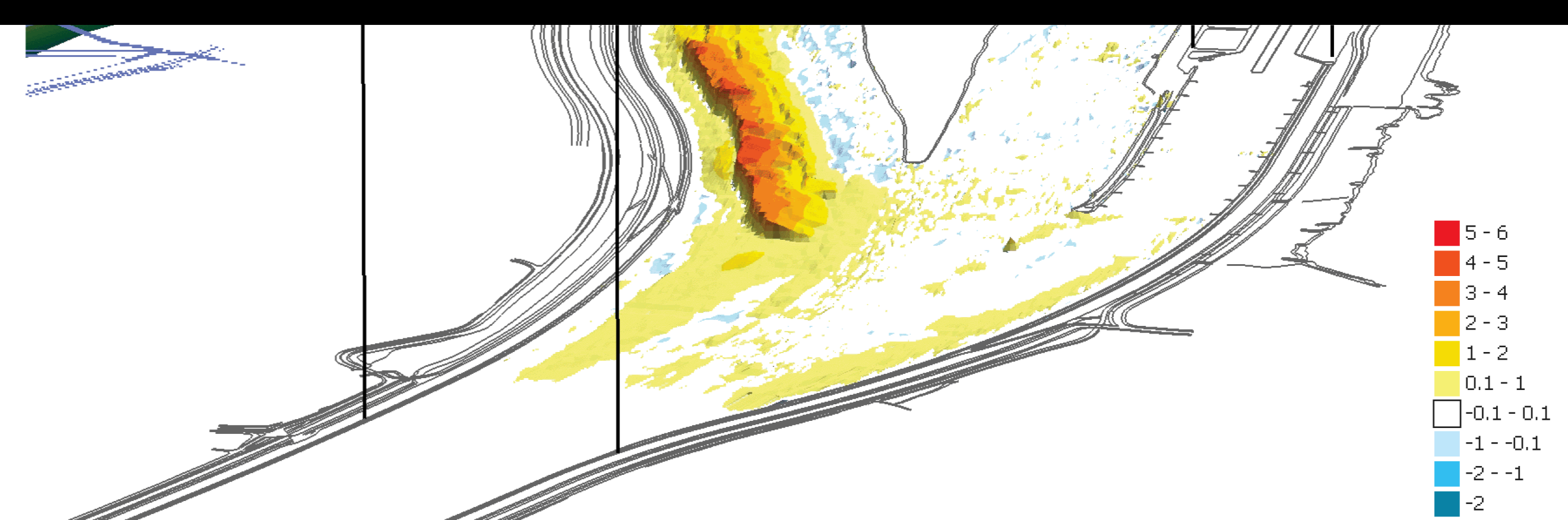


fig. 2: Investigation area and bed topography difference representing the depositions within 32 months (2001-2003).

Numerical setup and preliminary results

The turbulence observed in previous studies could be reproduced (see fig. 5). The influence of the hydrologic situation with different amounts of water and sediment is an important parameter.

- 78300 surface triangles
- 41000 surface points
- 20 layers
- k-ε turbulence model
- 1500 m³/s discharge inflow
- 1100 m³/s discharge powerstation
- 400 m³/s discharge weir
- 60μm grain size:

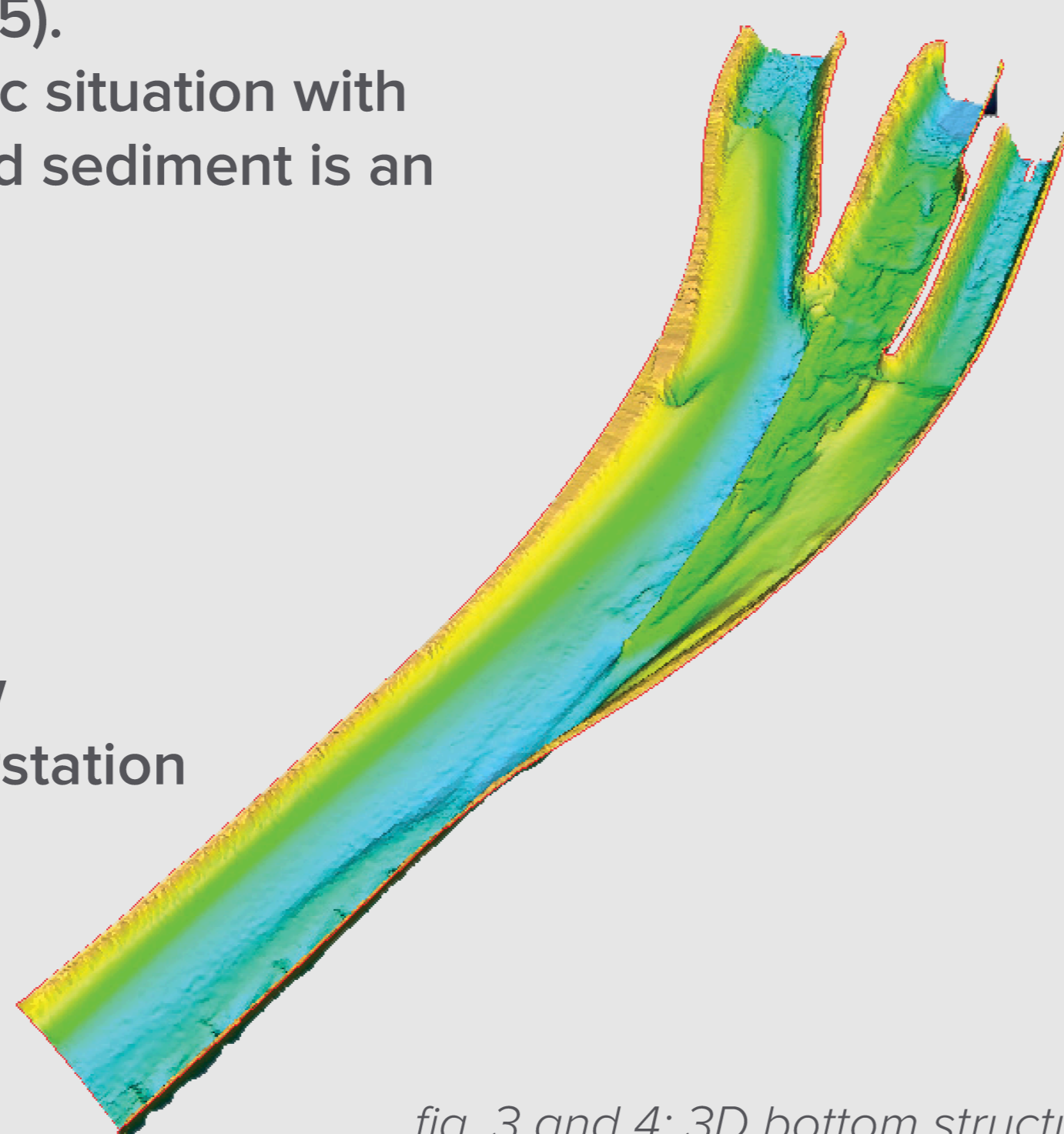


fig. 3 and 4: 3D bottom structure and unstructured mesh (at the inflow).

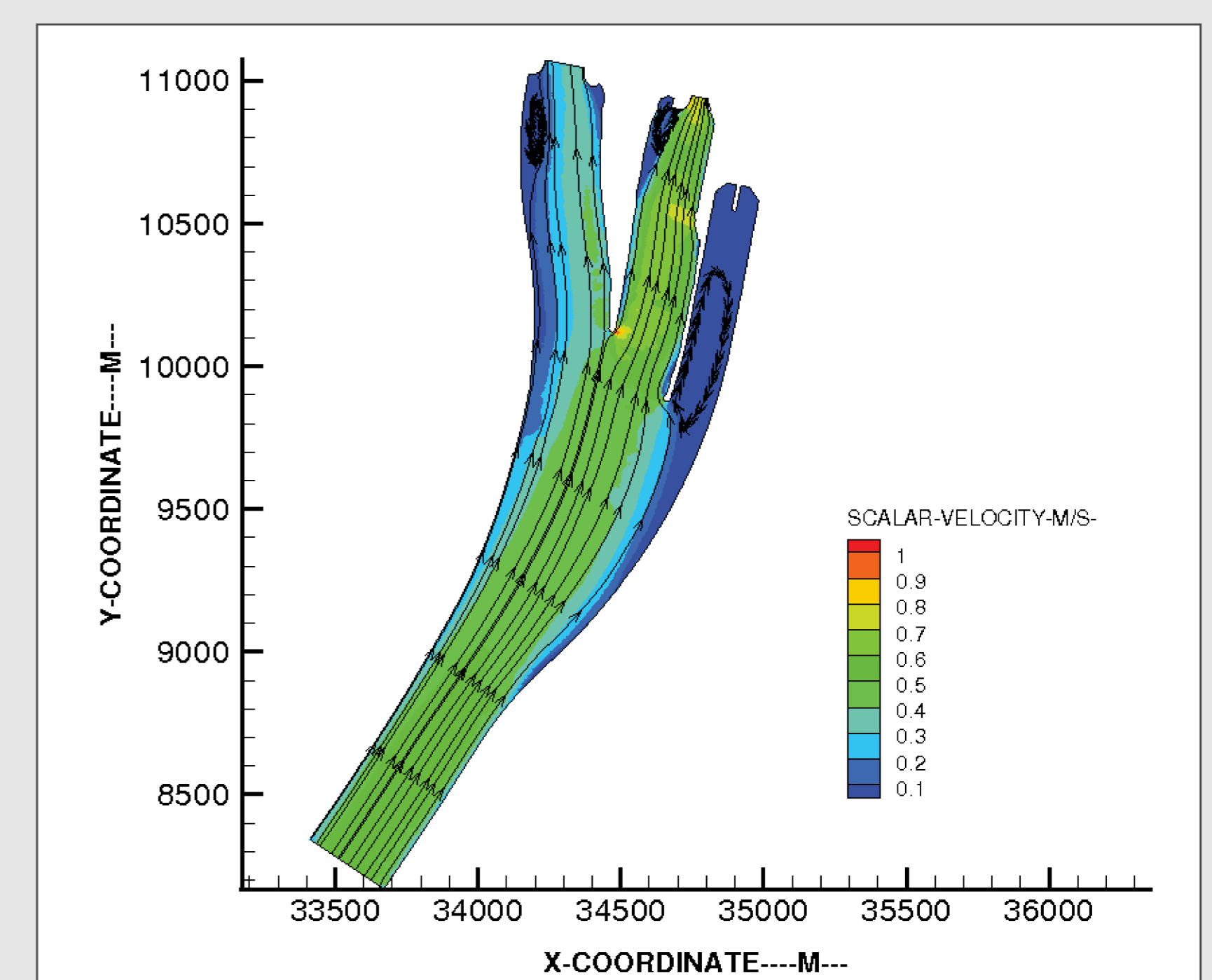
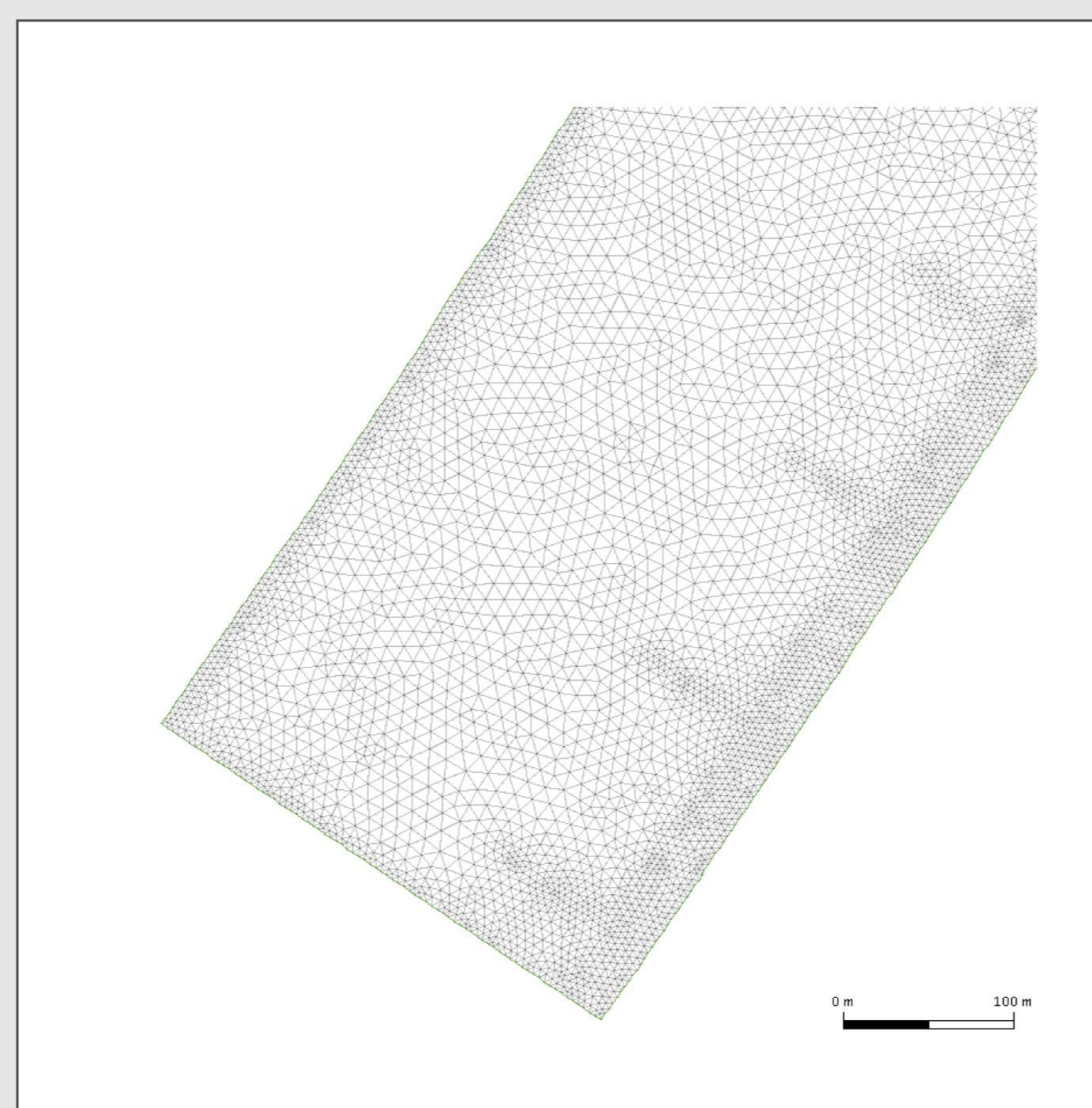


fig. 5: Streamtraces and velocities at $q=1500 \text{ m}^3/\text{s}$.