

Pilot location: Jouy-en-Josas Catchment, Paris area (France)

Monitoring

Rainfall

Rain gauges:

- 6 tipping bucket rain gauges with a 0.2 mm resolution operated in real time over the 110 km² SIAVB catchment.

Radars:

- C-band radar: the operational C-band weather radar network of Météo-France covers the whole catchment. The closest radar which is dual pol. and Doppler is located in Trappes at approximately 13 km West. The resolution is 1 km in space and 5 min in time
- X-band radar: dual pol. and Doppler radar will be installed in front of Ecole des Ponts ParisTech, located at approximately 33 km North-East from the catchment. The resolution will be of approximately 100 m in space and 2.5 min in time.

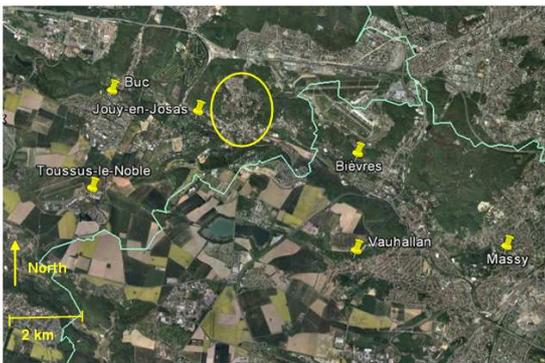


Figure 8: Position of the rain gauges operated by the SIAVB (the studied catchment is circled)



Figure 9: Rain gauge (circled) located near a house used for remote control of a storage basin.

Water depth sensors

Bassin des Bas-Près

A sensor (depth and flow) is installed near the outlet of the storage basin of Bas-Près which is located just upstream the Jouy-en-Josas catchment.



Figure 10: Water depth sensor of "Bassin des Bas-Près"

Pont de Pierre

A sensor is located near the outlet (see Fig. 1) of the studied catchment.



Figure 11: Water depth sensor of "Pont de Pierre"

Spatial datasets

The spatial data, which is used for the Jouy-en-Josas catchment, comes from the French National Institute of Geography:

- Land use cover: the spatial resolution is of 50 cm x 50 cm
- Digital elevation model: the current spatial resolution is of 25 m x 25 m with a vertical precision of 1 m. An improved DEM with a spatial resolution of 1 m x 1 m with a vertical precision of 10 cm is currently being developed and will soon be available for this area.

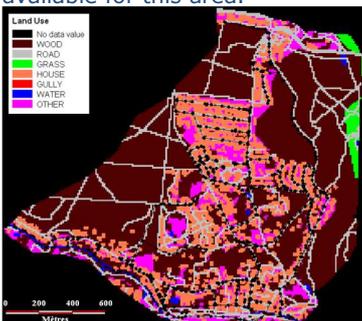
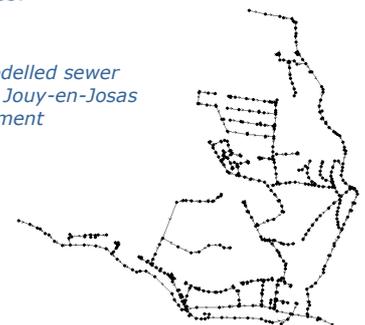


Figure 12: Illustration of the land use cover for the Jouy-en-Josas catchment with a spatial resolution of 10 m

Drainage system

The whole sewer system is considered, leading to 539 conduits of 15.3 km total length and collecting water from 257 manholes.

Figure 13: Modelled sewer network for the Jouy-en-Josas catchment



Urban pluvial flood models

Multi-Hydro, a fully distributed physically based model (2D/1D) is used to represent this catchment. It consists of an interacting core between open source software packages, each of them representing a portion of the water cycle in urban environment. It is currently being developed at Ecole des Ponts ParisTech. The 2D surface flow module uses square pixels and relies on an approximation of the 2D Saint-Venant equations. The flow in pipes is modelled with the help of a numerical solution of the 1D Saint-Venant equations.

The SIAVB runs in real time a hydraulic model of the Bièvre River that can be used to represent the inputted water flow into the Bièvre River considered as a conduit the Multi-Hydro model.