

River Tcherny Lom, Bulgaria

Location

The River Tcherny Lom is located in north-eastern Bulgaria. It is one of the two branches generating Russensky Lom River, which is the last major Bulgarian tributary of the Danube River. The Danube River borders Romania in the northern and eastern parts of Bulgaria.

The Tcherni Lom River flows northeast and joins after Shirokovo with left tributary River Baninski Lom. North of Ivanovo village, The River Tcherny Lom joins the River Bely (White) Lom and form river Roussensky Lom.



Catchment description

The River Tcherny Lom originates at 480 m height from Lilijaksko plateau, which consists of strong cretaceous sandstone.

The catchment is hilly with steep scarps, and river valleys with alluvial terraces. The scarps are strongly vertical, and are usually up to 100 meters high. From geological point of view the catchment area is located in the Moesian tectonic platform. The geology is represented by a topsoil layer (1 m thick); a carbonate soil layer (0.5 m thick), and loess (thick between 2 and 20 m). The northern part of catchment is composed of a fractionated crystalline core with heights of 250m-480 m. The central part is lowland consisting of Sarmatikum limestone, covered with quaternary loess.



Key descriptors

Catchment area	1549 km ²
River length	130 km
Area of station's catchment	1544.11 km ²
Maximum Altitude	518 m
Minimum altitude	54 m
Mean catchment altitude	287 m
Mean flow	3.73 m ³ /s
95% exceedance (Q95)	0.6 m ³ /s
10 % exceedance (Q10)	7.51 m ³ /s
1961-90 Average Annual Rainfall	594 mm

Hydrological summary

The flow regime is dominated by rainfall. The climate is continental. Maximum flow occurs during spring from February to June.

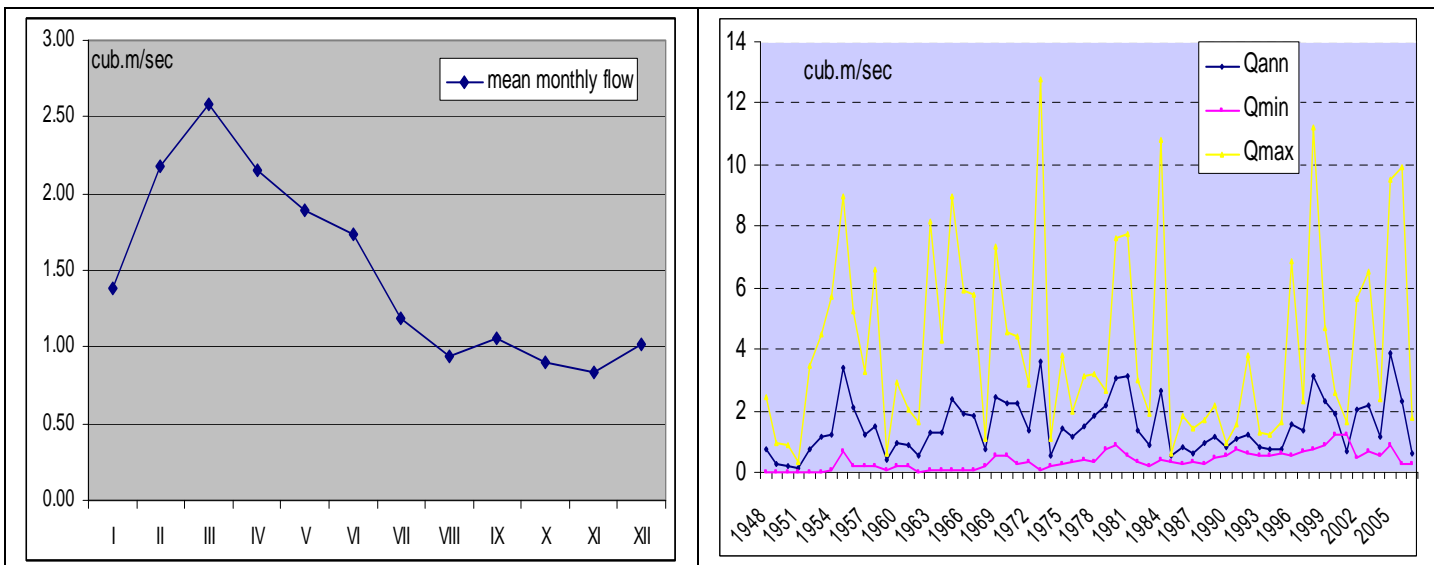


Figure. Variation of mean monthly flow within the year (left) and multi-year variation of mean, maximum and minimum monthly flow (right).

Like the majority of Bulgarian rivers, the River Cherni Lom is characterized by a strong influence of human activities. Due to hot summer and grown water needs, the water scarcity and droughts occur in the region. Over twenty small reservoirs for irrigation and forty for water abstraction have been built in the catchment area.



Figure. Reservoir

Data availability

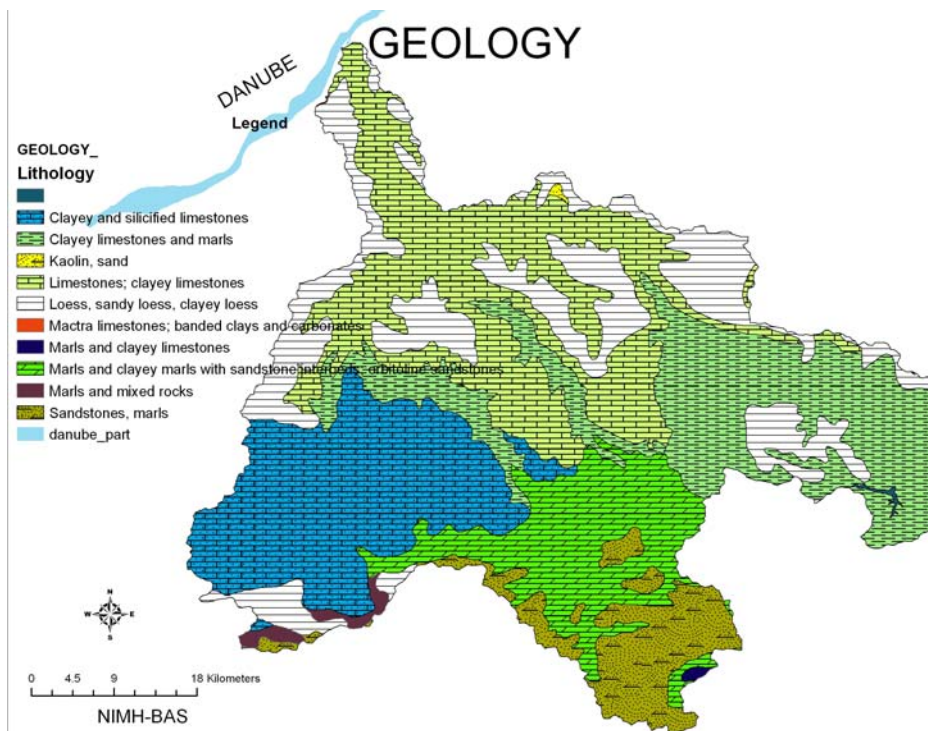
Data are collected in the river Tcherni Lom on water quantity, water quality (Chemical) and biological factors. Water discharge is measured regularly in two stations: station Kardam and station Shirokovo. These stations a part of the hydrological network of the National Institute of Meteorology and Hydrology (NIMH). Applied methods of observation, measurement, river discharge calculation, and data processing are in accordance with WMO regulations and guidance. Both gauging stations are equipped with float recorder. Daily and monthly flow data are available in NIMH.

Hydrological Observatory description

Station name	Kardam	Shirokovo
River name	Tcherny Lom	Tcherny Lom
Catchment area (km ²)	441	1383
Year opened	1948	1948
Station level (m)	171.2	91.82
Mean annual rainfall (mm)	610	586
Mean Flow (m ³ /s)	1.486	3.33
Q ₉₅ (m ³ /s)	0.26	0.54
Q ₁₀ (m ³ /s)	2.8	6.7
Q ₅₀ (m ³ /s)	1.25	2.74
Q ₉₀ (m ³ /s)	0.56	1.3

The data for chemical and biological factors are collected in chemical and biological monitoring networks respectively, under the auspice of the Danubian subdivision of the Ministry of Environment and Water (MOEW). The organization of the monitoring net including situation of the station, kinds of samples and species, timing and frequency of taking samples, and also chemical and biological analyses are in accordance with Water Directive 2000/60 EC.

Supporting data are also available, for example hydro-geological maps.



Research activity and outputs

- Hydrological regime evaluation
- Water resources assessment
- Statistical analysis and elaboration
- Flood and drought analyses

Facilities

The database is equipped with the infrastructure required to integrate temporally and spatially the hydrological and meteorological data, calculate water resources (water availability), insurance and prevention against water disasters, floods and droughts, and statistically process the recorded information.

In the catchments area of River Tcherni Lome there are three rain gauges. The observed data are stored in separate databases in meteorological archive of NIMH.

The observation of water level is continuous, but discharge measurements are repeated every month by current meter and after building the stage-discharge or Q-H relationship and H-V stage – velocity relationship. The data are kept in the Hydrological archive of NIMH.

Chemical samples and biological species are collected by respectively teams of chemists and biologists.

The River discharge measurements and collection of chemical and biological samples takes place in the same cross section of the river as the hydrological stations Kardam and Shirokovo. Moreover, chemical and biological samples are also taken in additional locations depending on the needs.

Institutional support

NIMH has maintained the national hydrological archives on behalf of the monitoring agencies since the 1936s and this is now recognised as part of the National Capability. The MOEW maintained chemical and biological observation recently to the present day.

The range of monitored of water parameters and the lengths of the records demonstrate the commitment of those supporting monitoring at the observatory.

Value to network

The NIMH provides data on hydrological conditions for scientific research, government administration, planning, water management, project design, and consultants.

The Tcherny Lom observatory provides data for hydrological conditions that are typical for southern continental region of Europe. Important features of the Tcherny Lom observatory are its long time series (since 1948) and strong human influence on hydrology, notably by many small reservoirs.

Contact for further information

Snejana Dakova, 66 “ Tzarigradsko shausse”, 1784, Sofia, Bulgaria, National Institute of meteorology and Hydrology. Snejana.dakova@meteo.bg