Genesis of the Peatland River Suck since the last Deglaciation

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Introduction

- In 2009 the river Suck (fig. 1 & 2) experienced the highest discharge ever. This might have been enhanced by extensive peat excavations in the catchment.
- The exact influence of the peat bogs on the hydrology is however not known, like the composition and hydrologic properties of the subsurface in the catchment.

Methods

- Fieldwork in a key area of the catchment provided a lithological map (fig. 3 & 4)

Genesis of the research area

- At the end of the Weichselian Ireland was covered with ice which stepwise retreated to the North during deglaciation leaving a series of morainic ridges.
- In meltwater lakes behind morainic ridges varved clays of 3 mm per layer (fig. 6) were deposited during some 500 years.
- During the Late-Glacial and early Holocene (12.5 6 kyr BP) lake sedimentation continued with calcareous gyttja deposits (fig. 7).
- Around 6 kyr BP peat started to develop (fig. 8) changing the river pattern. Outside the river valley peat bogs started to develop.

and a cross section (fig. 5), giving new insights on the genesis of the river Suck since last deglaciation and a general understanding of the catchment subsurface. - Hydraulic parameters of the subsurface have been obtained from laboratory tests. - These parameters are combined with various data of the Geological Survey Ireland (GSI) to make a 3D hydrological model for the catchment. - The model is forced by meteorological data (Klein Tank et al., 2002).

- After deforestation for agriculture the sediment load of the river increased. Clay and silt lead to the formation of small levees.
- Since the 19th century an increasing part of the peat bogs have been excavated.
- In the past 50 years these excavated areas are replanted with mostly coniferous trees for forestry.
- The recent economic recession has restarted the enhanced peat bog excavations.



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