

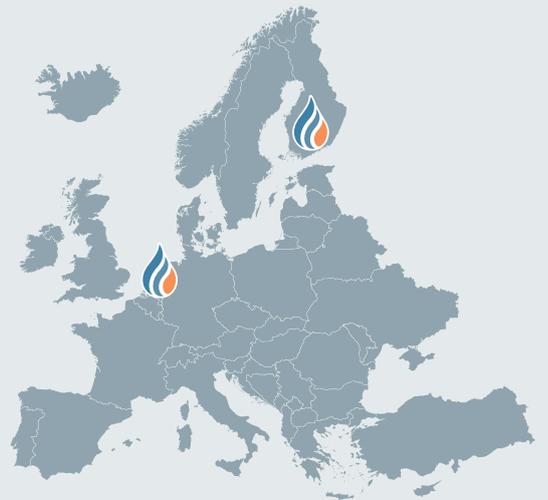
## USE CASE 1

# URBAN DROUGHT (Northern Europe)

Partners: Forum Virium Helsinki (FI), City of Rotterdam (NL), City of Haarlem (NL), STOWA (NL)

## OVERVIEW

Use Case 1 addresses **urban water** issues in Helsinki and Rotterdam by examining the soil-water vegetation system's (SWV) spatial distribution and the effects of human and external factors on water flow. It targets **water shortages** from local storage issues, drought conditions, groundwater over-extraction, and evapotranspiration, which cause low groundwater levels and infrastructure subsidence, impacting streets, homes, and utilities. The urban heat island effect is also worsened by inadequate green-blue infrastructure. The goal is to improve urban water management and climate resilience with smart technologies like **satellites and data science**, monitoring soil moisture, groundwater levels, and surface water to reduce risks from drought, such as heat stress, water stress for vegetation, water quality issues and subsidence. The project aims to gather insights from long-term trends, refine water-related measures, and develop **spatial risk indicators** for water shortages, creating sustainable, resilient cities.



## USE CASE 1 IN DETAIL

### Pain points & user needs

While Helsinki stakeholders report that much data exists, the problems stakeholders experience relate to the **fragmentation or scattering** of this data, the sensitivity or security-related reluctance to share data openly, and that some datasets are outdated. For Rotterdam, some information is only available to end users as **commercial data**, and end users often need to be experts in the field to work with the available data.

### Available tools and data examples

- **SCALGO**: terrain and surface water model, paid license required
- **Fluidit**: hydraulic simulation software for water distribution systems, paid license required
- **SYKE satellite observations**: open satellite data for Finland from Copernicus and NASA
- **FMI sea water level measurements**: Finnish sea level measurements provided by the Finnish Meteorological Institute (FMI)
- **Large-Scale Topography Base Register**: detailed large-scale base map of the whole of the Netherlands.
- **KNMI daily weather data**: temperature, sun, cloud cover and visibility, air pressure, wind, and precipitation for the Netherlands.



### HOW PCP WISE CAN HELP

- Regular (and historical) monitoring of soil moisture, evaporation, transpiration and groundwater condition
- Development of risk indicators for water-related issues that cause instability in city infrastructure, based on historical trends and future climate scenarios
- Monitoring of infrastructure subsidence, heat islands, and the condition of green spaces/parks.

