



Technical University of Crete School of Environmental Engineering

Large-scale Groundwater Simulation using Artificial Neural Networks in the Danube River Basin

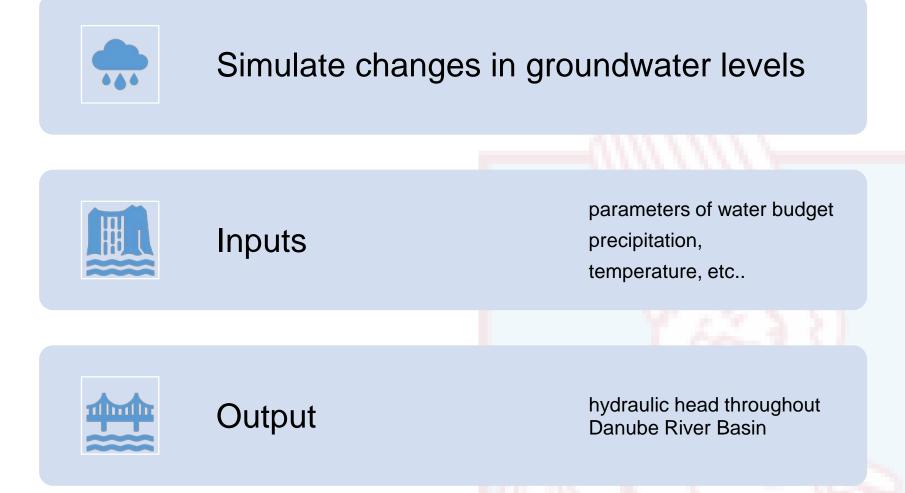
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Artificial Neural Networks (ANNs)



ANN architectures



Training algorithms

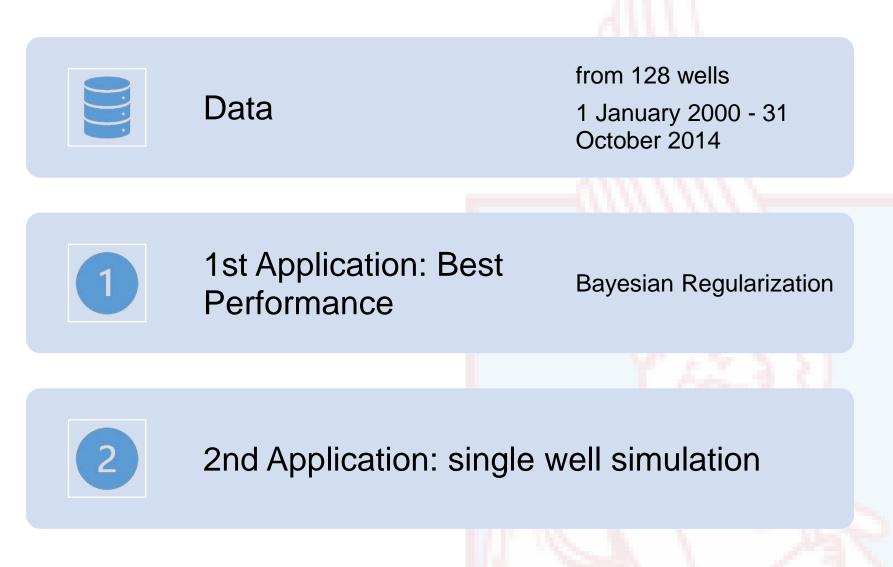
Levenberg-Marquardt Bayesian Regularization



Activation functions of the neurons

tangent sigmoid Iogarithmic sigmoid Iinear

Applications



Pros and Cons

All wells

- Great for trends
- Less accurate for single well
- Possibility to extrapolate spatially

Single well

- Better for single well error
- Prone to Overfitting
- No possibility to extrapolate spatially