



REPUBLIC OF SLOVENIA

MINISTRY OF THE ENVIRONMENT AND SPATIAL PLANNING

MINISTER'S OFFICE



# International Roundtable “Integrated Management of Shared Groundwater in South Eastern Europe”

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## Transboundary groundwater resources of upper rhine valley

by

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Organized by the  
**Slovenian Ministry of Environment and Spatial Planning**  
**Global Water Partnership Mediterranean**

Within the framework of  
**Petersberg Process Phase II / Athens Declaration Process**  
and  
**GEF IW:LEARN, Activity D2**



# Objective of the project “MoNit”

“**MoNit**” **Modelling of the groundwater contamination by Nitrate in Upper Rhine Valley**

- § Comparative evaluation of different possibilities of action in order to reduce the extent of the nitrate pollution in Upper Rhine Aquifer
- § Long-term prognosis of the future nitrate development
  - ü Advanced System Description
  - ü Model system / system of coupled models

# Introduction



- The Upper Rhine Valley is one the largest aquifers in central europe
- The groundwater volume is about 80 km<sup>3</sup>
- 80% of the population are supplied with drinking water from this groundwater resource
- ü Pollution of groundwater with nitrates, pesticides, industrial chemicals and regional with chloride
- ü Groundwater needs protection because of intensive farming, dense settlement, industry and trade and narrow road network

# Investigation area

## § Upper Rhine Valley

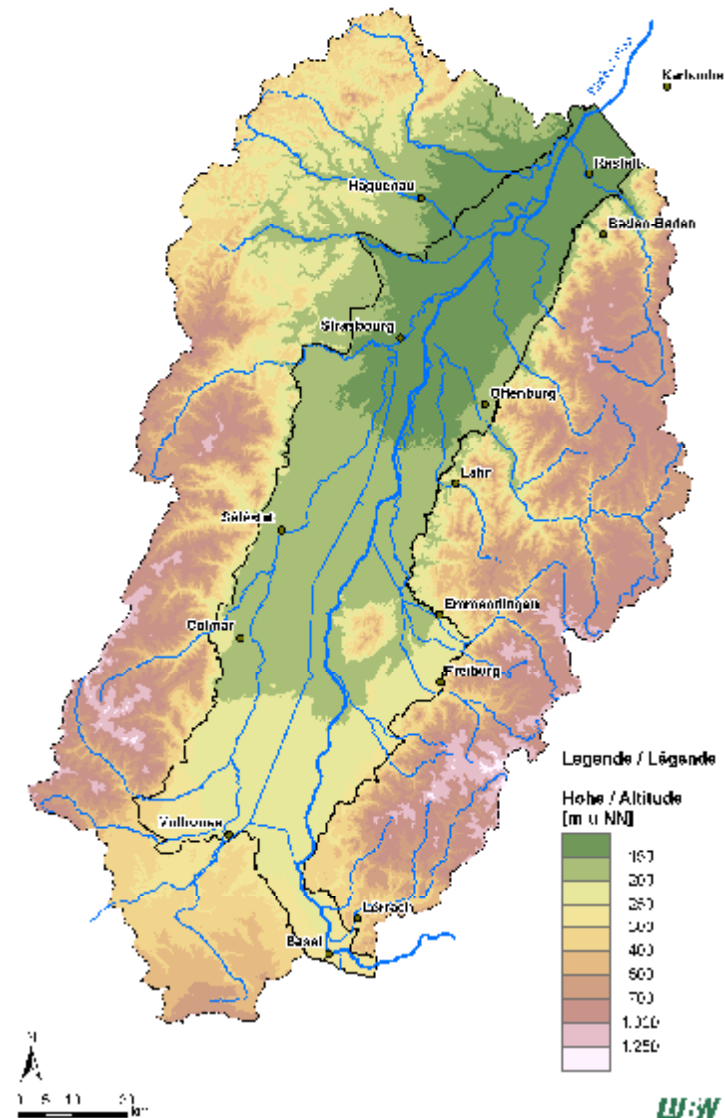
Ø Surface inner part 4,293 km<sup>2</sup>

Ø 49 % in agricultural use

Ø Surface external part 9,400 km<sup>2</sup>

Ø Includes catchments of the inflows

Ø Predominantly forested



# Cross-border cooperation



- § Since 1991 intensive cooperation between German, French and Swiss authorities
- § Several by the European Union co-financed projects in the framework of INTERREG and LIFE

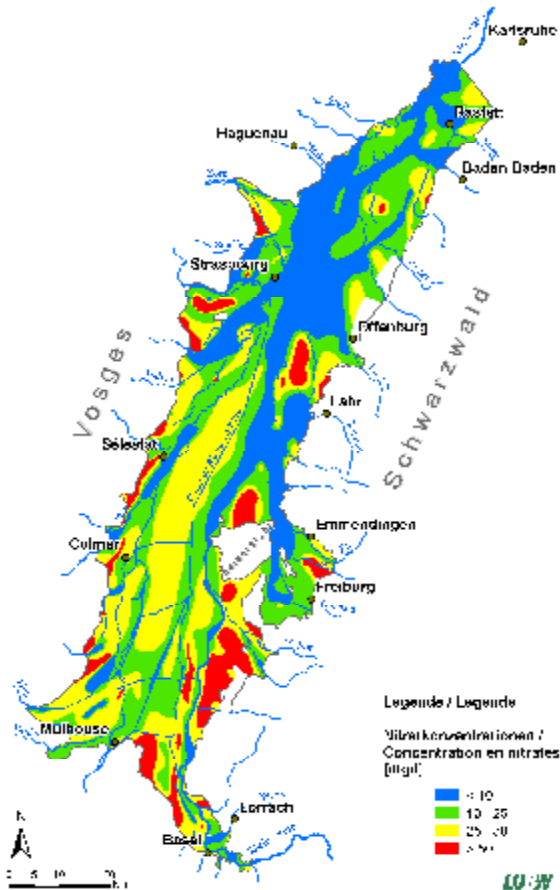
## Project goals

Protection and restoration of groundwater quality which allows present and future generations to have drinking water without intensive or costly treatment

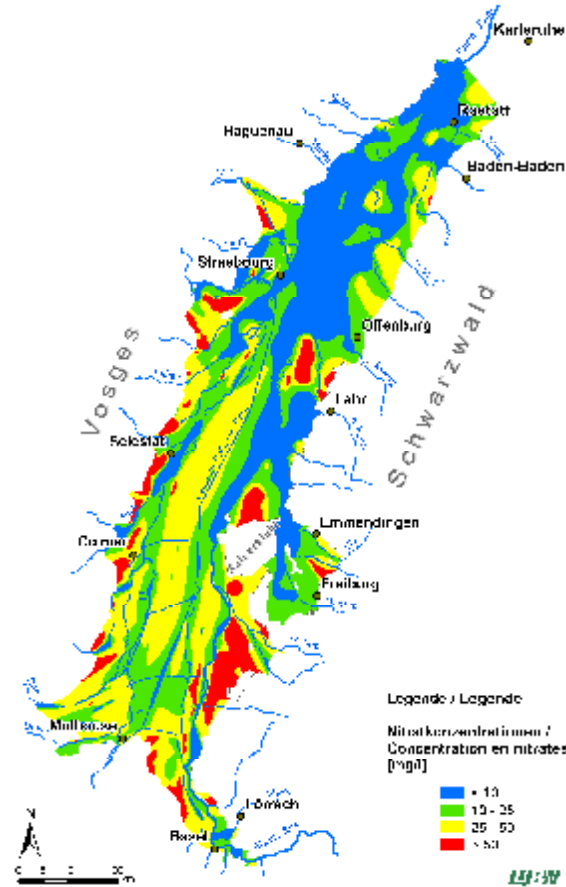
# Inventory of the ground water quality



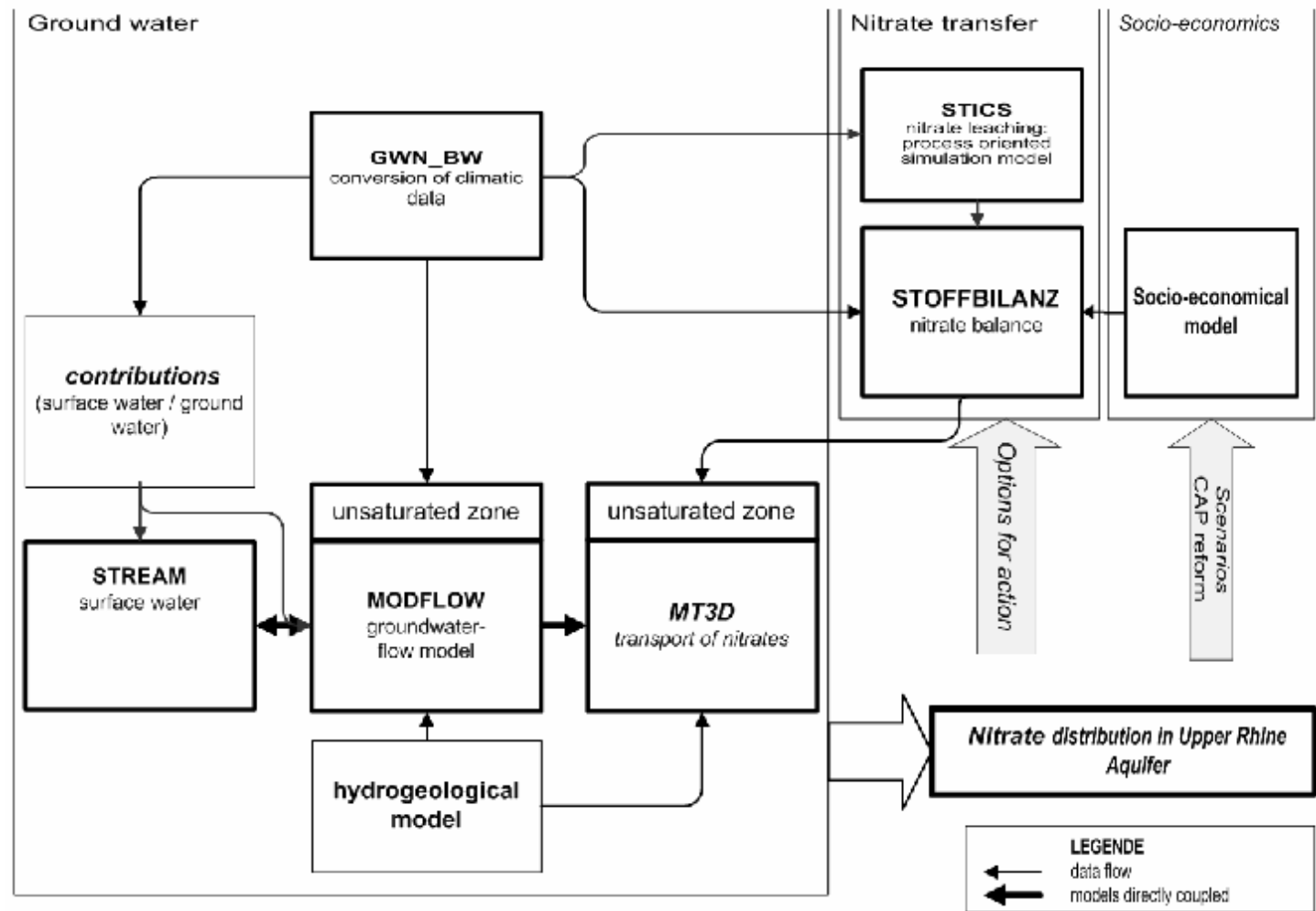
## Nitrate in 1997



## Nitrate in 2003

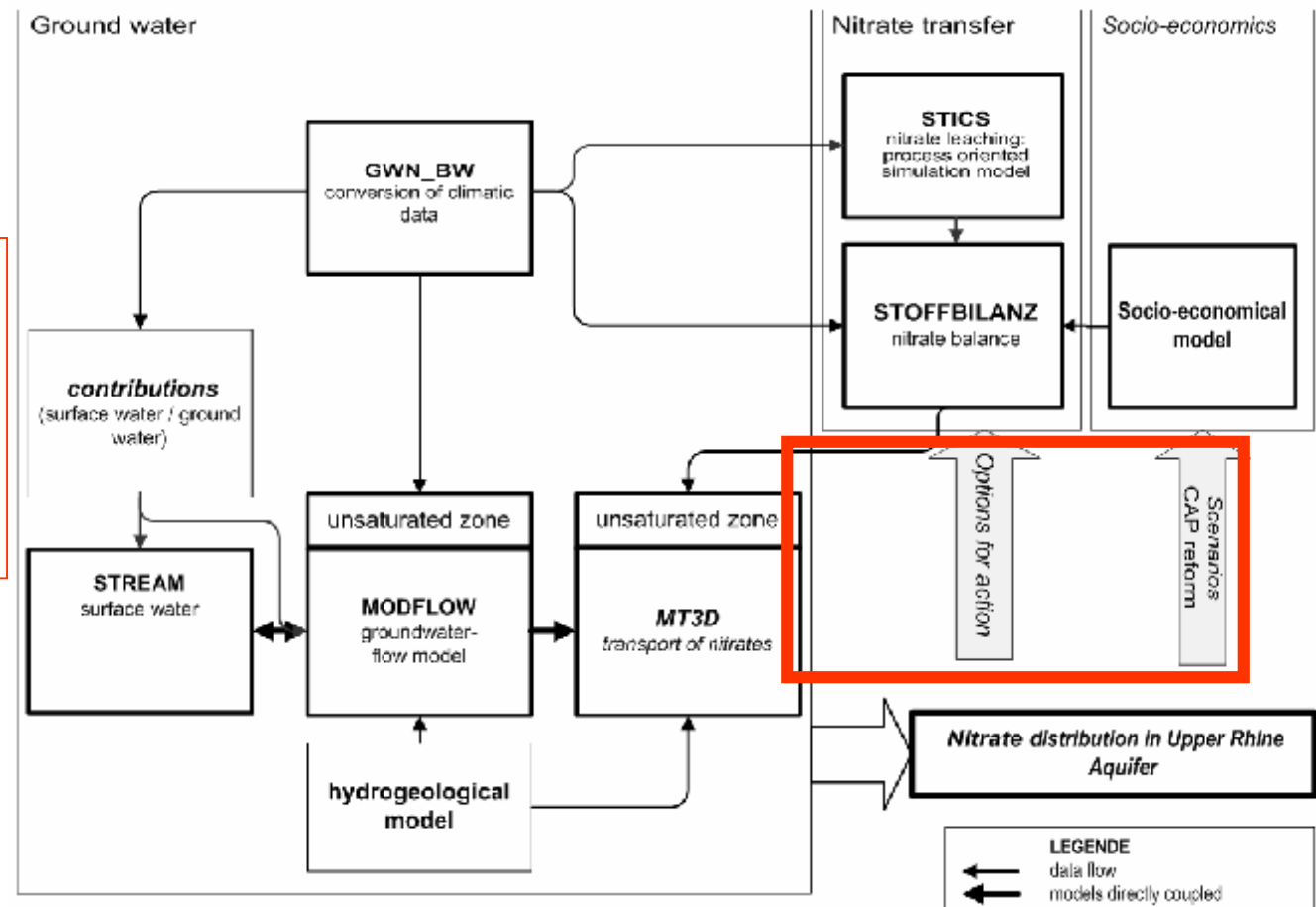


# Model system



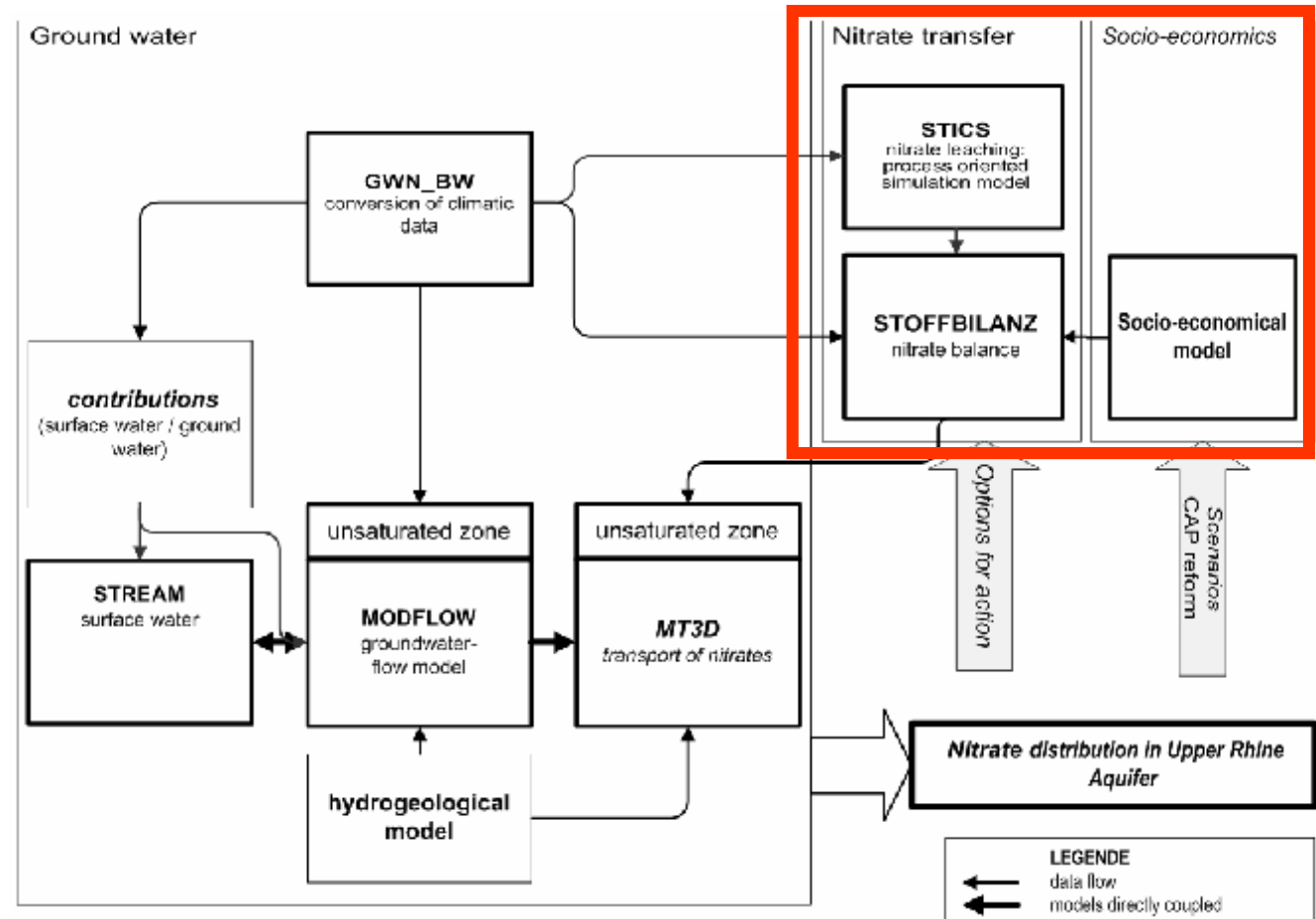
# Model system

**Options for action  
and Scenarios**



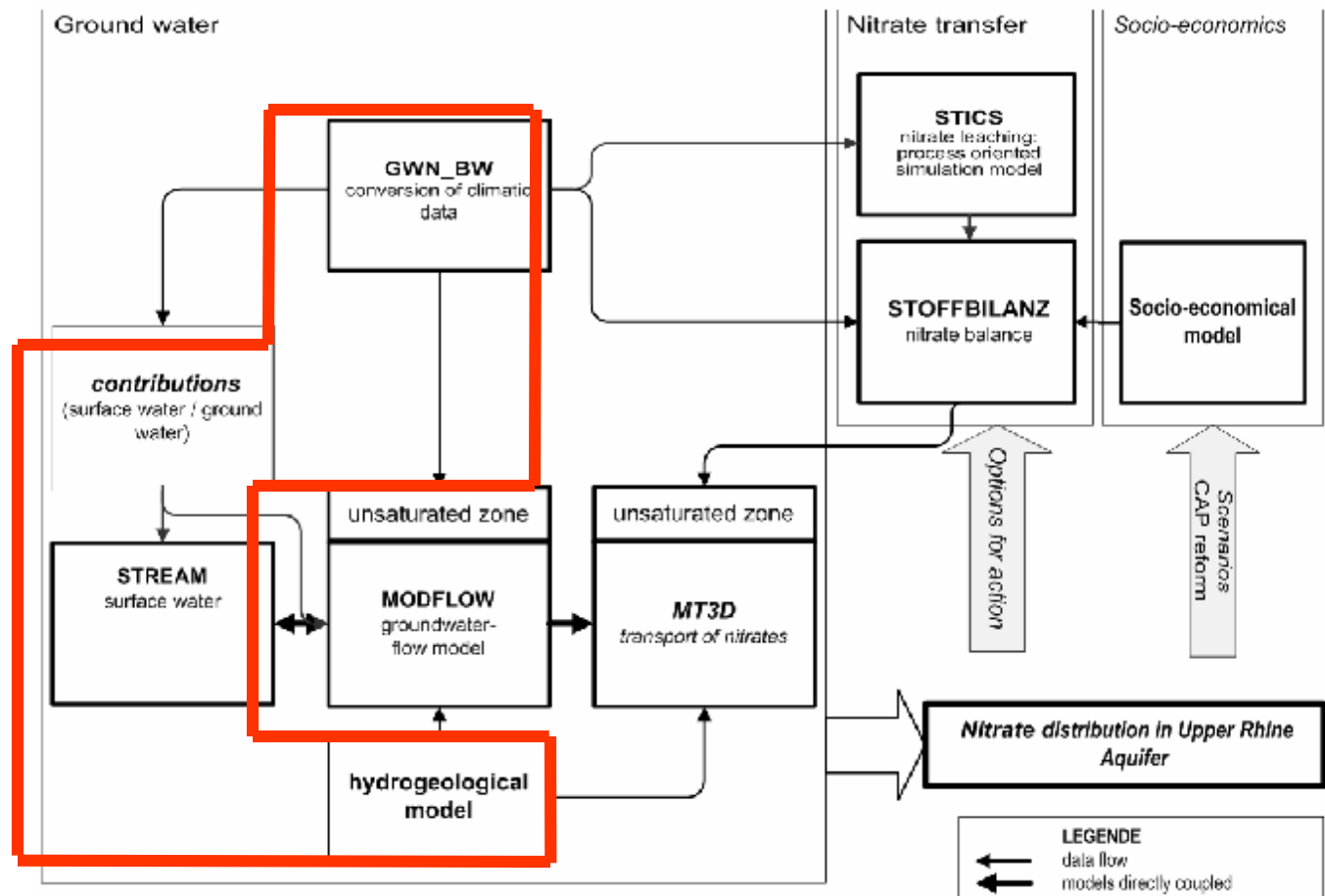
# Model system

**Spatial distribution of nitrate leaching**



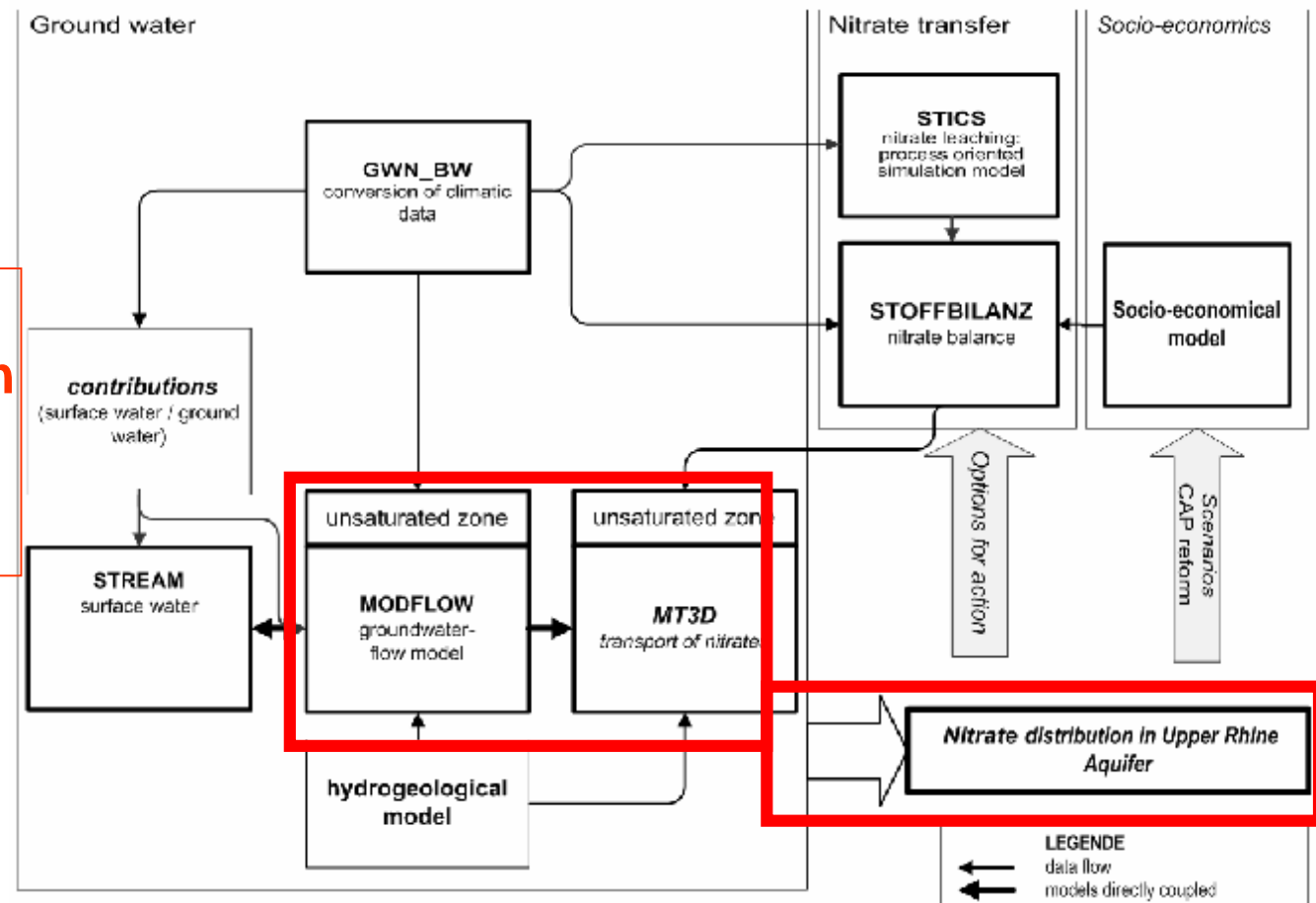
# Model system

Basics for groundwater model



# Model system

Nitrate distribution in groundwater



## cost of the project







project implementation between 2003 und 2006

# Financial partners



## European Union

### INTERREG III A Upper Rhine-Mid-South and PAMINA

§Institute for Environment, Nature Conservation  
and Measurements of Baden-Wuerttemberg

§Alsace Region

§Alsace Geological Service (BRGM)

§Water Agency Rhine-Meuse (AERM)

§Ministry of Ecology and Sustainable  
Development

§State Agricultural Investigation and Research  
Institute Augustenberg (LUFA)

§Government Bureau Freiburg

§Swiss Confederation

§Canton of Basel-Landscape

§Canton Basel-City



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EFRE)

# Thank you for your attention

- Financial Partners
- This project was supported by the European Union



Baden-Württemberg  
REGIUNGSPRÄSIUM FRIEDBURG



Kanton Basel-Landschaft



Basel-Stadt