EGU General Assembly 2020

PROJET FINANCÉ PAR L'ANR - PROJECT FUNDED BY THE ANR

INFILTRON

package for assessing infiltration & filtration functions of urban soils

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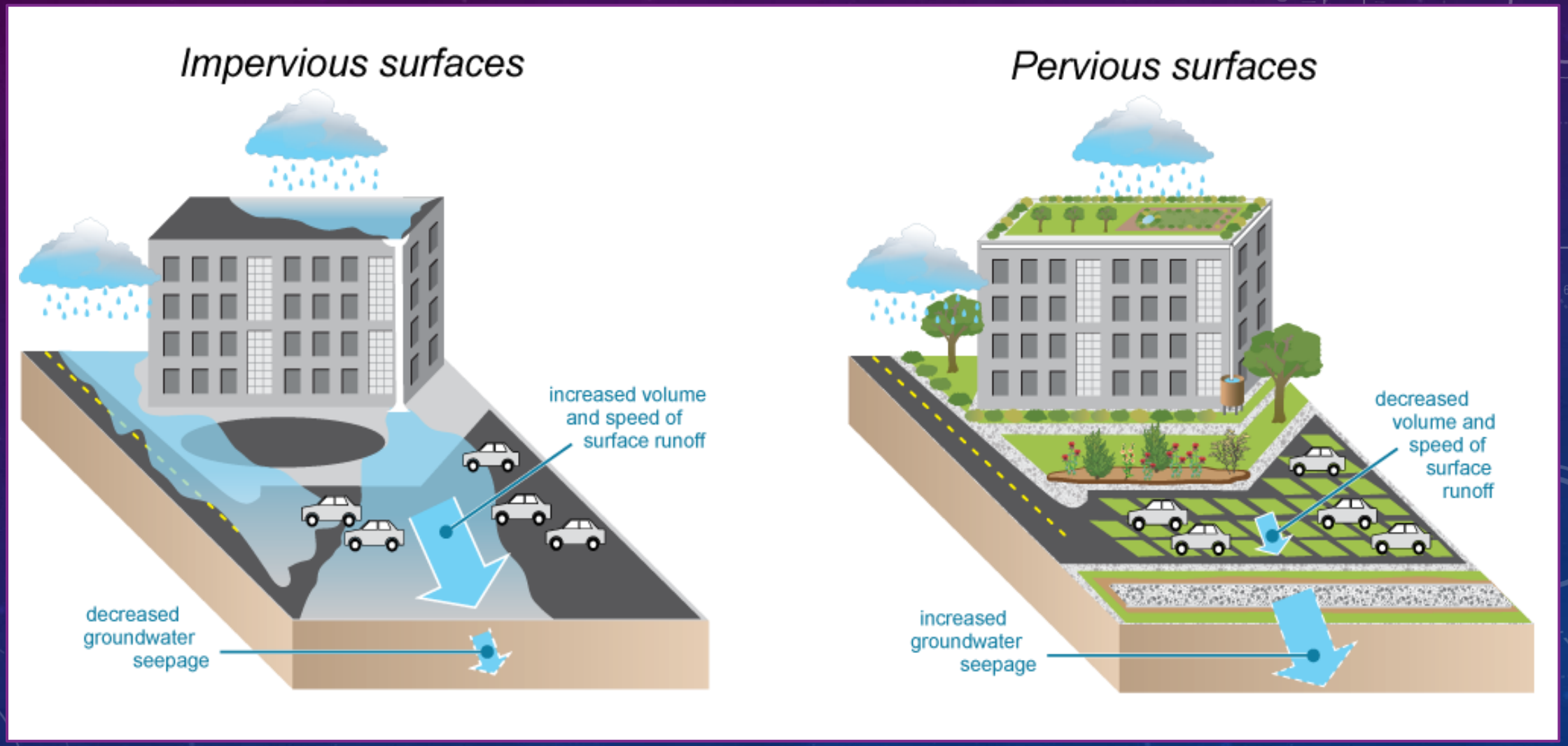
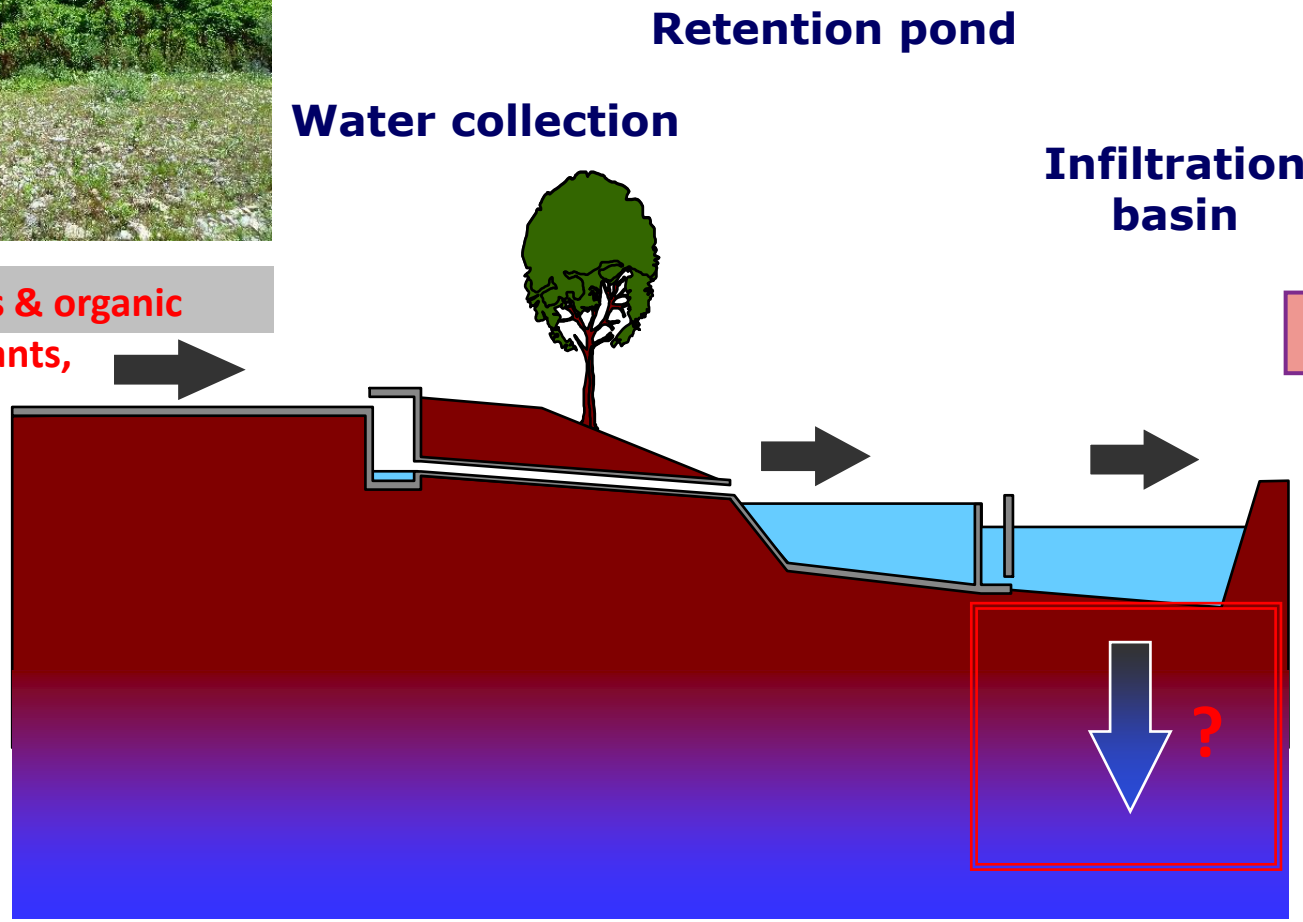
Introduction:
Need to restore water infiltration in urban areas



Infiltrating basins: crucial means to restore water infiltration

heavy metals & organic pollutants,



Need for monitoring **infiltration** and **filtering functions** of the infiltration basins

INFILTRON Project

Task 1 - INFILTRON-exp
LEHNA & DEEP
Infiltrometer develop.
and field tests

Task 2 - High-tech nano-tracers
ILM & Nano-H
Design and production

Task 3 - Validation of nano-tracers
IFSTTAR & LEM
Validation of transfer properties
in lab & field

Tast 4 - INFILTRON-mod
DEEP & LEHNA
Inversion num. model
& GUI

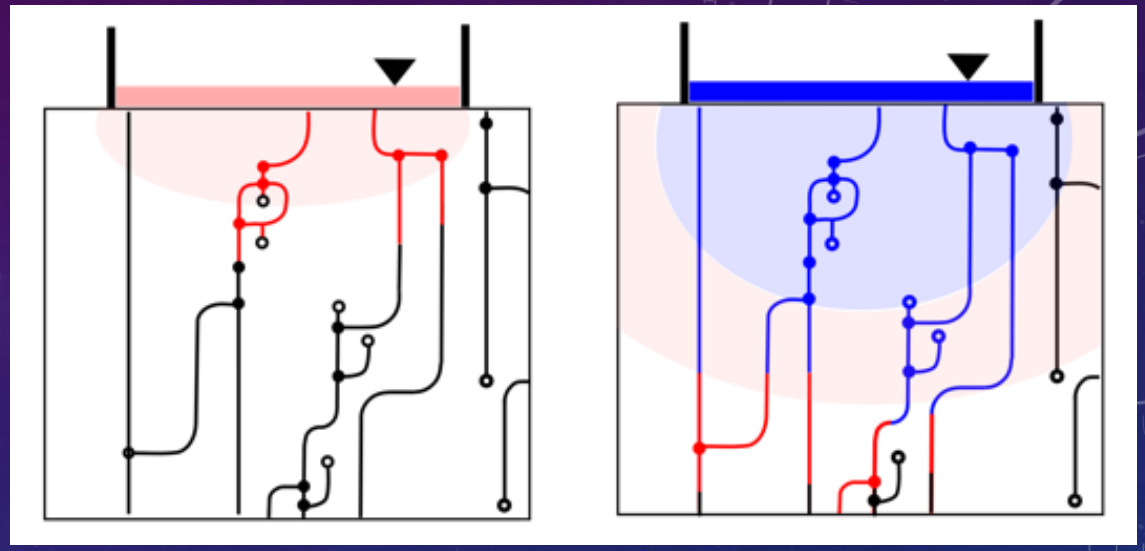
INFILTRON package

INFILTRON-exp & -mod
For assessing
infiltration & filtration functions
of urban soils

Knowledge on preferential flows
& impacts on mass transfer
in heterogeneous urban soils

Task 1: INFILTRON-exp infiltrometer

INFILTRON-exp:
- Large ring
- Injection of nano-tracers



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+ small size automatized infiltrometers

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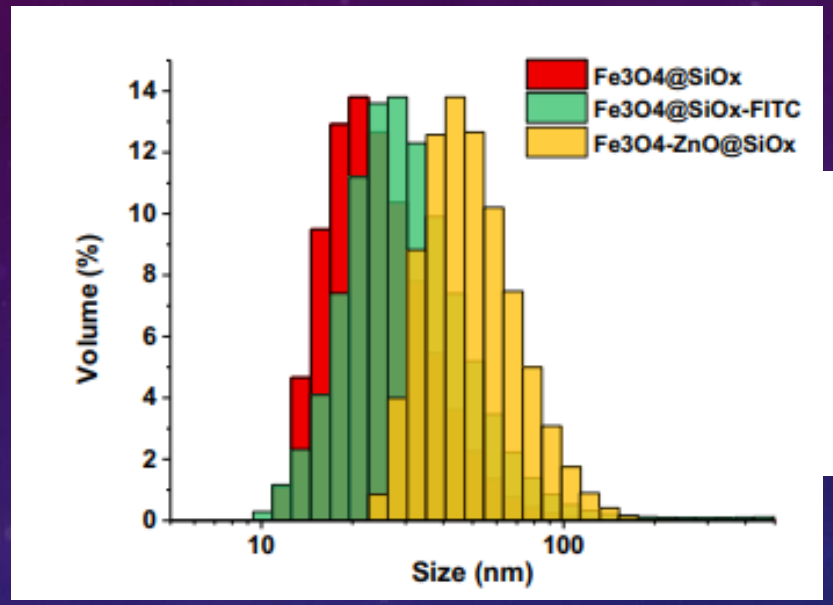
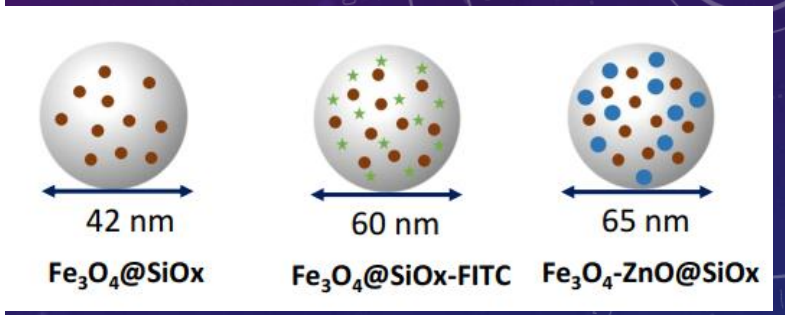
Ground-penetrating radar surveys for the detection of preferential flow into soils

Simone Di Prima et al.

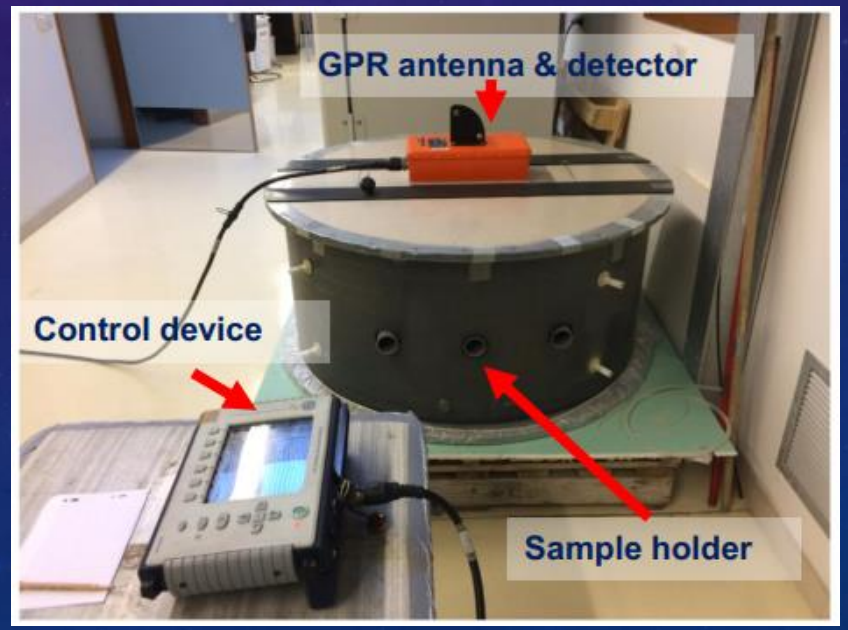
Task 2: Designing and producing Ecofriendly Nano-Tracers (ENTs)

Design & production of ENTs





Tests of their detection using Ground Penetrating Radar (GPR)

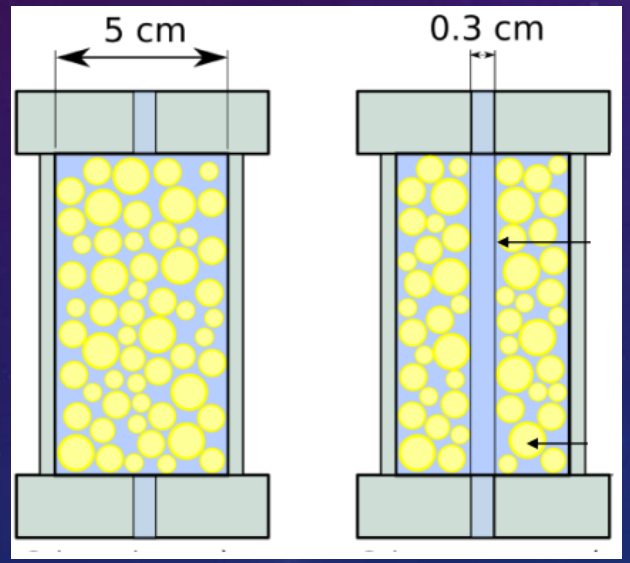


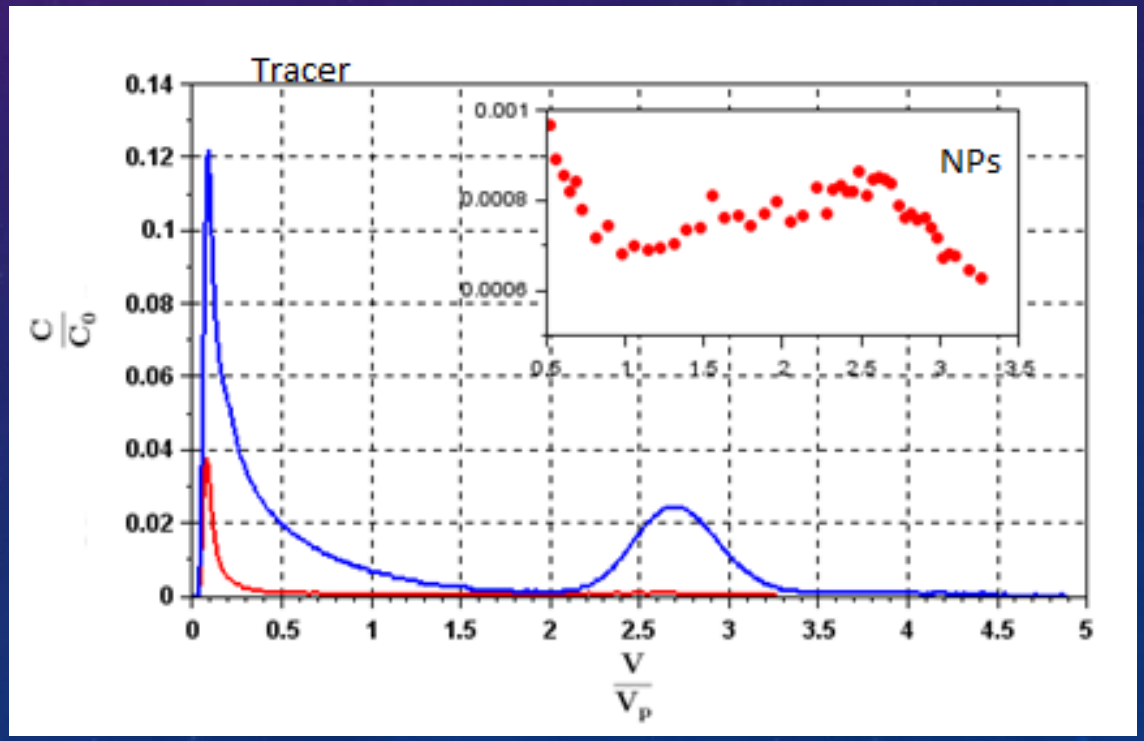
Next step functionalization & use

Task 3a : Validation of ENTs in regards to mineral nano-pollutants

Comparison of engineered ENTs with real nano-pollutants

Injection of ENTs and nano-pollutants in macropored columns





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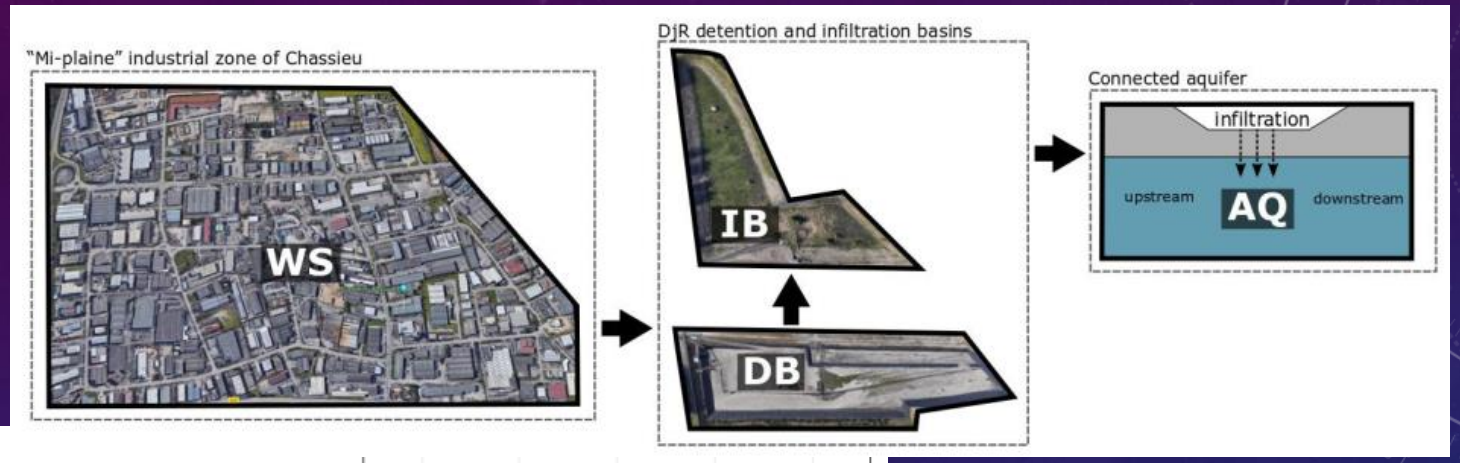
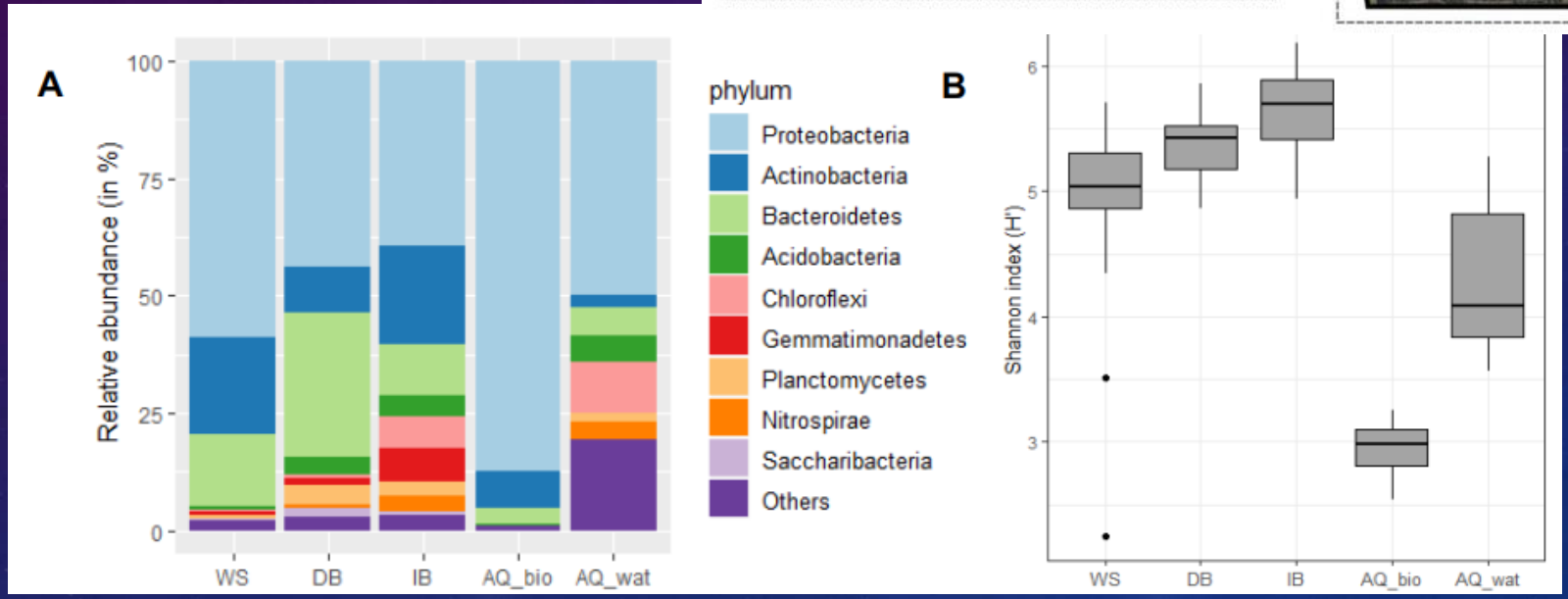
Is breakthrough of solute impacted by the edges of the columns in the case of macropored systems?

Jérôme Raimbault et al.

Task 3b : Validation of ENTs in regards to bacterial nano-pollutants

Characterization of bacteria strains



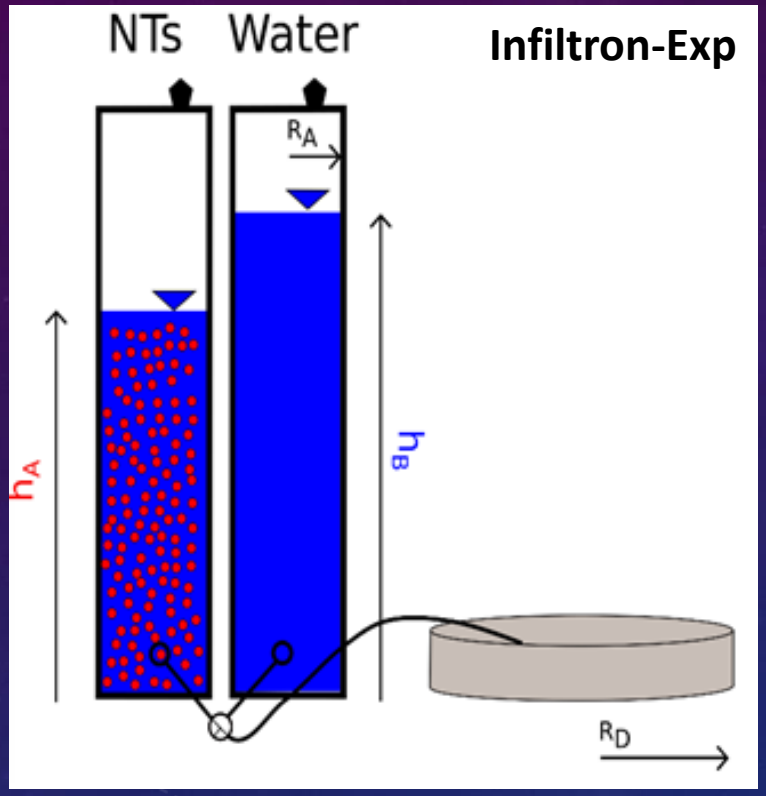


Development of column prototype for injection of bacteria and ENTs

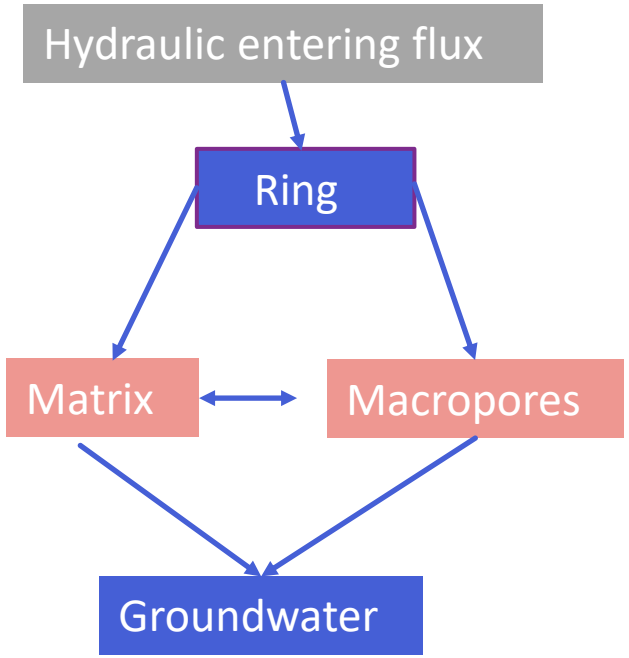
INFILTRON-mod: modeling experimental results and quantifying functions

Design of INFILTRON – mod for modelling INFILTRON-exp data

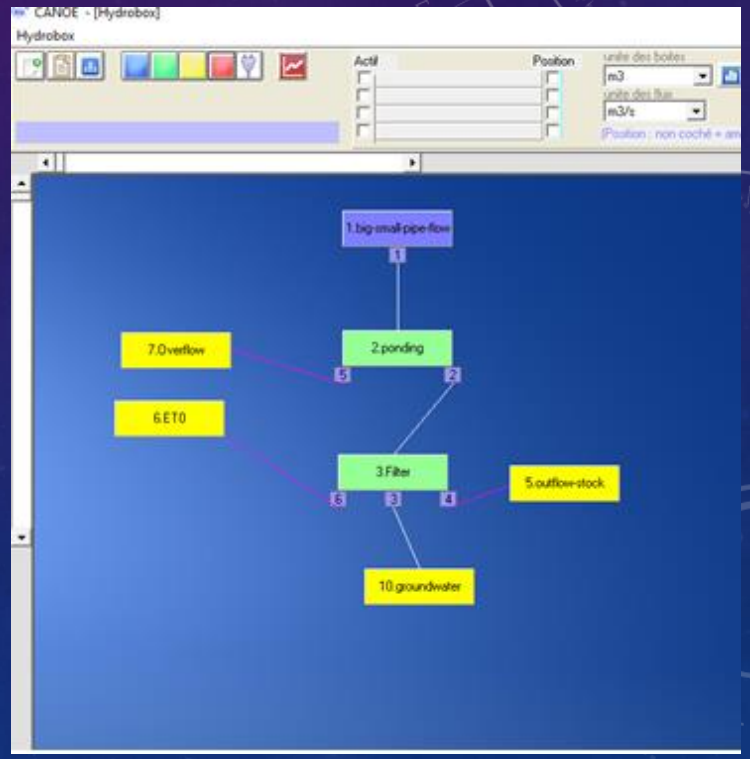
Infiltron-Exp



Infiltron-Mod architecture



Infiltron-Mod Interface © Canoe

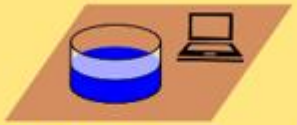


and quantifying indicators of the efficiency of infiltration & filtering functions

INFILTRON – final aim and perspectives

Two indicators for infiltration & filtering functions

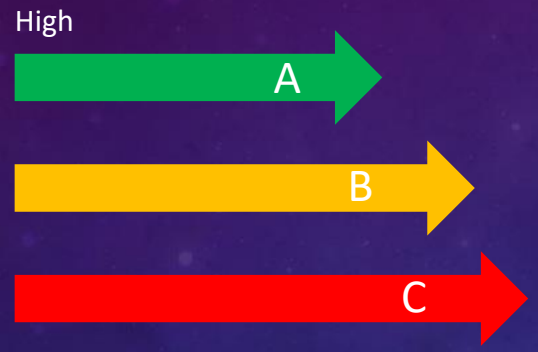
INFILTRON package



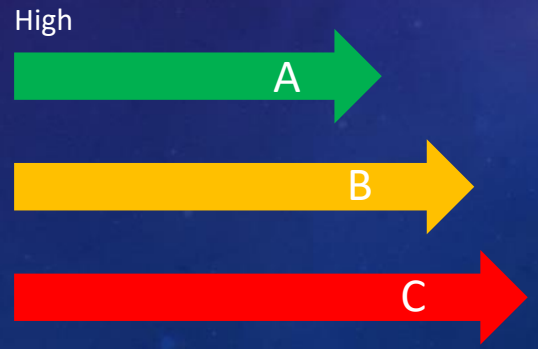
INFILTRON-exp & -mod
For assessing
infiltration & filtration functions
of urban soils

Knowledge on preferential flows
& impacts on mass transfer
in heterogeneous urban soils

Infiltration capacity



Filtering capacity



Help for Decision-making for management of infiltration basins … … and urban soils

Fictive map of soil infiltration & filtering capacities

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