

International conference on  
Integrated water resource management  
of tropical river basins



*Integrated, GIS-based modelling  
in WAVES and RIVERTWIN*

ANDREAS PRINTZ

Equipe:

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Dipl. Ing. Markus Müller (ILPOE)

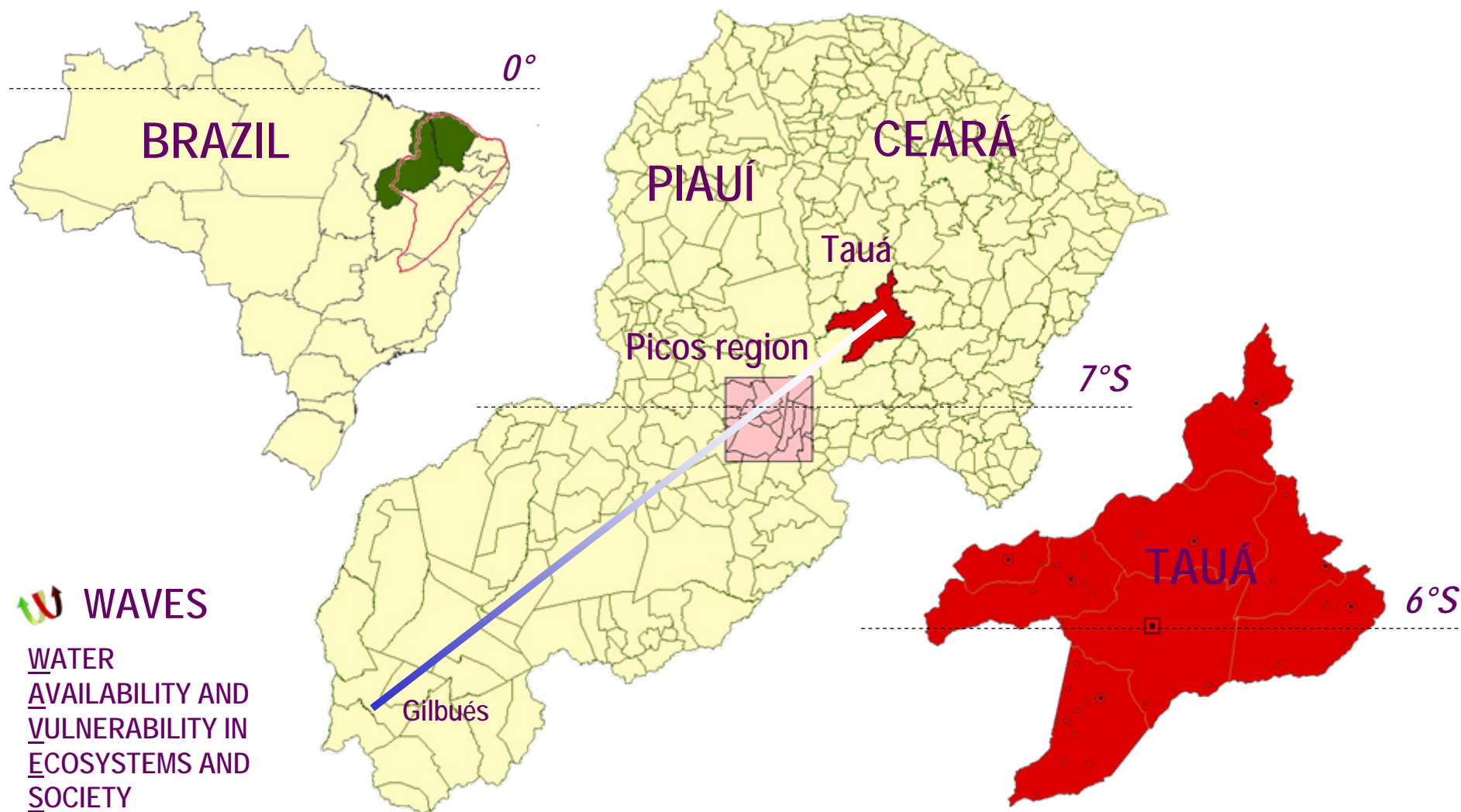
Dr. Hans-Georg Schwarz von Raumer (ILPOE)

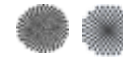
Prof. Dr. Giselher Kaule (ILPOE)

ILPOE – Institute for Landscape Planning and Ecology, University of Stuttgart



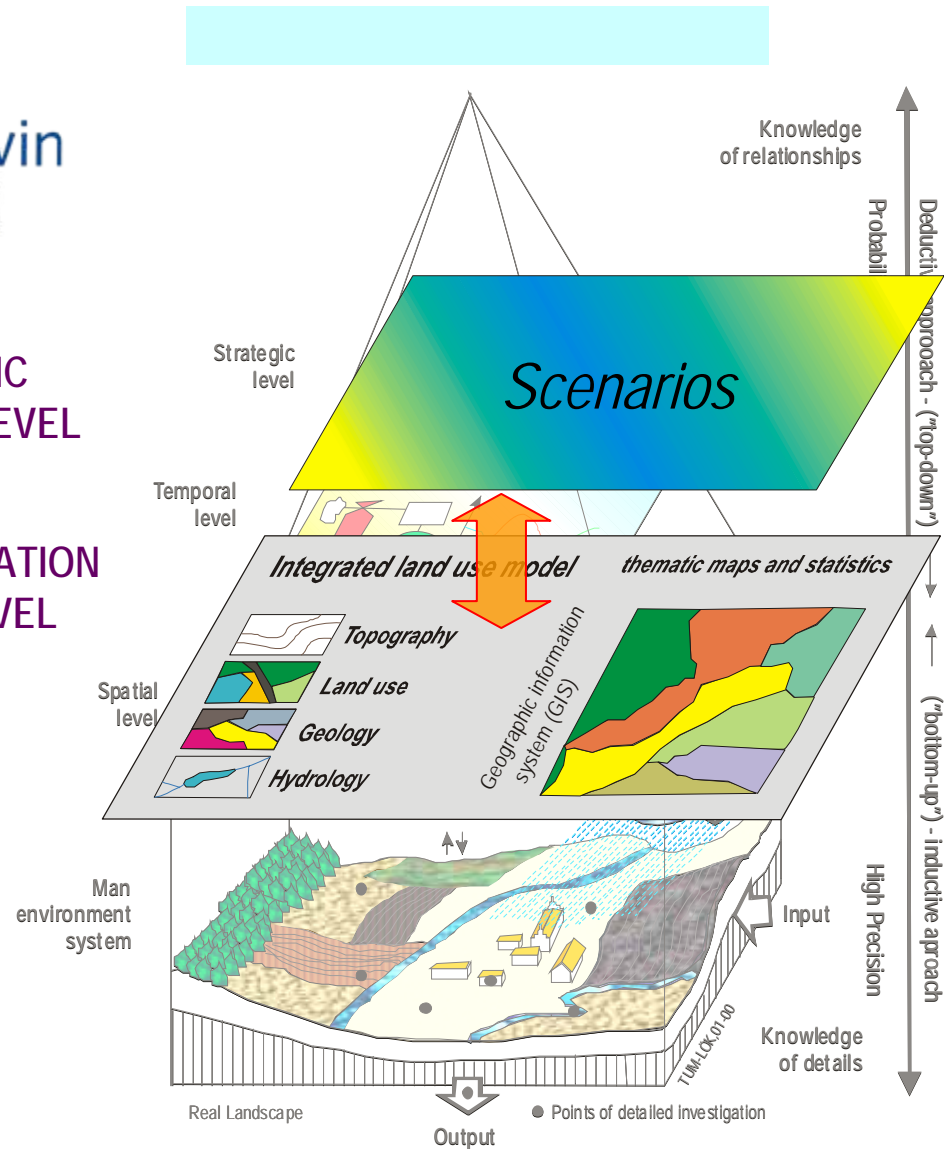
## RESEARCH ON THE REGIONAL LEVEL IN NORTHEASTERN BRAZIL

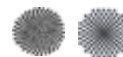




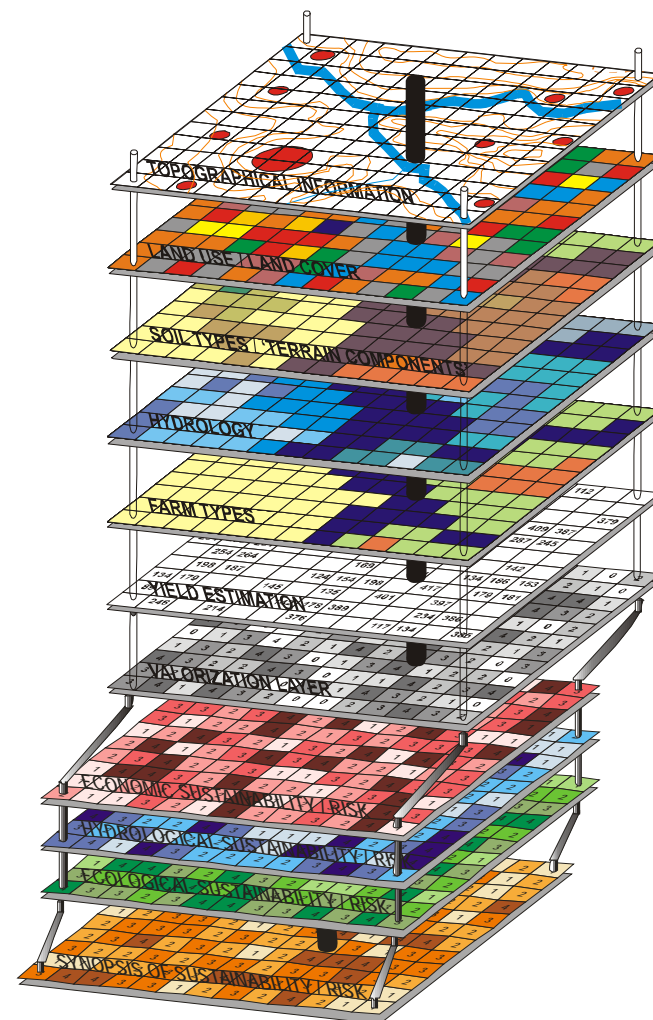
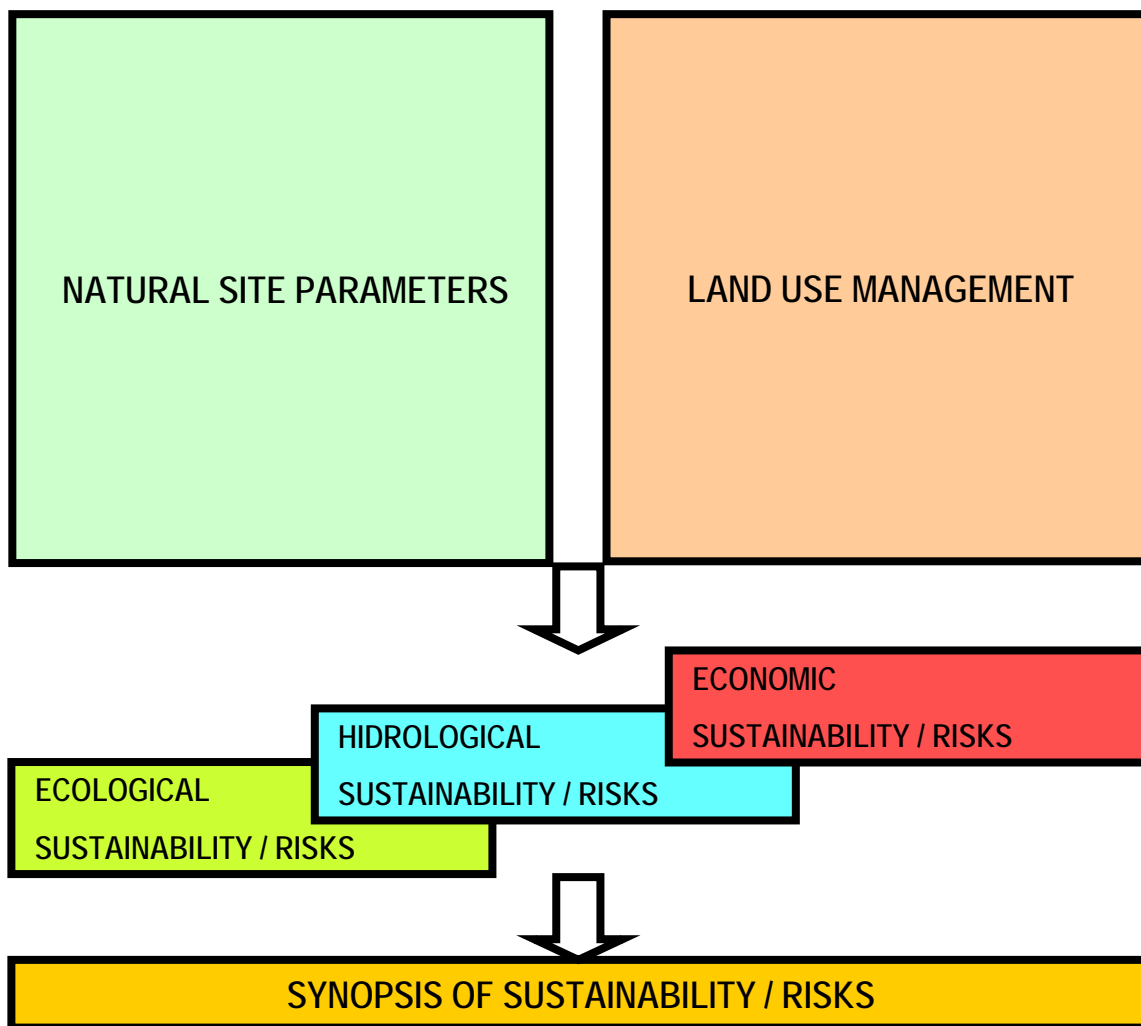
## STRATEGIC SCENARIO LEVEL

## GIS BASED SIMULATION ON SPATIAL LEVEL

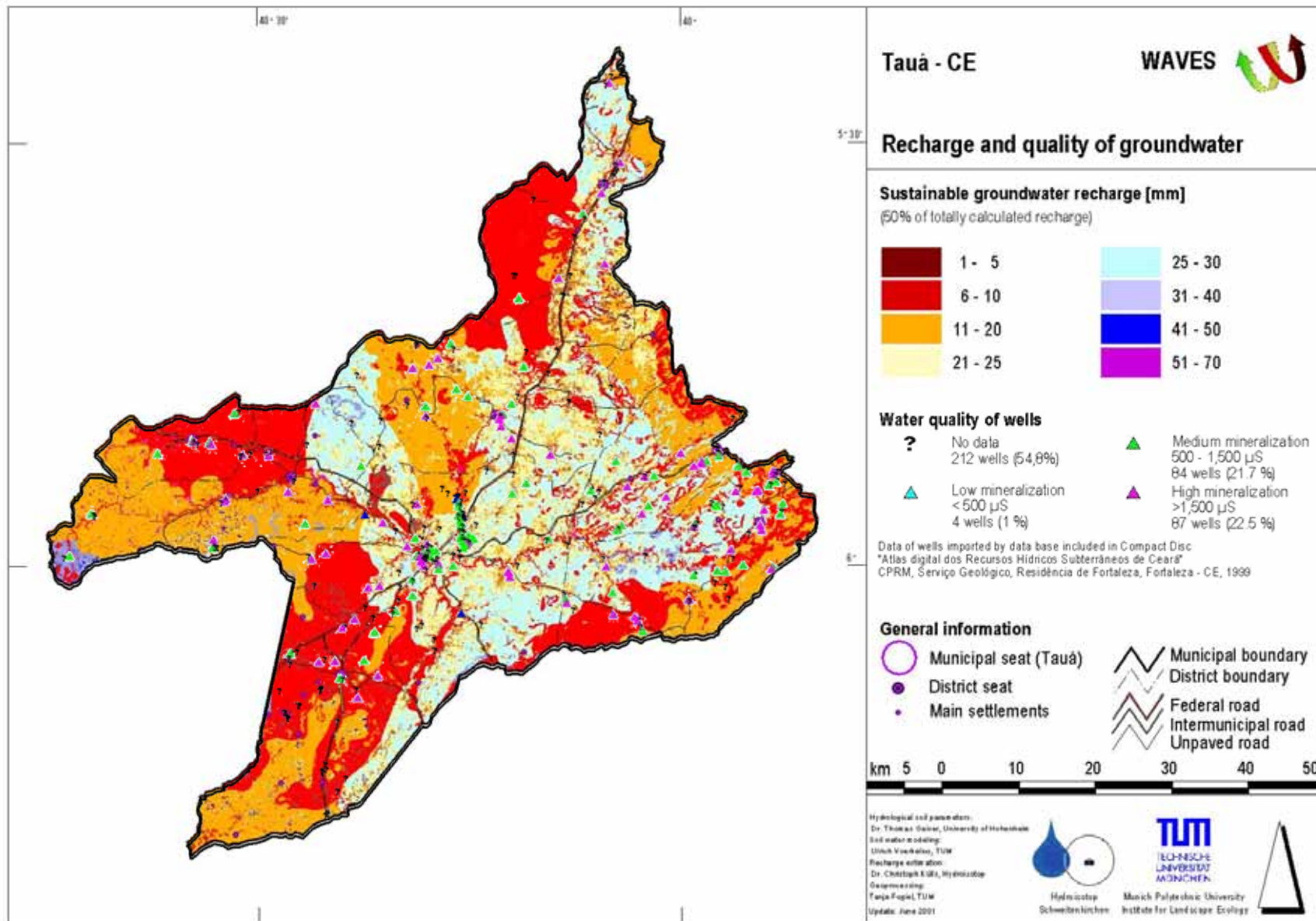




# INTEGRATION OF DIFFERENT WORKING GROUPS' RESULTS





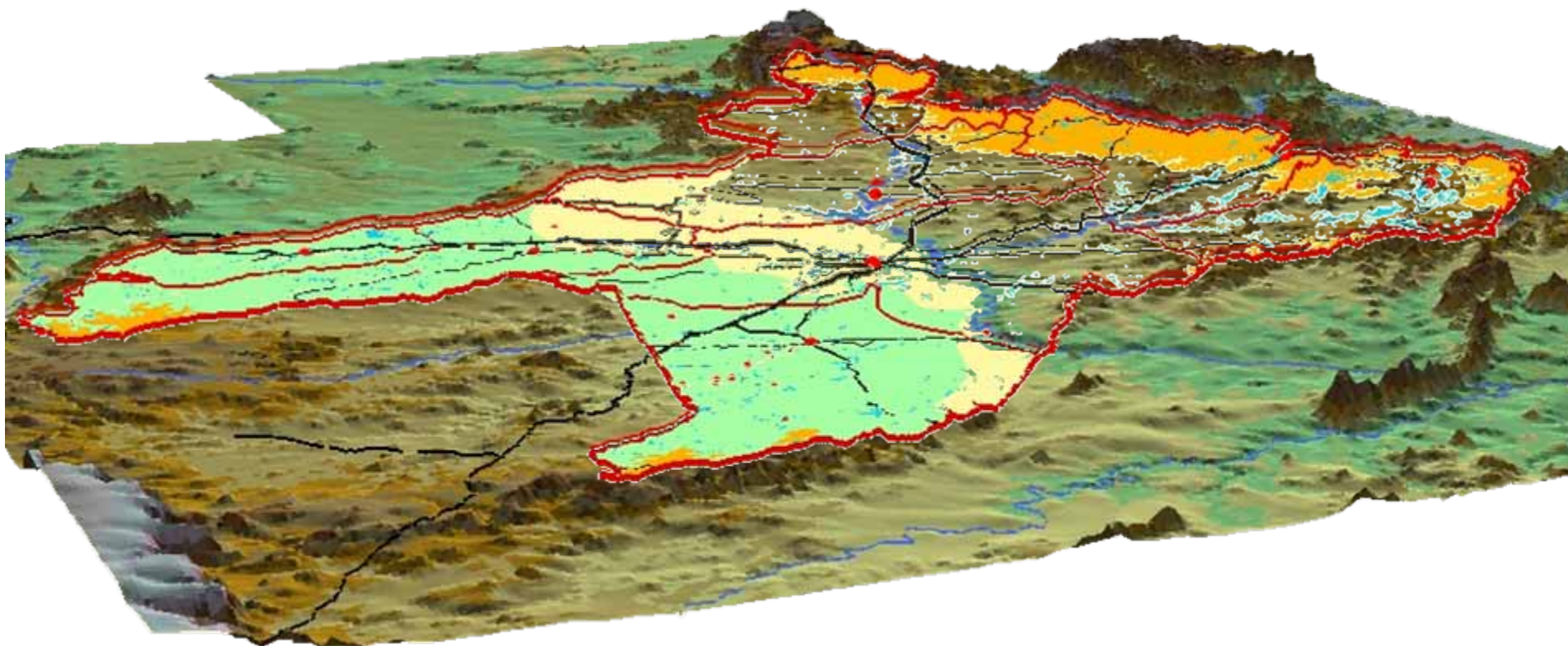




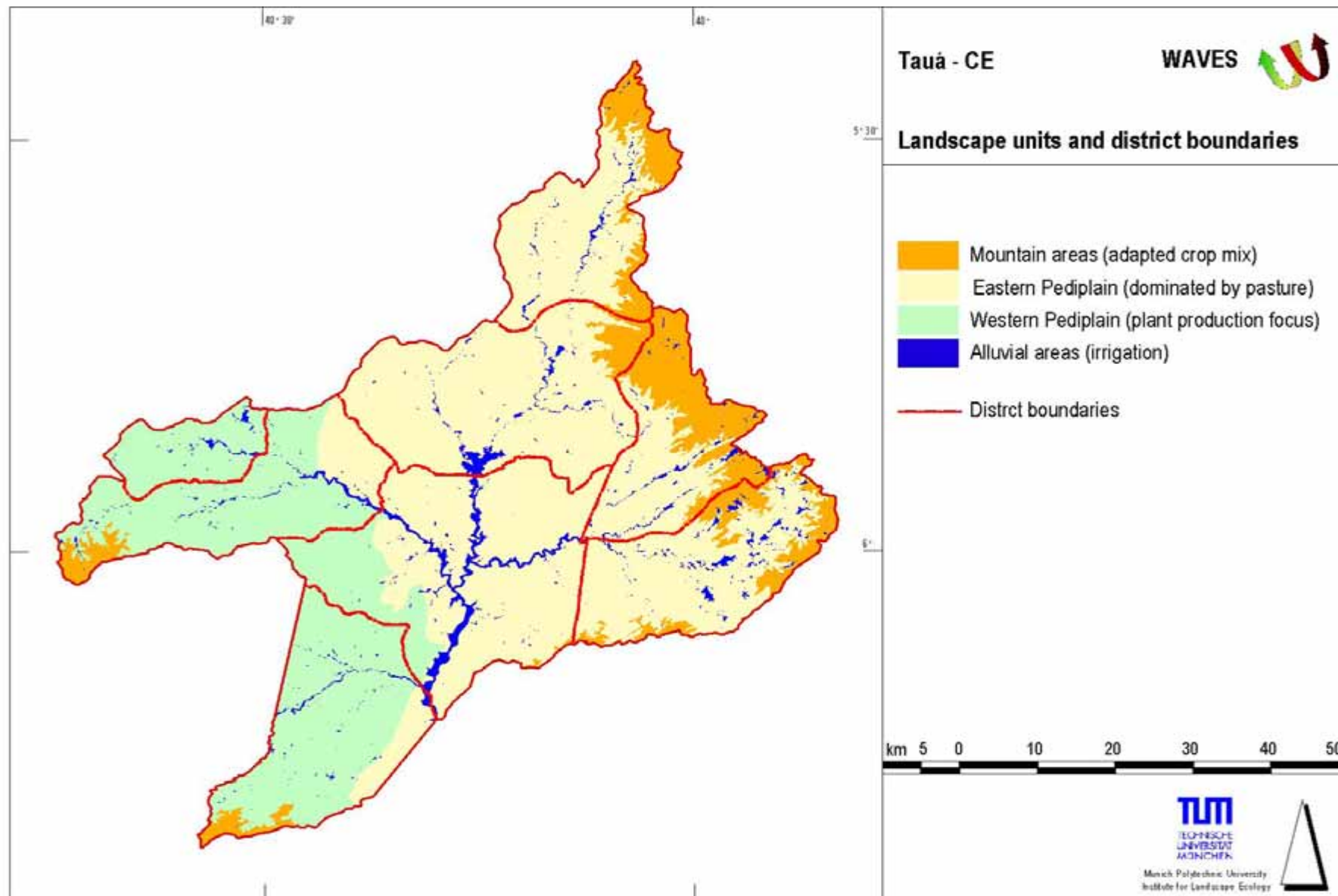
## SPATIALLY ALLOCATED FARM TYPES

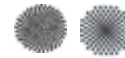
- Topography
- Soils

	Serra		Pediaplano L'Este
	Alluviais		Pediaplano Oeste

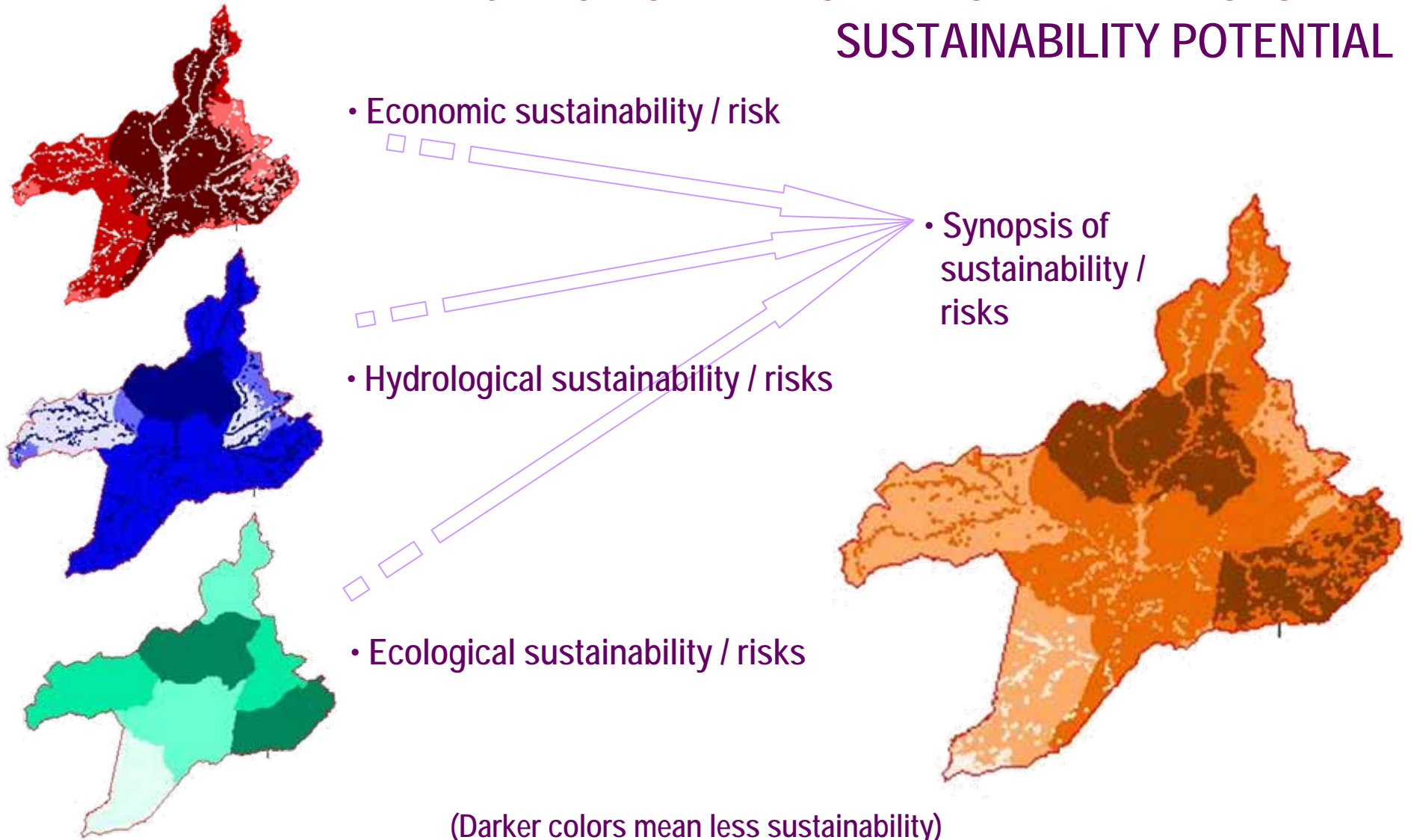




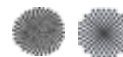




## IDENTIFICATION OF AREAS WITH STABILITY RISKS AND SUSTAINABILITY POTENTIAL





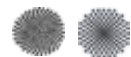


## RIVERTWIN RESEARCH AREAS AND MODELS' RESOLUTION

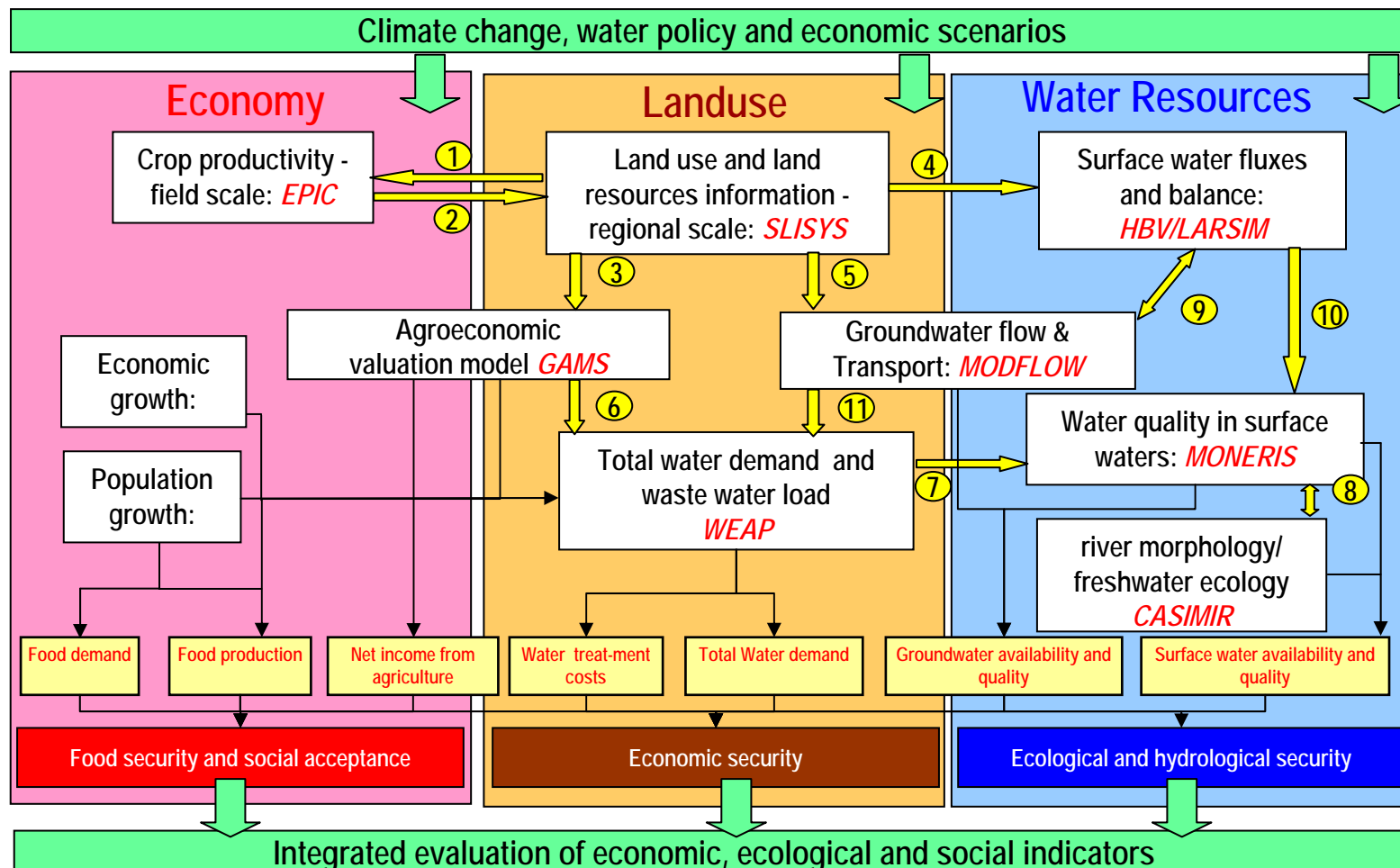
Spatial resolution: grid with a cell size of 1 km<sup>2</sup> (1000 x 1000m)

Temporal resolution: output of interim results: 0.5-1 year

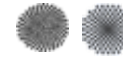
<i>Character of different water basins</i>	WAVES	NECKAR	OUÉMÉ	CHIRCHIK
Total size (1,000km <sup>2</sup> )	3-4	15	43	14
Population (1,000 inhabitants)	50-70	7,5	1-2,000	2-3,000
Climate zone	tropical semiarid	temperate humid	tropical subhumid	continental, semiarid
Inflow regime	rainfall	snow, rainfall	rainfall	snow, glacial-rainfall
Data availability	low	high	low	moderate



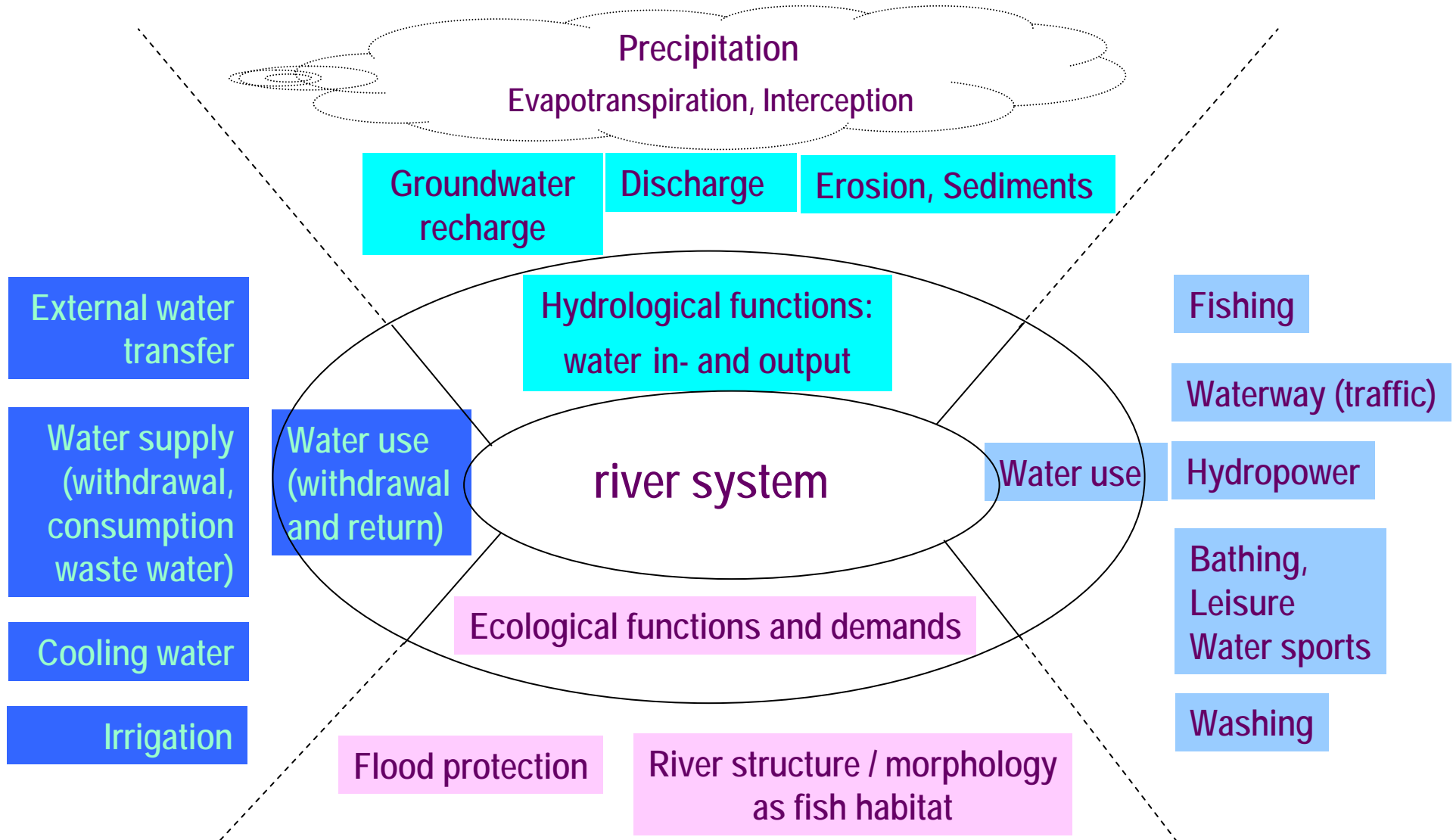
## RIVERTWIN – SUBMODELS AND WORKING FOCUS



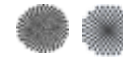
**Exchange Parameters:** 1: Soil, terrain, climate and vegetation information; 2: yield, biomass, water and nutrient balance and transport, water consumption, pesticide load; 3: yield, biomass, water and nutrient demand; 4: Surface water, Sediment, pesticide and nutrient loss; 5: Recharge, load; 6: Water demand from agriculture; 7: Reflux treated water and load; 8: Sediment and nutrient load; 9: Groundwater Surface Water interaction; 10: water flux in river network; 11: water availability in rivers, lakes and aquifers



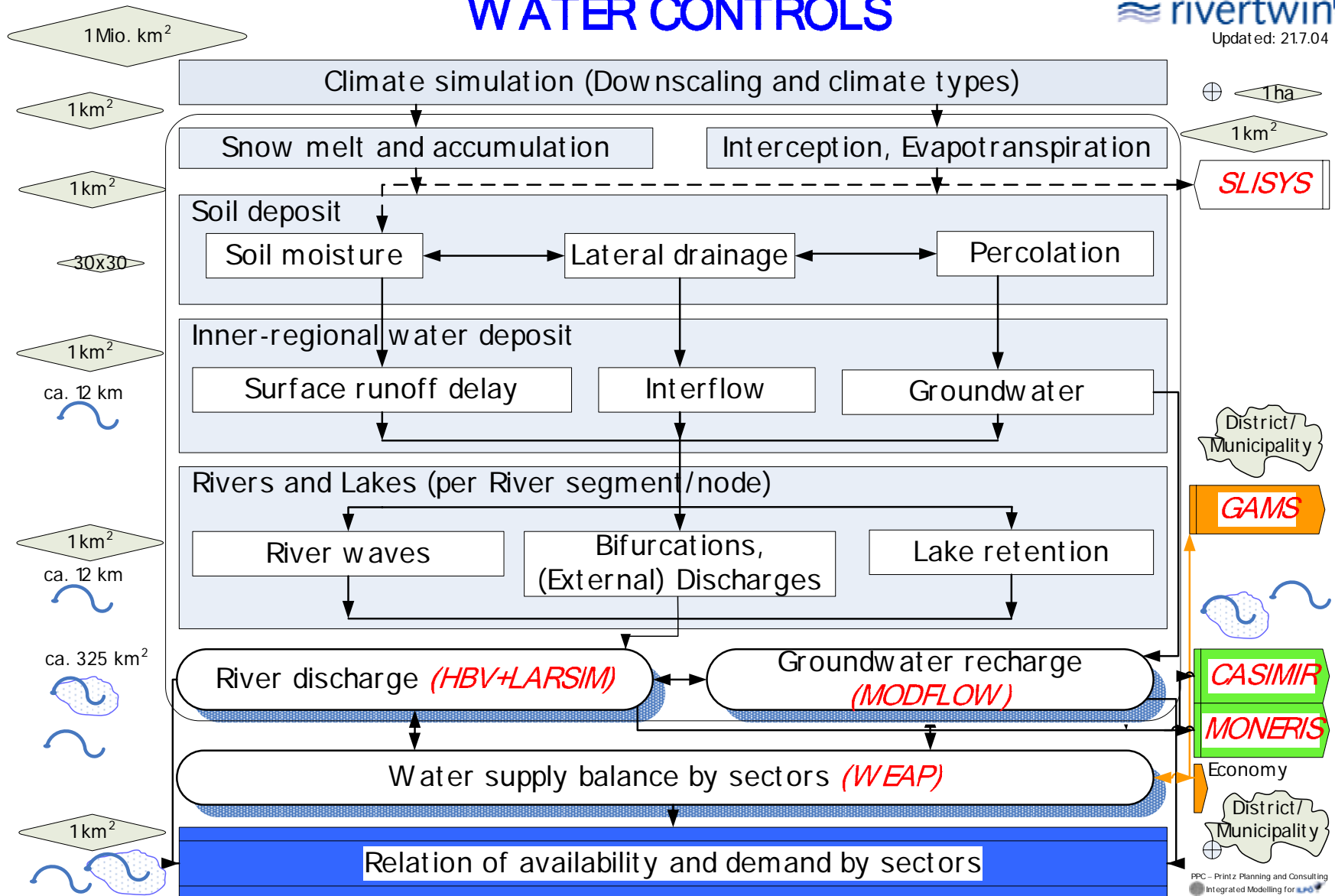
## WATERSHED MANAGEMENT TASKS

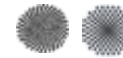




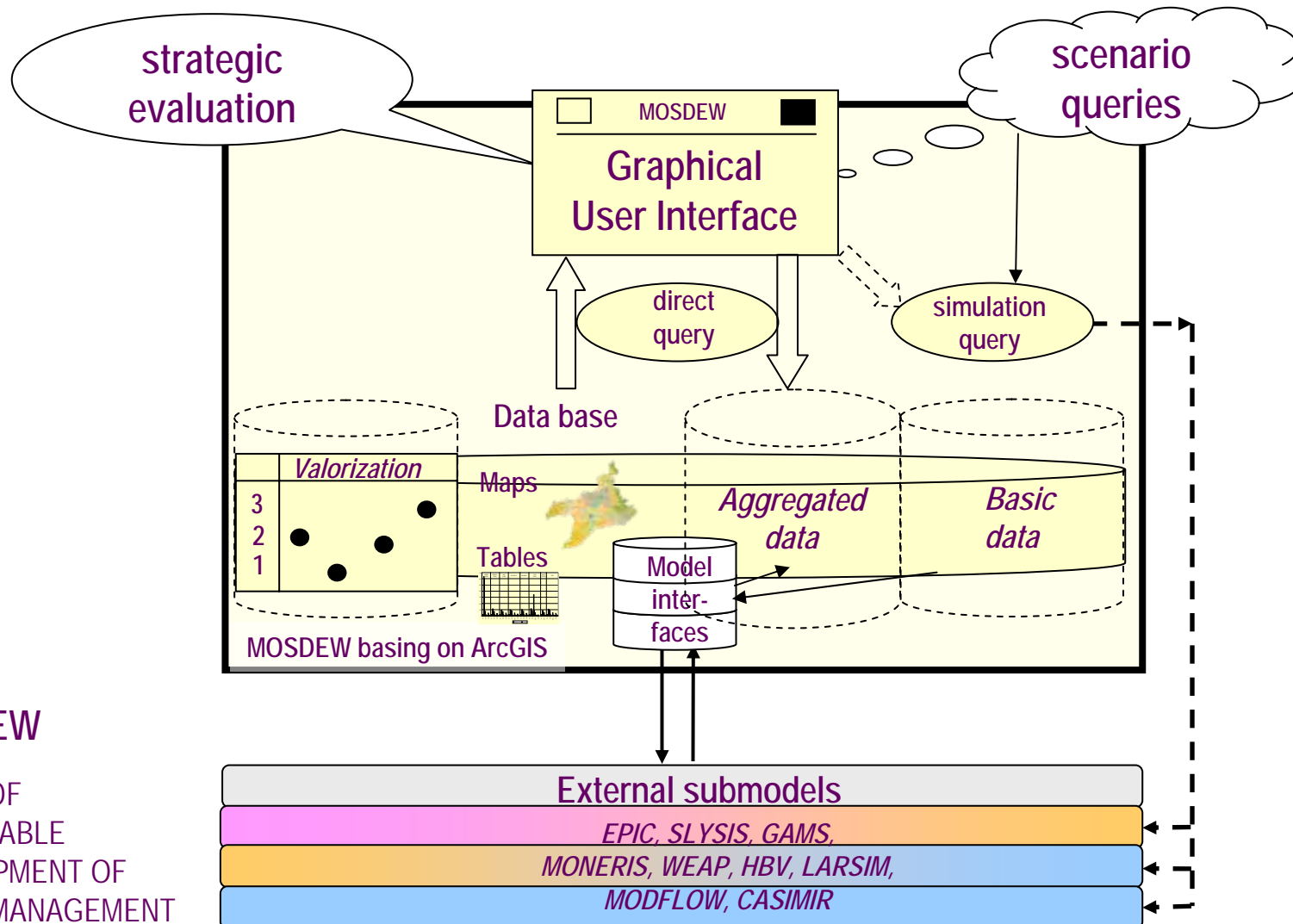


# WATER CONTROLS





## SIMULATION STEPS AND COUPLING



### MOSDEW

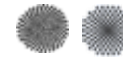
MODEL OF  
SUSTAINABLE  
DEVELOPMENT OF  
WATER MANAGEMENT



## GIS-BASED INTEGRATION BY MOSDEW

- Integration of various disciplines research results and scales at a regional level
- Low data availability can be improved
- Common definition of interface entities / geometries accelerate verse-vice understanding and submodels' orientation
- Rapid and relatively accurate allocation of defined risk areas
- Transparent base for decision makers (politicians, stakeholders, investors)
- Open architecture





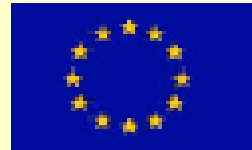
ANDREAS PRINTZ

*Integrated, GIS based modelling  
in WAVES and RIVERTWIN*

*Developing Planning Instruments for  
Integrated Water Management*

*Thank  
you very  
much for  
your  
attention*

 rivertwin



PPC  
Printz Planning and Consulting



University of Stuttgart,  
Institute for Landscape Planning and Ecology

