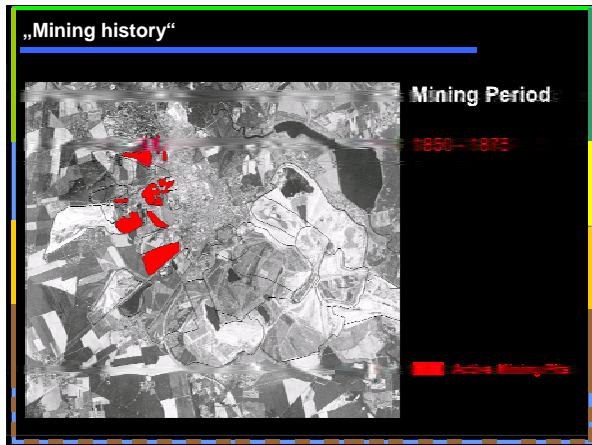


### Questions and problem overview

- 150 years of open pit lignite mining: Impacts on groundwater balances, flow directions and velocities?
- Dependencies between mining activities and contamination spreading in this region?
- Fate of contamination in the future (after closing pits)?

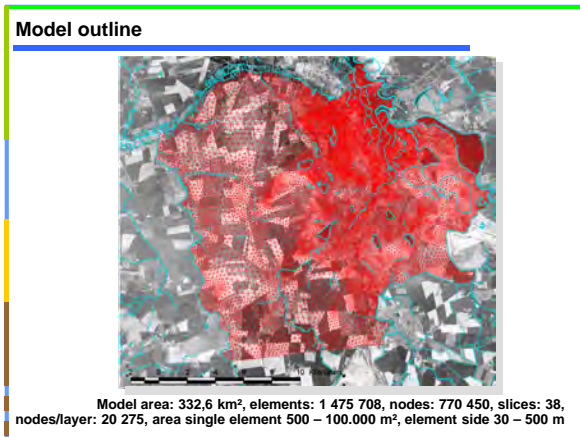


### Complex modelling approach

Diverse modelling systems and tools:

- Compartment (atmosphere), soil, unsaturated zone, surface water, geology, saturated zone
- Non-linear functions in modelling systems and their coupling
- High number of parameters
- Heterogeneous parameters and boundary conditions

-> Model Untere Mulde/Fuhne very complex



### Modelling tools

**Geological modelling:**  
GSI3D, EVS/MVS, transfer to hydrogeological model with GIS

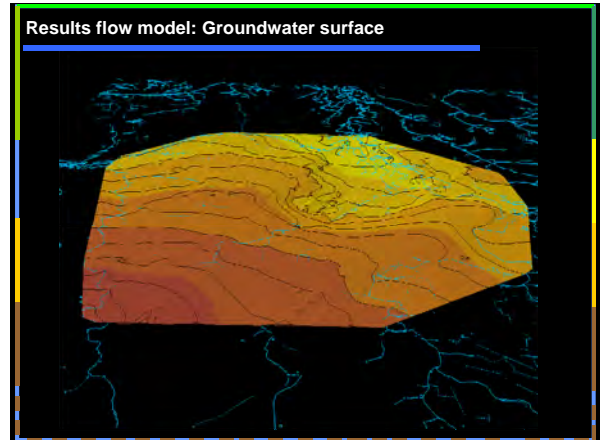
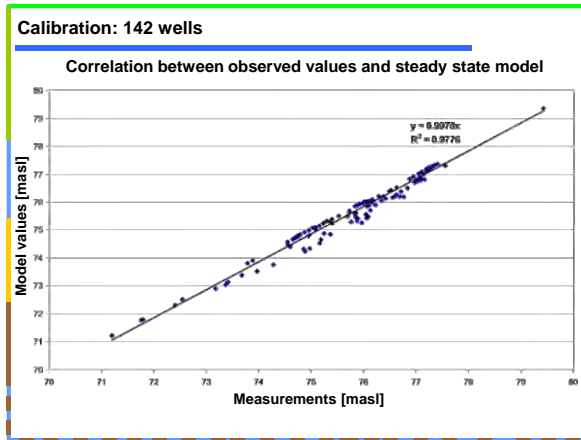
**Groundwater recharge:**  
GIS and self developed program according to Wessolek et al. (2004) (TUB-BGR)

**Hydrograph surface water Mulde:**  
Time series analysis

**Unsaturated zone:** Hydrus1D

**Saturated zone (flow and transport):** Feflow

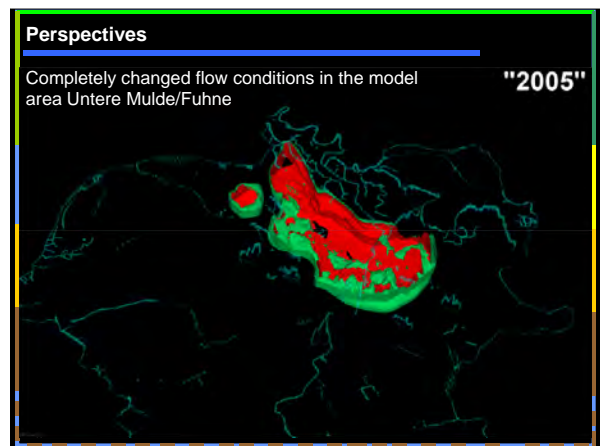
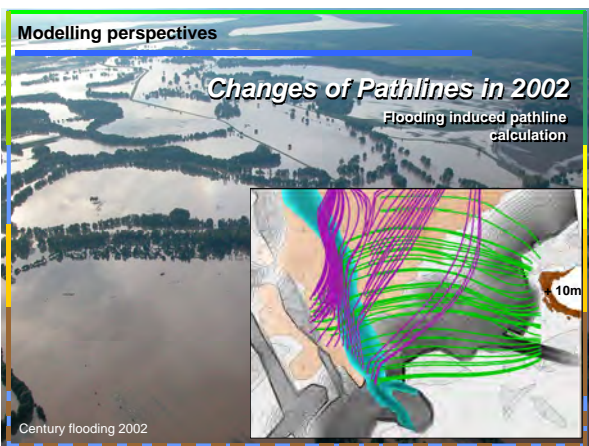
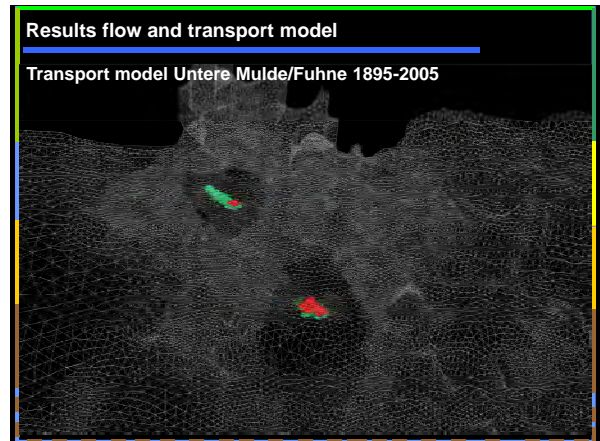




**Setup transport model**

Parameters and boundary conditions:

- Ideal tracer
- „Impact“ for each industrial site
- „Impact“ starts at the beginning of the production



**Thanks**

**Thanks for your attention**

**Project contexts of the examples of the teams:**

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