



Future IDF curves for regional planning in Europe

P. Kutschera (1), J. Olsson (2), D. Havlik (1), and G. Gruber (3)

(1) AIT - Austrian Institute of Technology, Dss, Austria, (2) SMHI - Swedish Meteorological and Hydrological Institute, Norrköping, Sweden, (3) Graz University of Technology, Institute of Urban Water Management and Landscape Water Engineering, Graz, Austria

Many aspects of the regional planning are directly related to the climate. For instance, the rainfall statistics is crucial for the planning of the waste water treatment systems.

These systems are expensive to build, and typically used for many decades before re-designing. Thus, the regional planners are typically facing the following dilemma: "should I build bigger (more expensive) infrastructure and risk overspending today, or should I build smaller infrastructure and risk catastrophes and early re-building of the infrastructure later?"

These decisions are often based on the IDF (Intensity, Duration, Frequency) curves, which describe the relation between (rain) intensity, duration and return frequency, that is the rain-related aspects of the climate in the certain area. The information on rain statistics for the last 10-30 years is readily available in many areas.

For instance, in Austria, this information is provided free of charge by "Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft" (lebensministerium.at).

Due to climate change, the rainfall statistics for the last N years, however, may not be representative for the future climate. Unfortunately, the "future" IDF curves are currently not easily available.

The SUDPLAN project partners have therefore designed a system that produces local IDF curves representative for the various future climate scenarios. The system takes the "current" IDF curve, location, and the climate scenario as input; feeds this information to the "IDF downscaling service" and returns the downscaled IDF curve representative for the local climate in 50-100 years according to the scenario used.

In the scope of SUDPLAN, the system has been tested for several locations in Austria, Germany and Sweden. However, the SUDPLAN's IDF downscaling service can be used anywhere in Europe if current local IDF data are available.

The paper will: (1) give a short introduction into the available climate scenarios; (2) describe the methodology of downscaling global climate change data to local conditions; and (3) illustrate the IDF downscaling workflow and resulting IDF curves at the various locations in Austria.