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Relevance of a multi-topic observatory of urban environments, ONEVU in Nantes (France) -a 10 years feedback

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Relevance of a multi-topic observatory of urban environments, ONEVU in Nantes (France) - a 10 years feedback

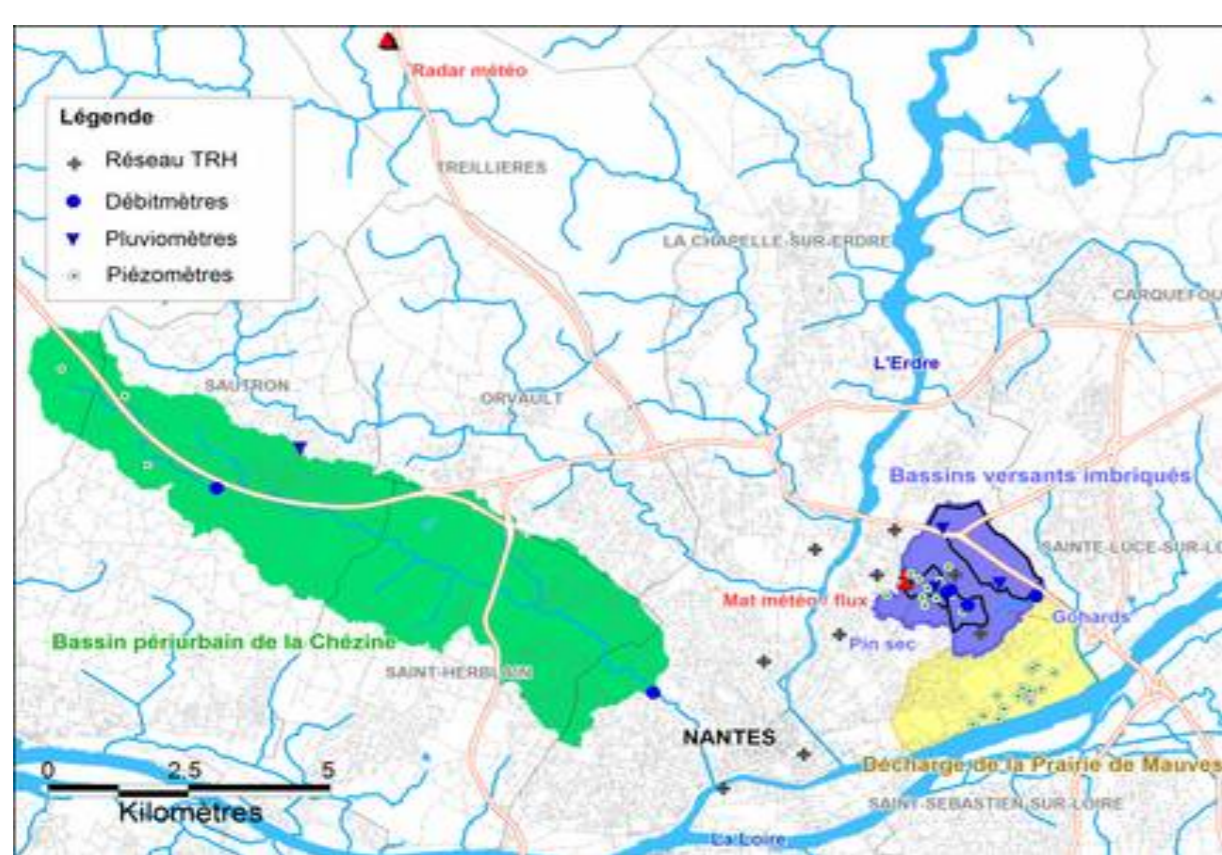
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Context

A multi-topic research observatory was set up in January 2006 by the research institute of urban sciences and techniques (IRSTV) to jointly monitor the water, pollutant and energy balances of several urban and peri-urban watersheds on the long-term. ONEVU (Observatoire Nantais des Environnements Urbains) allows various research studies involving the IRSTV federation partners. The observatory joined OSUNA (Observatoire des Sciences de l'Univers Nantes Atlantique) in 2010.



Observation of water, pollutant and energy fluxes on the soil/surface/atmosphere interfaces



Main observation stations

Observation topics	Main variables	Acquisition type
Climatology	Air temperature and relative humidity (TRH network) Energy budget : net radiation, sensible and latent heat fluxes (eddy-correlation) Spatial variation of heat fluxes vs vegetation ratio	continuous continuous FluxSAP 2012 campaign
Hydrology	Rainfall Sewer or river flowrates (embedded catchments and periurban catchment). Water temperature Soils moisture and piezometry Stormwater pollutant fluxes (heavy metals, PAH, pesticides) Atmospheric deposition	continuous continuous continuous INOGEV campaign campaign
Soils geochemistry	Piezometry Surface and groundwater quality soils contamination (metals)	continuous continuous campaign
Remote sensing	Covered or vegetal surfaces caracterisation using IR or HS airborne remote sensing Hyperspectral & Lidar coupling	FluxSAP 2012 campaign campaign

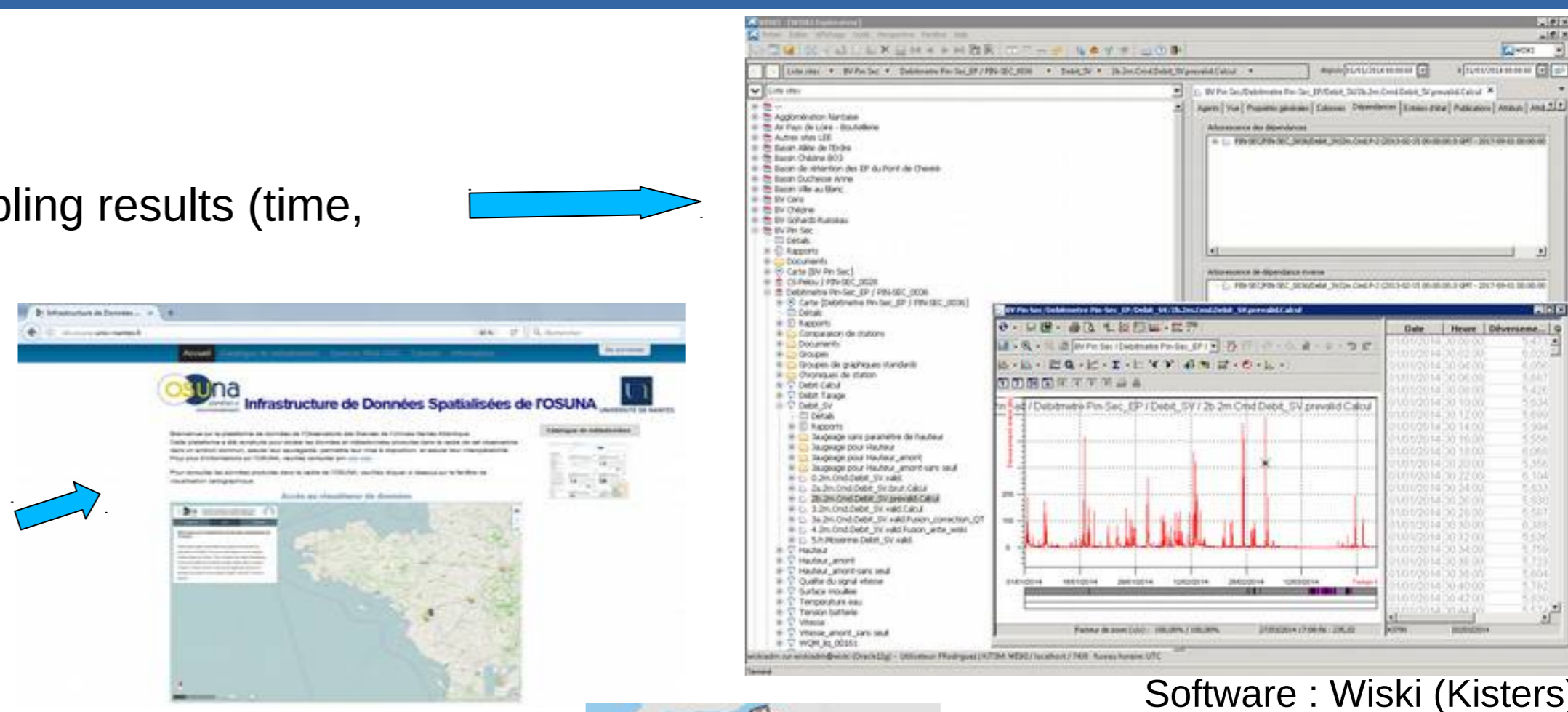
Information systems

Brigadoon – Data structure including (i) time data series and (ii) sampling results (time, date and localization) and using a common element : the *station*

IDS OSUNA

A Spatial Data Infrastructure encompass some of the metadata

Cartographic tool presenting the observation stations and data description through a metadata catalogue



Software : Wiski (Kisters)

=> Towards a french national information system :

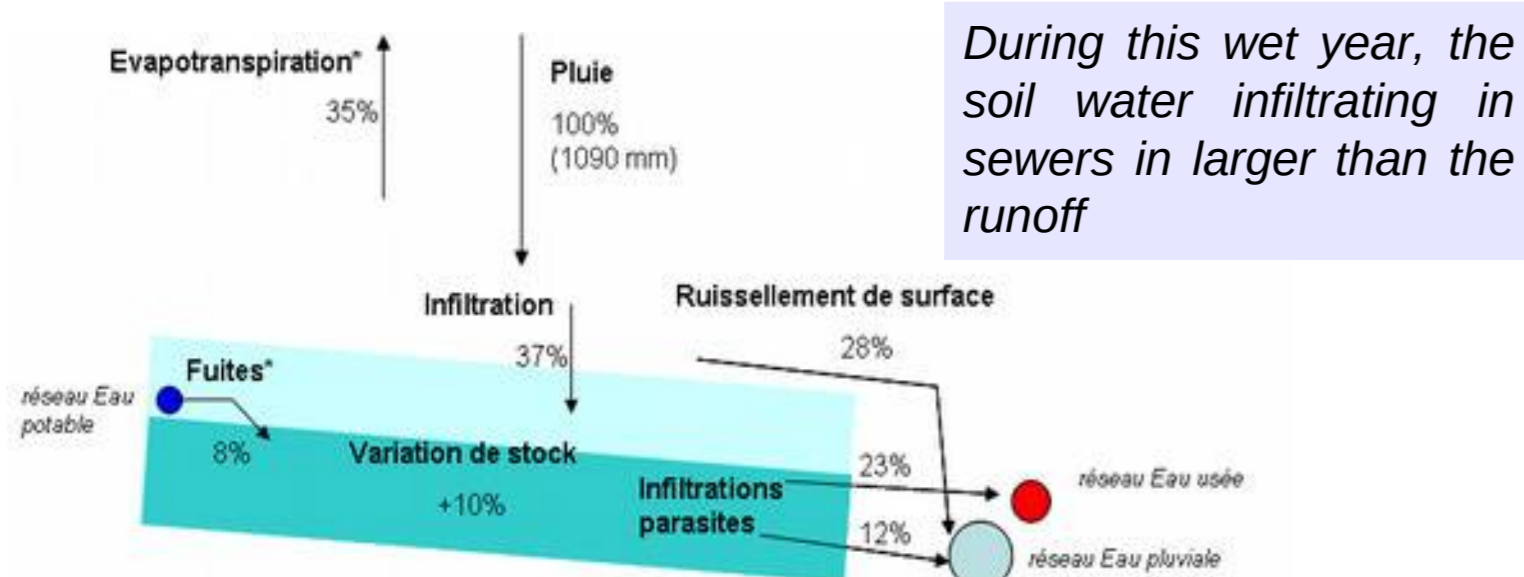
OBSERVIL : Urban environment observation service (SNO project)

How to put together and diffuse urban observation data ??

Some results

Water budget

Pin Sec catchment from may 2006 to may 2007

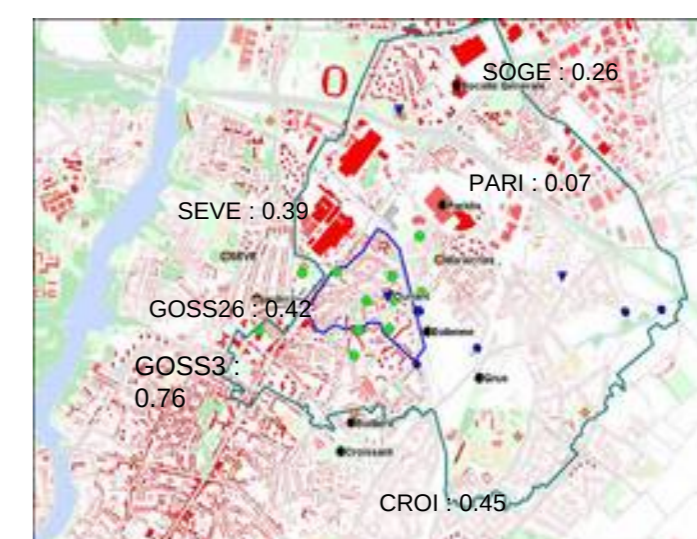
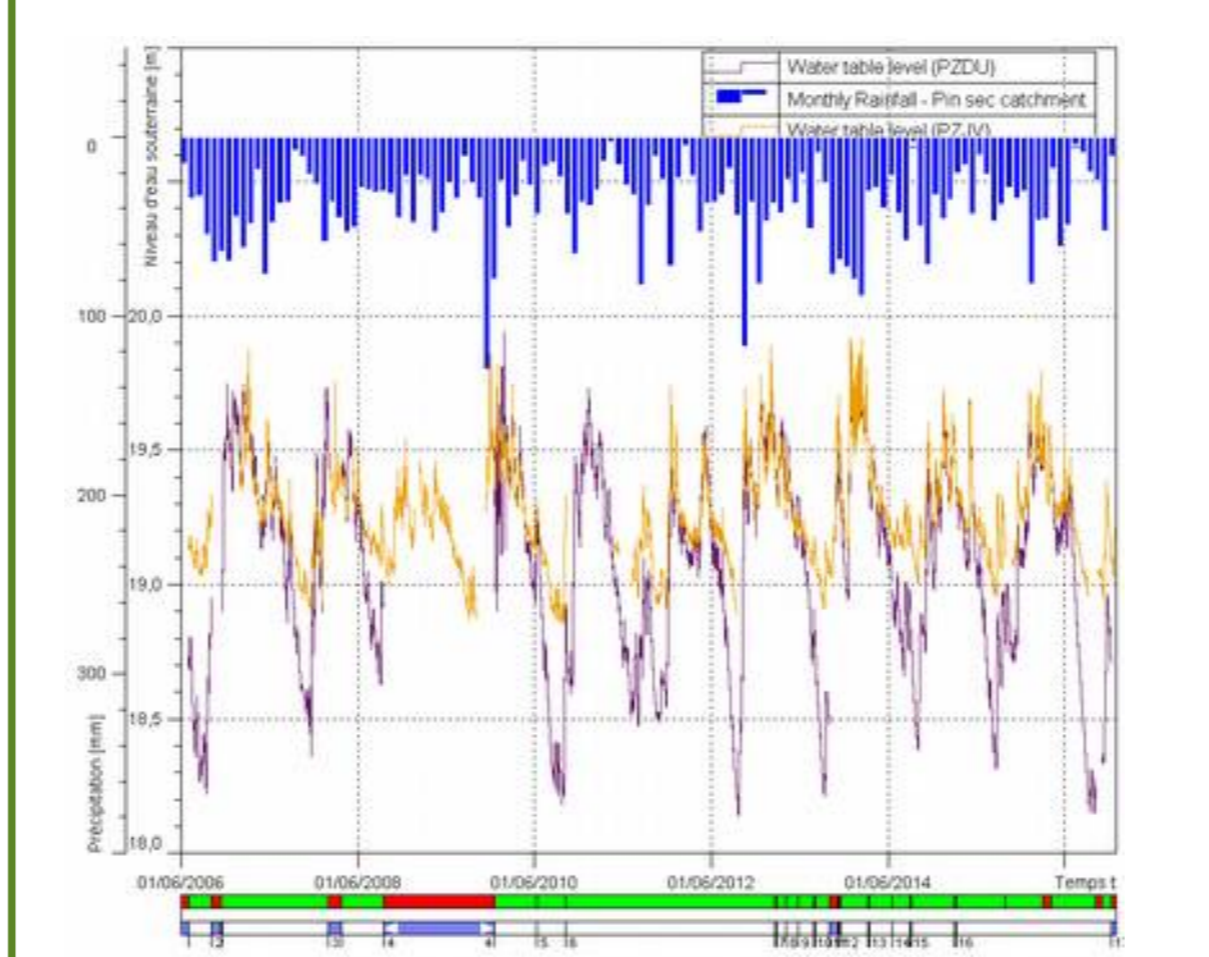


During this wet year, the soil water infiltrating in sewers in larger than the runoff

Values expressed in percentage of the rainfall.

* Estimated fluxes

A 10-year hydrological dataset



FluxSAP 2012
Observation of spatially distributed heat fluxes during one month by eddy-correlation in an urban area

(Vegetated fraction around the mast / from 2009 Quickbird image)

Variation of average latent heat flux with vegetation

