

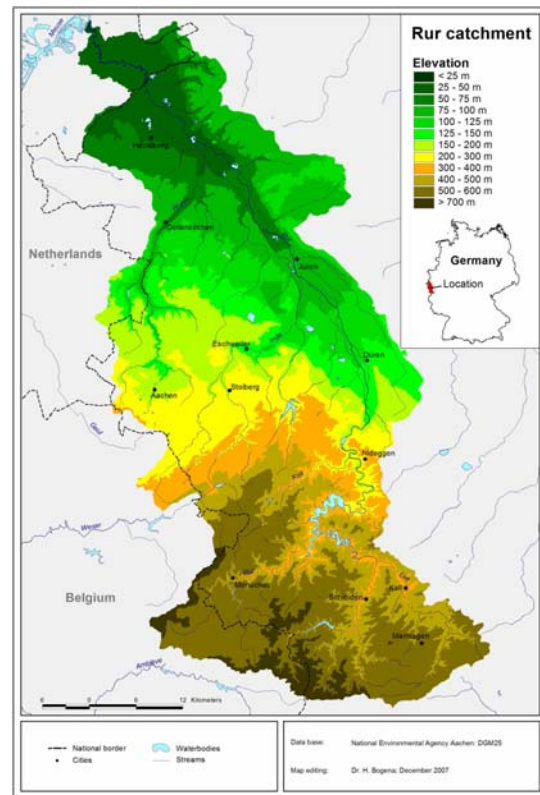
Rur river, Germany

Location

The catchment of the River Rur covers a total area of 2354 km² and is situated in Western Germany with about 157 km² (6.7 %) being in Belgium and about 108 km² (4.6 %) on Dutch territory. The river rises in the south west of the catchment, in the Rhenish Massif (max. altitude 720m, annual rainfall 1200mm), and then flows north and then north-west before entering the Meuse River near Maastricht (average annual rainfall 700mm).

The largest city in the region is Aachen with a population of 260,000 (annual rainfall 900 mm).

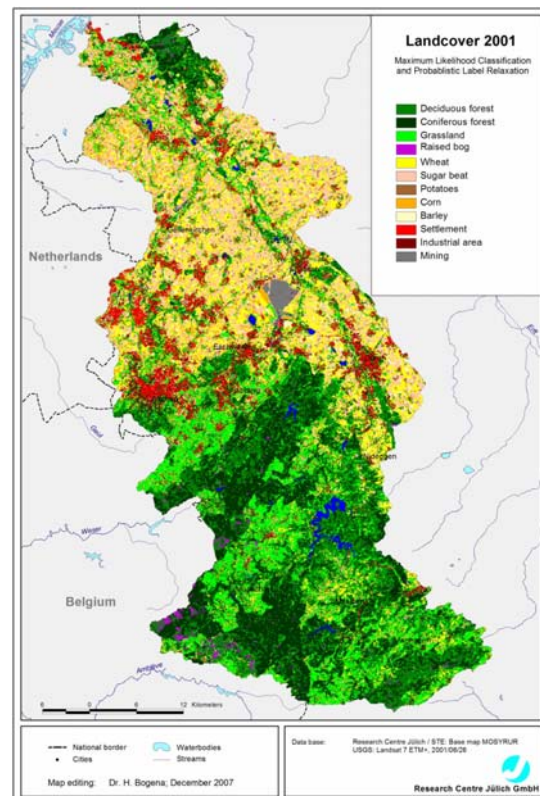
In the southern part of the Rur Catchment the Eifel National Park has been founded on the 1st of January 2004 comprising about 110 square kilometres.



Catchment description

The catchment area exhibits a distinct land use gradient: More than one third of the region of the Rur catchment is arable land, the major portion being in the lowland regions in the northern part of the Rur catchment. Forests are covering 34 % of the Rur catchment and are predominating in the upland region. Pastures account for 22 % and are mainly located in upland areas.

The southern part of the catchment is predominantly formed of Devonian and Carboniferous sedimentary rocks, which are alternating sequences of silt- and mudstones as well as sandstones and greywacke sandstone with small groundwater storage capacities. The northern part of the catchment is predominantly formed of Quaternary and Tertiary unconsolidated rock deposits



Hydrological Observatory description

Key descriptors:

Catchment area at downstream monitoring site	2354 km ²
Average annual rainfall	880 mm
Average annual runoff (Gauging station Stah)	348 mm
Average annual flow (Gauging station Stah)	22.8 m ³ s ⁻¹
Highest peak flow and date (Gauging station Stah)	123.7 m ³ s ⁻¹ , 26 Mar. 1988
Lowest daily mean and date (Gauging station Stah)	8.14 m ³ s ⁻¹ , 21 Jul. 1996
Flow and rainfall data available from	1960

Hydrological summary

Dependent on the regional hydrogeological conditions water resources management practices in the Rur basin differ considerably. In upland region aquifers are limited due the low permeability of the solid rock strata groundwater and runoff generation occurs mainly through direct runoff. Consequently the water resources in this part of the Rur basin are exploited by reservoirs. In all, there are ten reservoirs, which are used for drinking water supply, energy generation and flood control. In the flatland region there are abundant loose rock aquifers, with high groundwater recharge rates. Accordingly, these aquifers are subject to an intensive groundwater withdrawal for drinking and other purposes.

Data availability

The Environment Agency for North Rhine Westphalia and local water association (e.g. WVER) undertake flow monitoring at a number of sites within the catchment (50 are currently operational), with the longest records starting in the early 1930s. The water associations also maintain a network of water quality monitoring stations within the catchment. Several Meteorological monitoring stations are maintained by the German Weather Service (DWD). High temporal resolution (10 min) runoff, water quality and weather monitoring stations are maintained at Forschungszentrum Jülich in the framework of the TERENO initiative. Supporting data e.g. describing geology, soils, elevation, and land use, are stored in a Geographical Information System maintained by the Forschungszentrum Jülich.

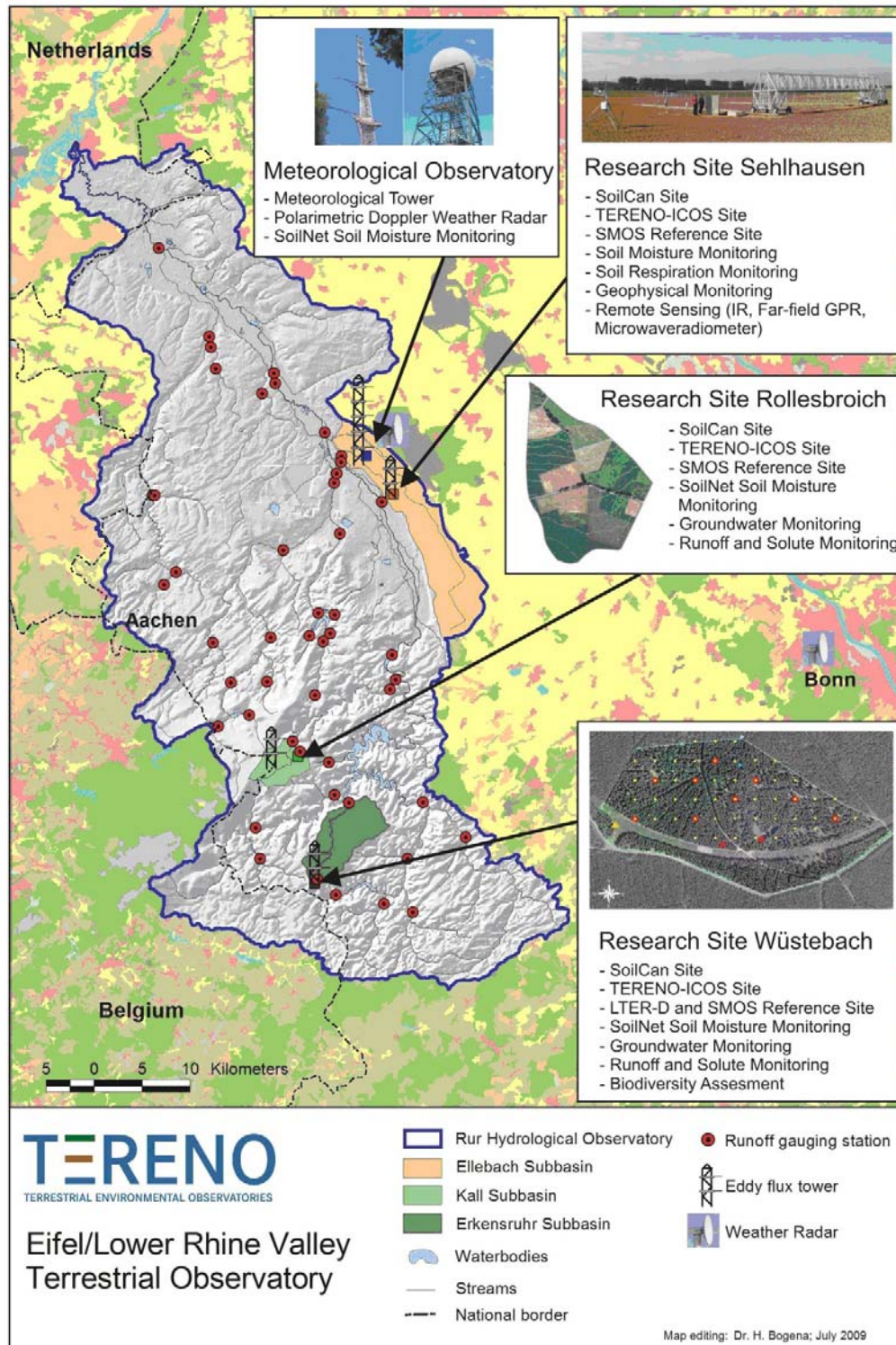
Research Activity and Outputs

The Rur Catchment is currently the focal investigation area of the Transregional Collaborative Research Centre 32 "Pattern in Soil-Vegetation-Atmosphere Systems: Monitoring, Modelling, and Data Assimilation", which is a collaboration of the universities of Bonn, Aachen and Cologne and the Forschungszentrum Jülich. The Transregio 32 works on exchange processes between the soil, vegetation and the adjacent atmospheric boundary layer. The overall research goal is to yield improved numerical models for the prediction of water-, CO₂- and energy-transfer by accounting for the patterns occurring at various scales.

Recently, TERENO (Terrestrial Environmental Observatoria), a collaborative project of FZ Jülich, FZ Karlsruhe, UFZ Leipzig-Halle, DLR, GFZ and HMGU has started, with the Rur Catchment being one of four Hydrological Observatories. The aims of TERENO include the development of appropriate monitoring systems for the multi-scale, multi-temporal monitoring of regional changes in terrestrial systems as a result

Hydrological Observatory description

of global change and direct environmental impacts, an integrated scientific and socio-economic analysis of urban systems, the detection, analysis and synthesis of spatio-temporal data for the development and validation of coupled or integrated models and the development of early warning systems (more information can be found at <http://www.tereno.net/>). The details of the Rur hydrological observatory as part of the Eifel Lower Rhine Valley Terrestrial Observatory is presented below.



Value to Network

The Rur Observatory provides data for hydrological conditions that are common in its region (e.g. temperate climate) but which are quite different from those monitored by many other observatories in the network. Some important distinguishing features of the Rur catchment in the European context are the more than average rainfall, the long time series, and high spatial and temporal density of measurements

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