

Modellierung von Hydrosystemen
"Numerische und daten-basierte Methoden"
BHYWI-22-22 @ 2018
Datenbasierte Methoden - Einführung

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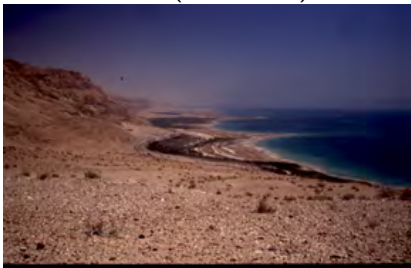
²Centre for Advanced Water Research – CAWR

13.07.2018 - Dresden

- 1 Hydro-Systeme
- 2 Hydro-System Modelle
- 3 Prozessbasierte Hydro-System Modelle
- 4 "Surrogate" Modelle
- 5 Work Flows ...

Hydro-Systeme

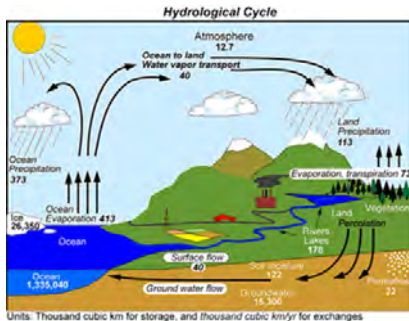
Totes Meer (Dead Sea) - Arid



Elbe - Humid



Wasserkreislauf



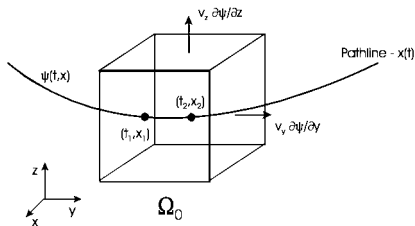
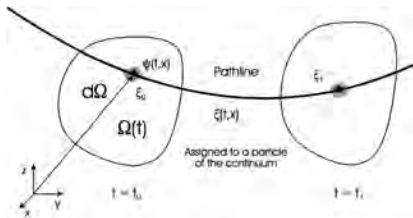
Referenz: Sachse et al. (2014) OGS Tutorial
"Computational Hydrology"

Hydro-System Modelle

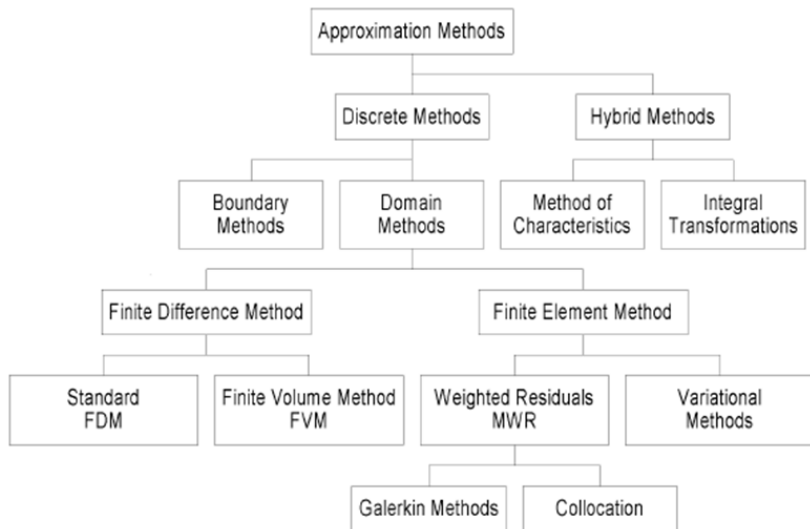
- ▶ Prozess-basierte Modelle
- ▶ Surrogate (daten-basierte) Modelle

Prozessbasierte Modelle

Prozessbasierte Modelle



Prozessbasierte Modelle



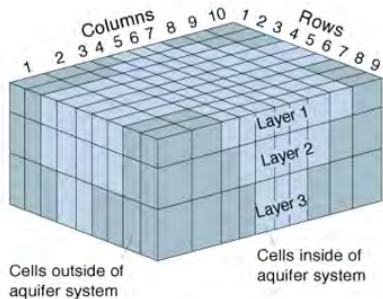


Figure 2. Example of model grid for simulating three-dimensional ground-water flow.

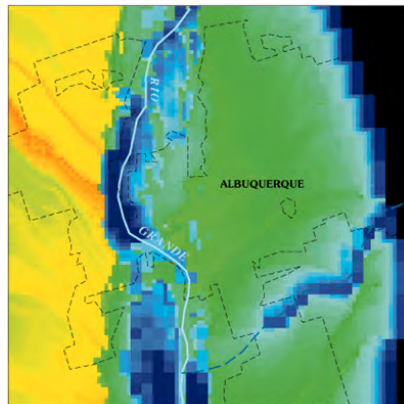


Figure 7. Application of particle tracking to estimate ground-water travel time.



”Surrogate” Modelle

- ▶ Stochastische Modelle
- ▶ Netzwerke (**Neuronale**,
Bayes'sche Netzwerke, ...)
- ▶ Machine Learning (KI)
- ▶ ...