



Integrated Wastewater management through Hydrological Modelling of River Basins in India and Europe -Shushuk

ECOLAB –(CNRS), Castanet, Tolosan, France
IIT Delhi, New Delhi, India
UCLM, Toledo, Spain
Under
New INDIGO

This event is co-financed by the European Commission through the involvement of several projects.



A joint event organized by:



Hosted by National Geophysical Research Institute (NGIR - CSIR).



Overview

- Shushuk's partners
- Objectives
- Study sites
- Activities carried out
- Deliverables

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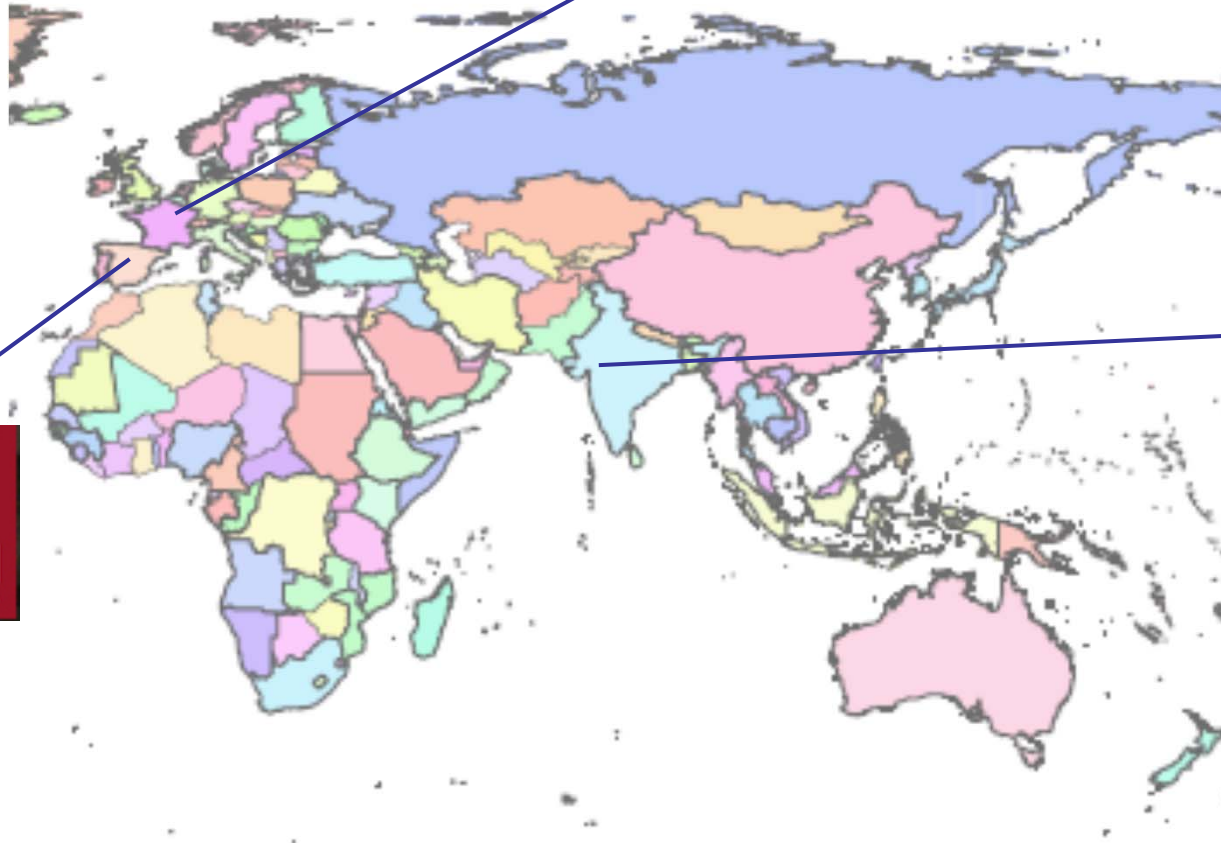
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Shushuk's partners



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Objectives

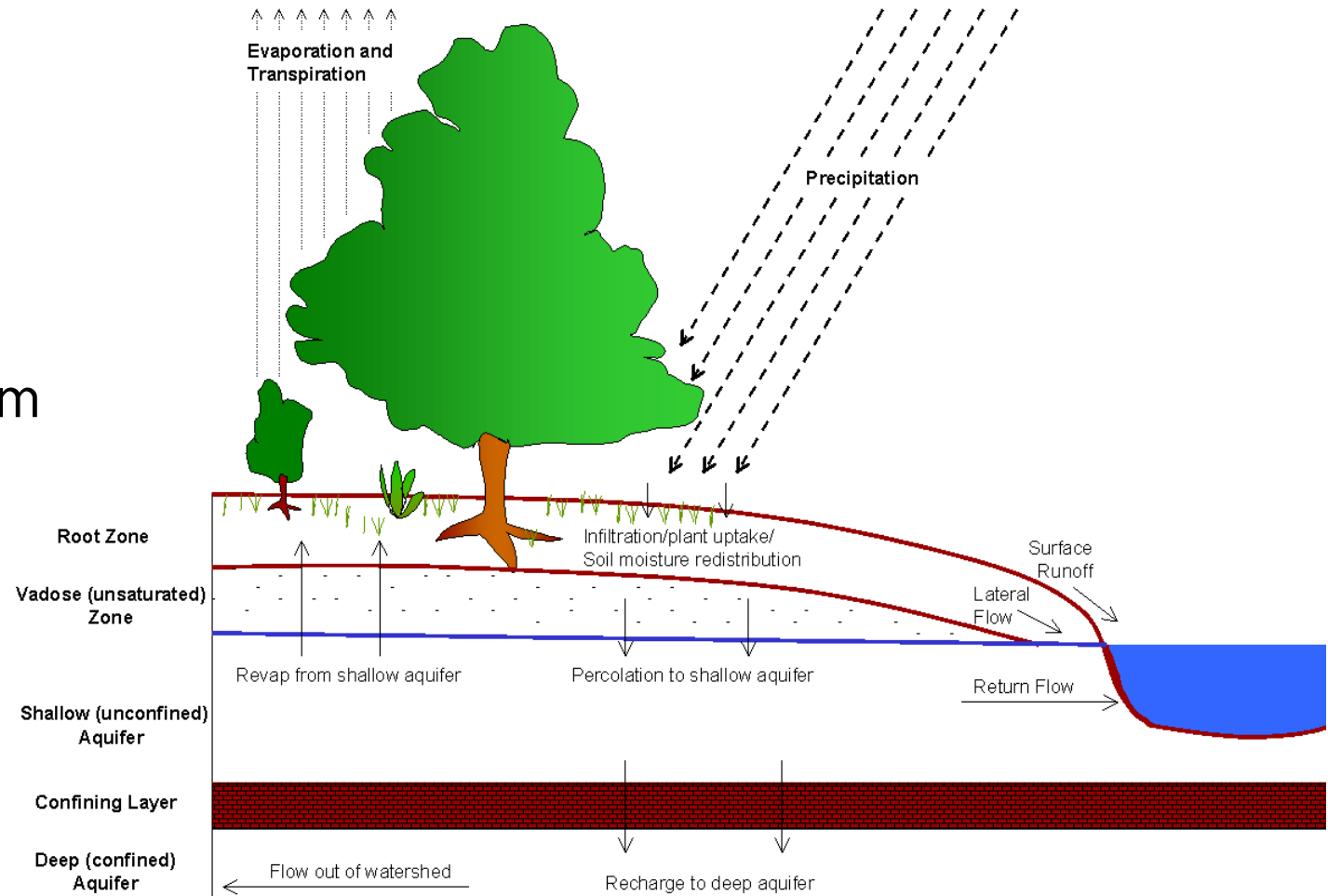
- » Assess the sediment load on water quality of a river basin
- » Assess the point & non-point source pollution load on water quality of a river basin
- » Select suitable Best Management Practices, ranking of sources & expected efficiency in nutrient reduction

Objectives

Hydrological Simulation (SWAT)

Features

- Physically based
- Distributed model
- Continuous time model (long term yield model)
- Uses readily available data
- Suitable for long term impact studies

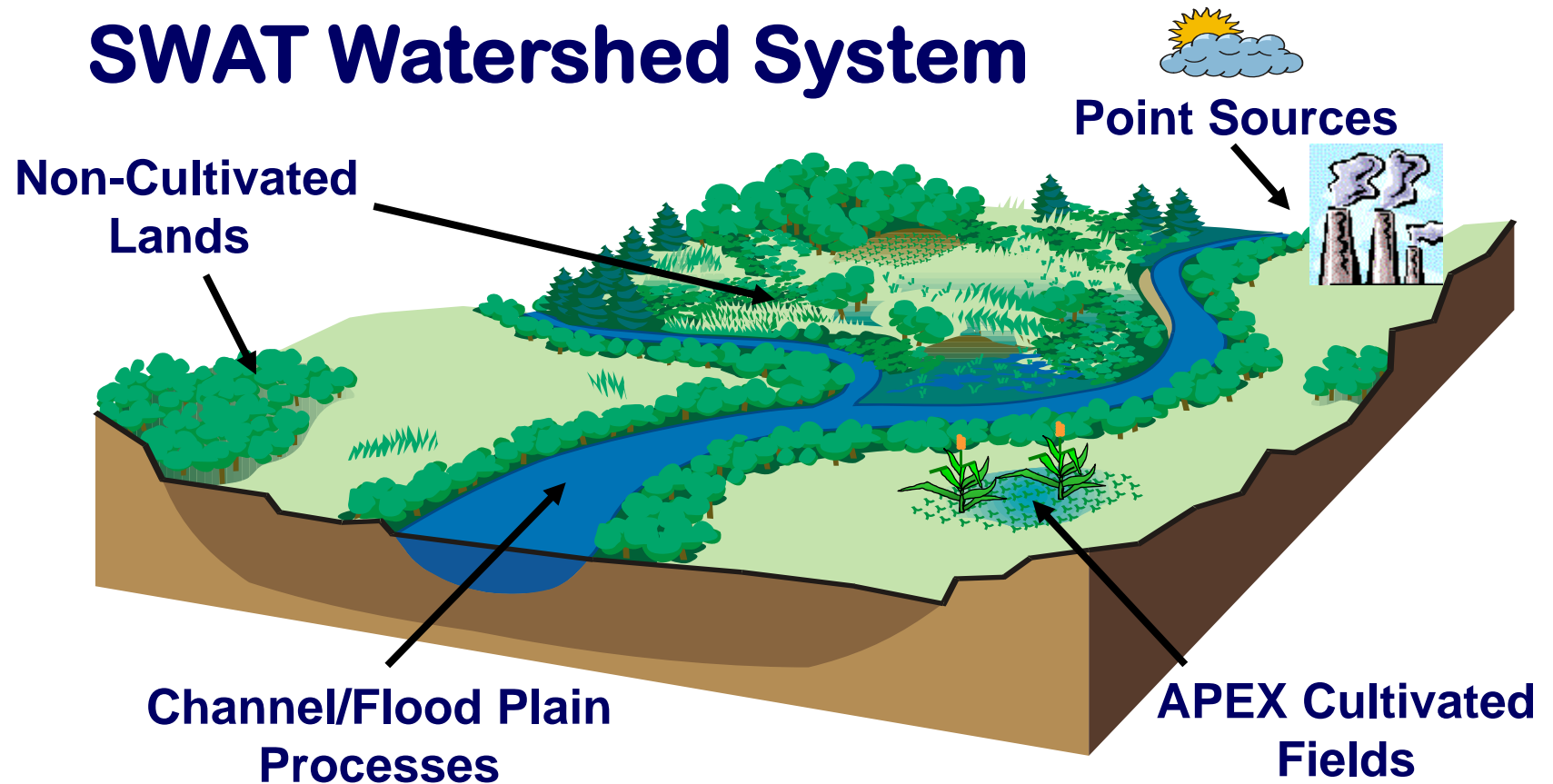


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Hydrological Simulation (SWAT)

SWAT Watershed System



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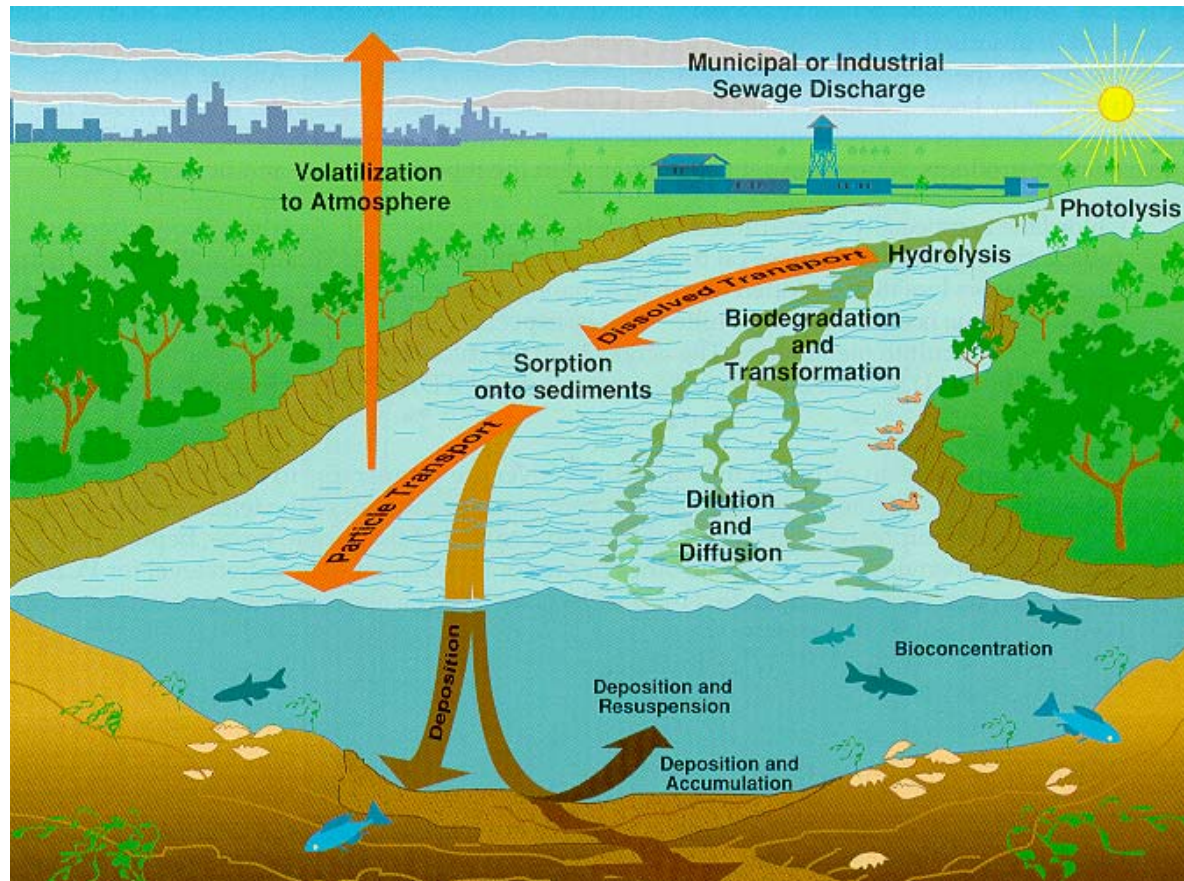


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Hydrological Simulation (SWAT)

Channel Processes



SWAT

Channel Processes

- Flood Routing
- Transmission Losses, Evaporation
- Sediment Routing
 - Degradation and deposition
- Nutrients
 - modified QUAL2E/WASP
- Pesticide
 - Toxic balance

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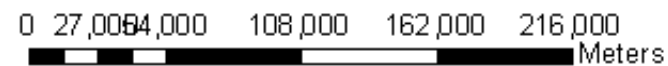
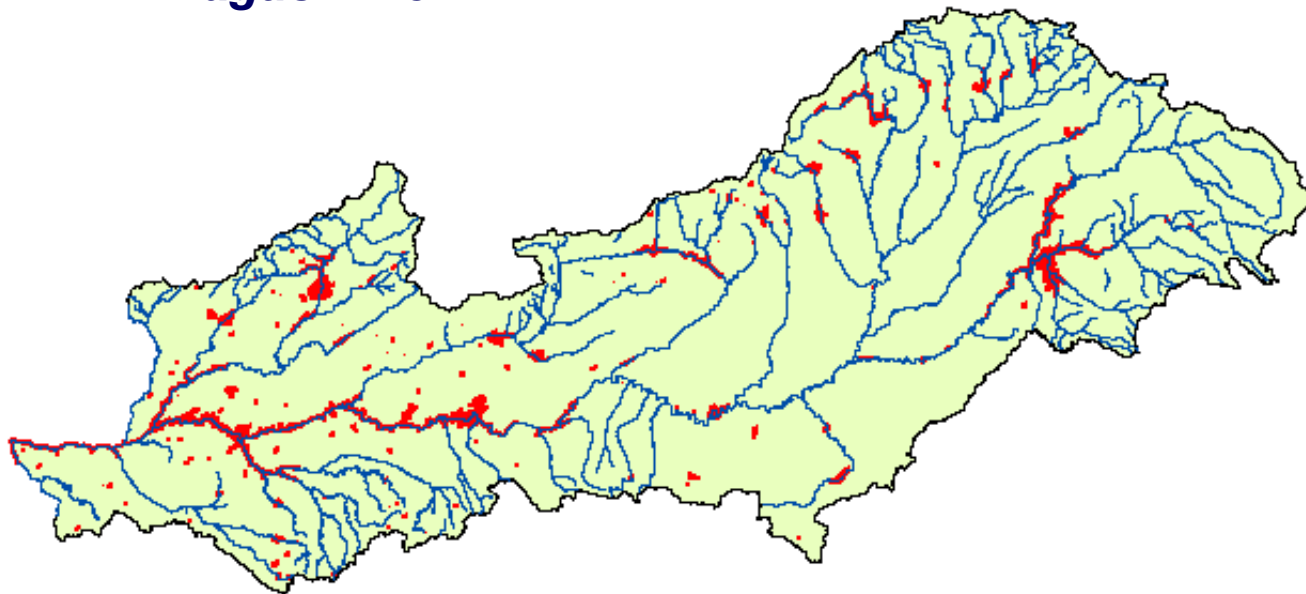
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Study sites



Tagus River



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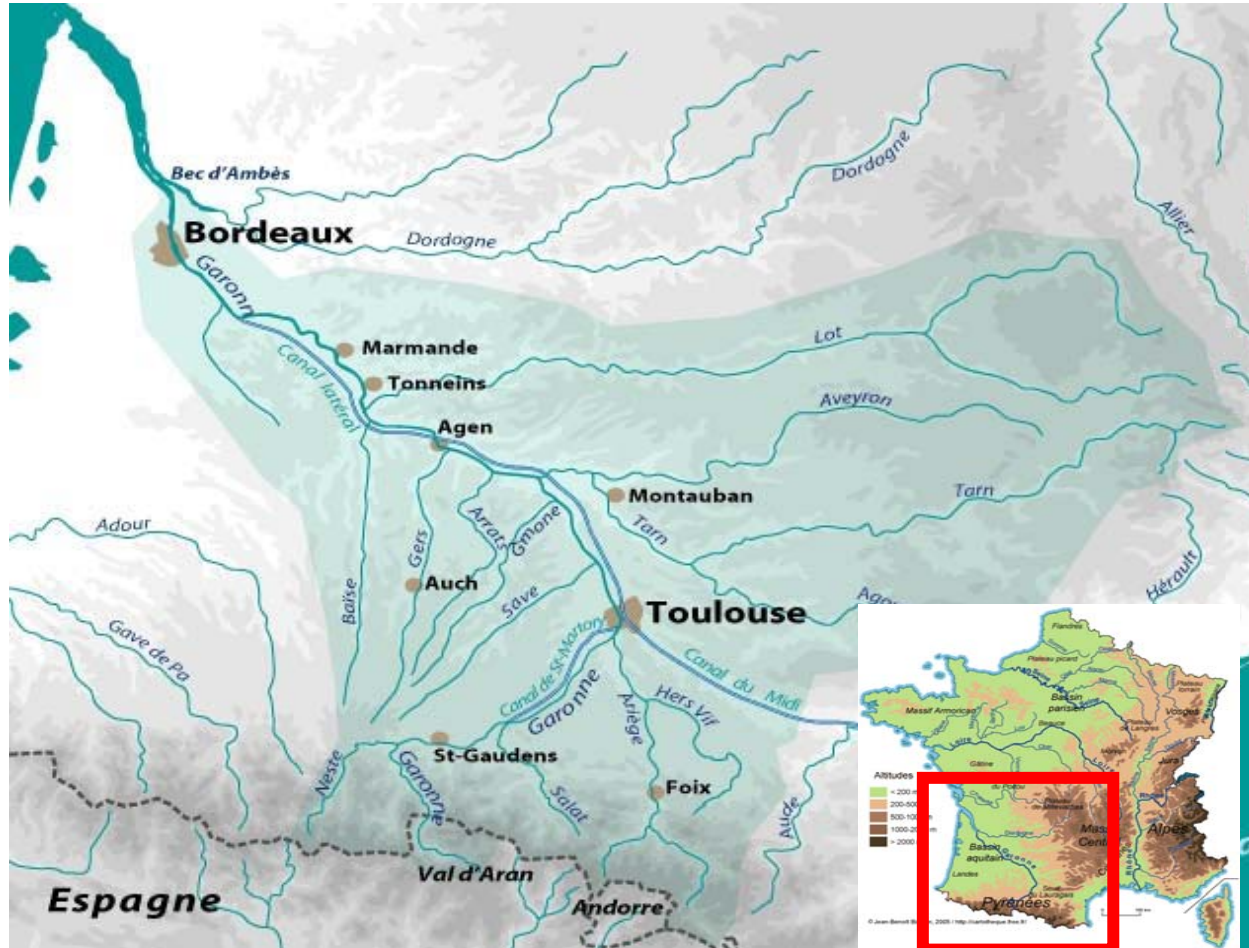
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Study sites



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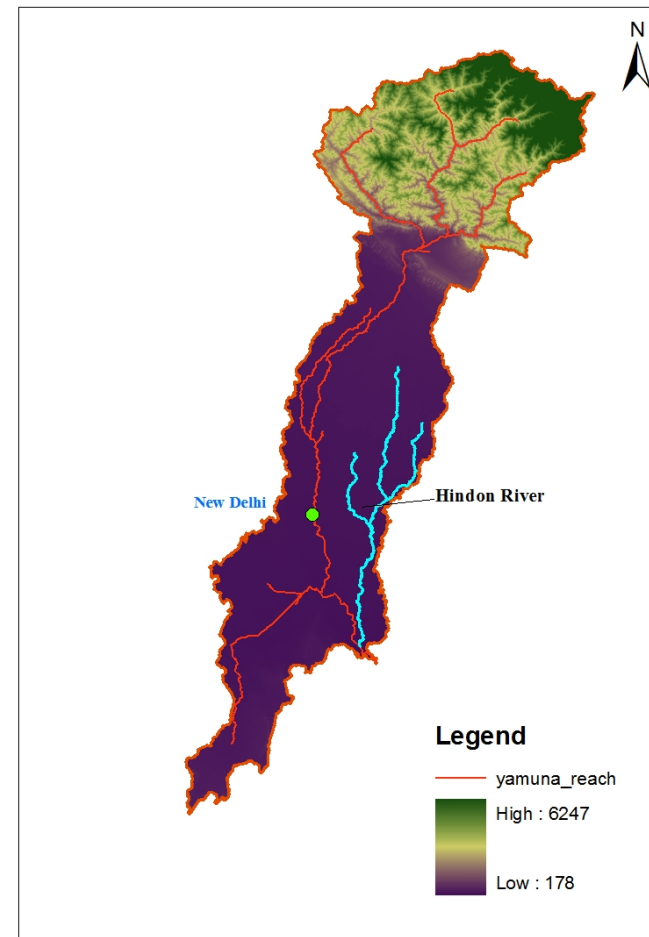
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Study sites

Upper Yamuna River Basin



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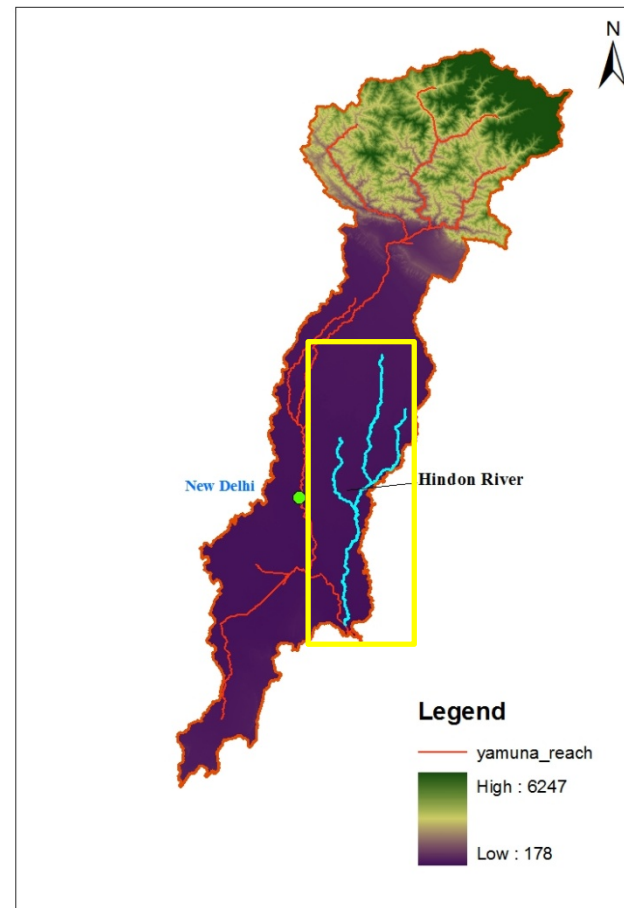
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Study sites

Hindon River



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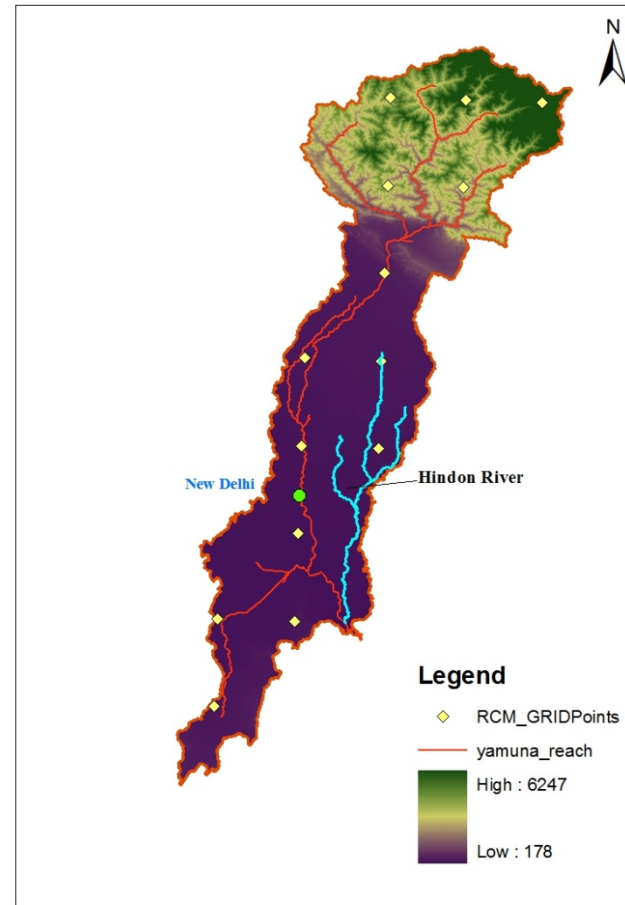
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Study sites

RCM GRID Points In Yamuna Basin



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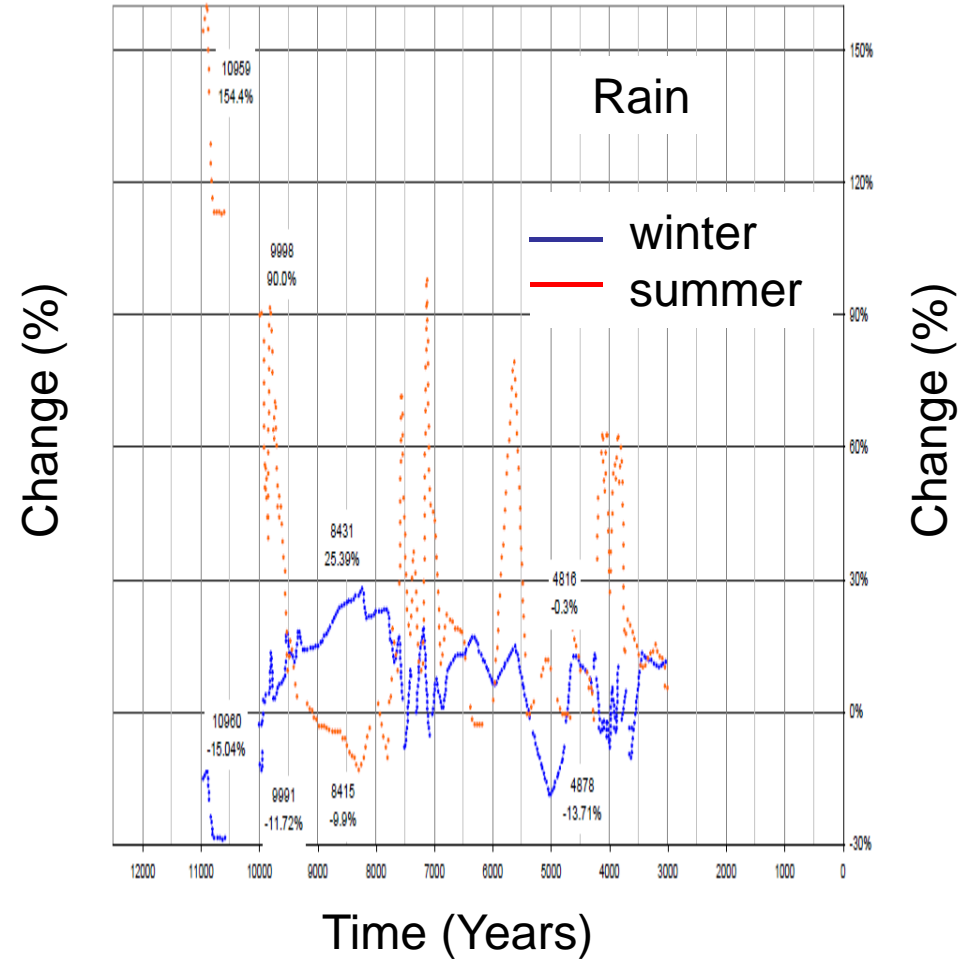
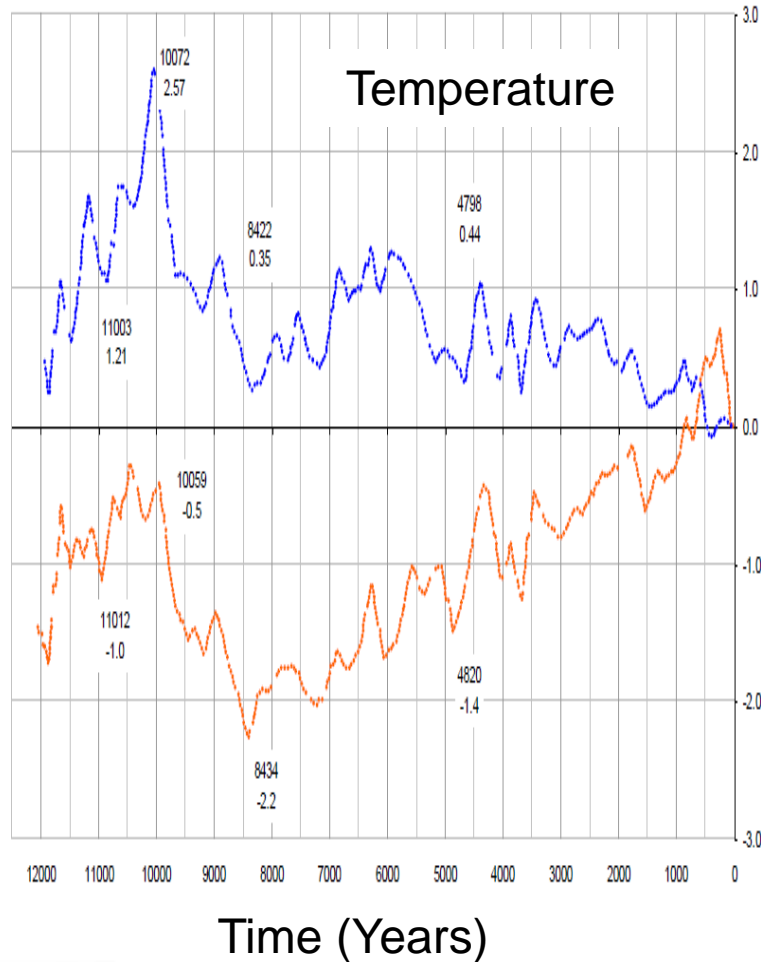
Activities carried out

- **Visit to the Indian Institute of Technology, Delhi (May 9-15, 2012)**
Three people from Ecolab (France)
Activity: Work meeting and visit of the Yamuna and Hindon rivers
- **Visit to the Indian Institute of Technology, Delhi (July 16-20, 2012)**
Three people from Ecolab (France)
Two people from University of Castilla La Mancha (Spain)
Activity: Attendance to the SWAT conference
- **Visit to the Ecolab (September 3-4, 2012)**
Two people from Indian Institute of Technology, Delhi
Two people from University of Castilla La Mancha
Activities: Work meetings and visit to the Garonne river
- **Visit to the Ecolab (September 6-7, 2012)**
Two people from Ecolab (France)
Two People from Indian Institute of Technology, Delhi (India)
Activities: Work meetings and visit to the Tagus river

Deliverables

- ❖ Exploring the possibility to transfer proven methodologies and knowledge (modeling, data processing, sampling protocols, analysis methods) on test cases basis (e.g., : to use peats to understand climate change, measure in stream processes in river).
- ❖ Comparison between SWAT modeling in Indian subbasins and European subbasin : non point + point domestic source. Hindon, Save, Alberche.
- ❖ Hindon river, transport metals and nutrients by modeling.
- ❖ Impact of major cities waste discharge to water quality in three contrast catchment in the world.

Temperature and rain changes between 1950 to - 12000 BP calculated using peat



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