

The Simulation Experts
Water - Rainfall - Runoff

OSTAP
Engineering & Consulting

www.oestap.at



Simulation and Modeling

The modeling and simulation of rainfall and the resulting runoff on surfaces, within sewer networks, and in water bodies have been applied with great success and efficiency for many years in urban water management and the broader field of water resources engineering.

Rainfall–runoff modeling generally includes all processes that precipitation undergoes – from the moment it reaches the surface to its discharge into a receiving water body. This allows for the consideration of processes occurring within the catchment area, the sewer system, and the receiving waters. In general, rainfall–runoff models consist of the following two components:

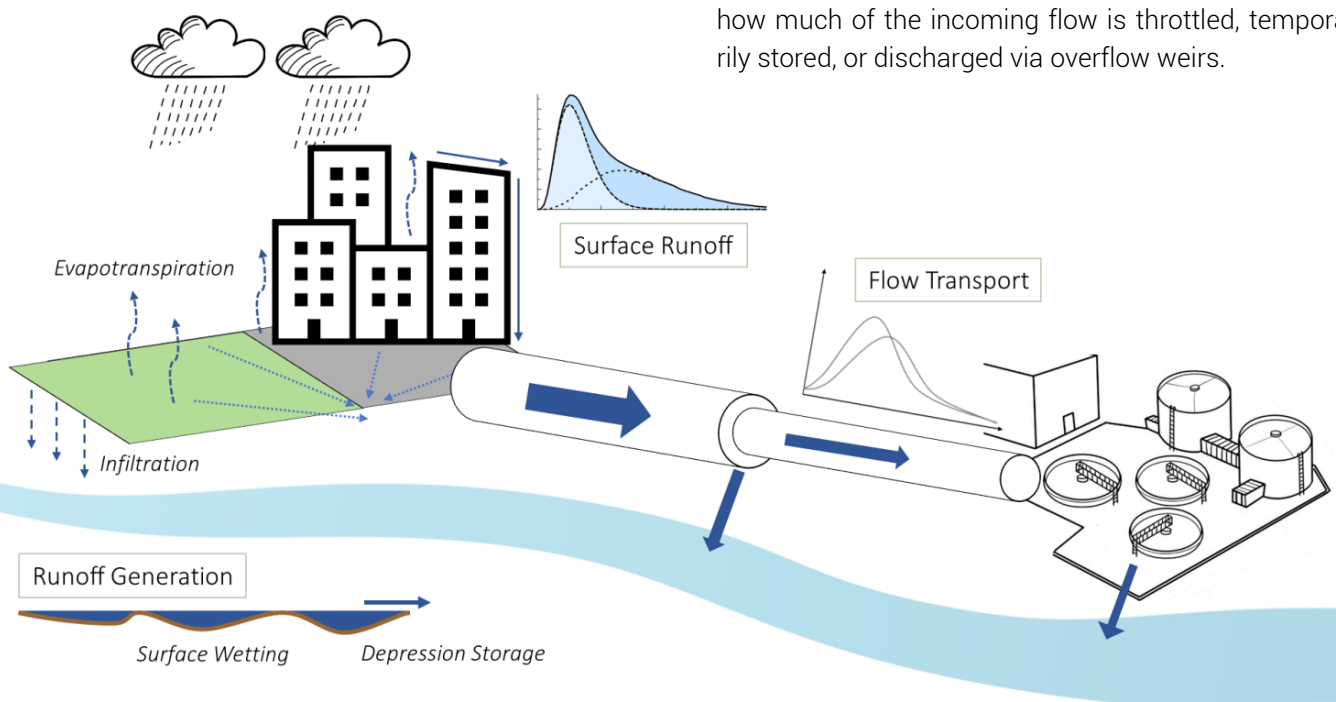
- Surface runoff (Hydrology)
- Flow transport within sewer systems or water bodies (Hydraulics)

The surface runoff model represents the processes that occur on the surface – from the initial impact of rainfall to the inflow of water into the sewer system or a watercourse.

While runoff generation determines the portion of rainfall that effectively contributes to runoff, runoff concentration calculates the resulting hydrographs based on this effective rainfall.

The flow transport component describes the movement of runoff within sewer networks or open channels. Depending on the required level of detail, this can be modeled using simpler hydrological–conceptual approaches or more detailed hydrodynamic methods.

Additional key aspects of rainfall–runoff modeling include the division and/or storage of flow at special structures, such as junctions, combined sewer overflows, and retention basins. These elements determine how much of the incoming flow is throttled, temporarily stored, or discharged via overflow weirs.



*From coarse-scale models to detailed models,
from extreme rainfall events to long-term analyses,
from water quality protection to flood management ...*

*.. we are your trusted and
experienced simulation experts!*





Still Calculating - or Already Simulating?

As we have demonstrated in numerous successful projects, simulations can be applied very efficiently in the planning and design of urban water management and general water resources systems.

Thanks to our expertise and many years of experience, we are able to offer a wide range of simulation solutions tailored to diverse applications:

- Sewer network simulations
 - Hydrological-conceptual models
 - Hydrodynamic detailed models
- Surface runoff simulations
 - Hydrological models
 - 2D hydrodynamic models
- Coupled 2D surface and 1D sewer network simulations

Applications of simulation include:

- Verification of the hydraulic performance of sewer networks
- Assessment of combined sewer management
- Optimization of drainage systems
- Selection of cost-efficient measures by considering the entire drainage system
- Planning of system extensions and modifications
- Flooding assessments (pluvial and fluvial)
- Heavy rainfall hazard maps
- Flood hazard zone mapping
- Planning of flood protection measures

Our Tools

We use the most suitable and efficient simulation tools for each area of application. These include:

- Hydrodynamic sewer network simulations and coupled 1D-2D-simulations
++ Systems, tandler.com GmbH
- Hydrological-conceptual long-term simulations
KOSIM, itwh GmbH

- Hydrological simulations
HEC-HMS - Hydrologic Engineering Center -Hydrologic Modeling System
- 2D surface runoff simulations
HEC-RAS 2D - Hydrologic Engineering Center - River Analysis System



The background of the image is a scenic view of a river with green grassy banks and a blue sky with white clouds. Overlaid on this background are ten green rectangular boxes, each containing white text. The boxes are arranged in two columns of five. The text in the boxes represents various engineering and environmental services.

Sewer Network
Simulations

River Hydraulics

Surface Runoff

Hillslope Runoff

Hydrodynamics

Hydrology

Combined Sewer
Management

Hydraulic Surge

Stormwater
Management

Heavy Rainfall
Hazard Maps

Flooded Areas

Flood Hazard Maps

Flood Protection

System Optimization

envionmental engineers

engineering with passion

Head Office

Heiligenstädter Straße 51/3
1190 Vienna
☎ +43 1 505 27 43

Office Ameis

Kirchenplatz 9
2141 Ameis
☎ +43 25 24 20 164

Office Carinthia

Drauweg 31
9800 Spittal a.d. Drau
☎ +43 1 505 27 43

Office Salzburg

Itzlinger Hauptstr. 31/32
5020 Salzburg
☎ +421 1 505 27 43

Office Kosovo

33 Garibaldi 17/13-1
10000 Prishtine
☎ +383 45 881 400

✉ office@oestap.at

🌐 www.oestap.at
FN 587360s
ATU 78502345

ÖSTAP Engineering & Consulting GmbH

