
Web application for Intensity of Erosion and Outflow

Name of the River Basin: Vinicka Rijeka

Country: Montenegro

Year: 2018

**GPS coordinates, latitude and longitude with Google Maps:
42.801003,19.84483**

INPUT DATA

Geometric characteristics of the river basins

F = 17.6299 km² (Surface area of the drainage basin)

O = 21.51861 km (Length of the watershed)

Fv = 9.91858 km² (Surface area of greater portion of the drainage basin)

Fm = 7.71132 km² (Surface area of smaller portion of the drainage basin)

Lv = 7.31913 km (Natural length of main water course)

Lb = 8.29074 km (Length of the drainage basin measured by a series of parallel lines)

Topographic characteristics of the river basins

**Contour line length - Liz [km]: ["1.39164 ", "7.37748 ", "7.37178 ", "7.98934 ", "4.29275
", "3.63637 ", "3.65955 ", "3.93973 ", "5.37646 ", "7.42631 ", "7.76852 ", "4.28908 "]**

**The area between the two neighboring contour lines - f [km²]: ["0.44559 ", "2.95570 ", "2.12800
", "1.89432 ", "1.32803 ", "0.62144 ", "0.55537 ", "0.62253 ", "0.76737 ", "1.49231 ", "2.02380
", "2.20315 ", "0.59230 "]**

h0 = 700 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 692 (Lowest altitude in the drainage basin)

Hmax = 1838 (Highest altitude in the drainage basin)

Hydrological characteristics of the river basins

$\Sigma L = 7.31913$ km (The total length of the main watercourse with tributaries of 1st and 2nd class)

$L_m = 6.92495$ km (The shortest distance between the fountain (head and mouth))

Water permeability

$f_p = 0.2258$ (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

$f_{pp} = 0.2585$ (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

$f_o = 0.5157$ (Part of the surface area of the drainage basin which is composed of the rocks of poor water permeability (heavy clay, compact eruptive))

Land use

$f_s = 0.474821939$ (Part of the surface area of the drainage basin under the forest)

$f_t = 0.484920589$ (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

$f_g = 0.040257472$ (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

$h_b = 115$ mm (Level of torrent rain)

U_p (years) = 100

$t_o = 9.0$ °C (Average annual air temperature)

$H_{god} = 944.3$ mm (Average annual quantity of precipitation)

Erosion coefficients

$Y = 1.16876$ (Types of soil structures and allied types)

12.22 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

73.57 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

1.41 % (Solid and Schist limestone, Terra Rosa and Humic soil)

12.8 % (Brown forest soils and Mountain soils)

0 % (Epieugleysol and Marshlands)

0 % (Good structured Chernozems and alluvial well-structured deposits)

0 % (Bare, compact igneous)

Xa = 0.482745 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

4.03 % (Plough-lands)

5.9 % (Orchards and vineyards)

27.19 % (Mountain pastures)

15.4 % (Meadows)

28.49 % (Degraded forests)

18.99 % (Well-constituted forests)

$\phi = 0.370145$ (Numerical coefficient of visible and clearly pointed processes of soil erosion)

6.99 % (Depth erosion)

6.22 % (80% of the river basin under rill and gully erosion)

5.44 % (50% of the river basin under rill and gully erosion)

4.66 % (100% of the river basin under surface erosion)

15.4 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

2.33 % (50% of the river basin under surface erosion)

1.55 % (20% of the river basin under surface erosion)

0 % (There are smaller slides in the watercourse beds)

4.03 % (The river basin mostly under plough-land)

53.38 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 0.57330979911547 (Coefficient of the river basin form)

m = 0.49173328302508 (Coefficient of the watershed development)

B = 2.1264567457187 km (Average river basin width)

a = 0.25039960521614 ((A)symmetry of the river basin)

G = 0.4151543684309 (Density of the river network of the basin)
K = 1.0569217106261 (Coefficient of the river basin tortuousness)
H_{sr} = 1218.212714763 m (Average river basin altitude)
D = 526.212714763 m (Average elevation difference of the river basin)
I_{sr} = 36.596356190336 % (Average river basin decline)
H_{leb} = 1146 m (The height of the local erosion base of the river basin)
E_r = 178.02142894264 (Coefficient of the erosion energy of the river basins relief)
S₁ = 0.78697 (Coefficient of the regions permeability)
S₂ = 0.7130871066 (Coefficient of the vegetation cover)
W = 1.340714077213 m (Analytical presentation of the water retention in inflow)
2gDF^{1/2} = 426.63363830669 m km s⁻¹ (Energetic potential of water flow during torrent rains)
Q_{max} = 184.02693378103 m³ s⁻¹ (Maximal outflow from the river basin)
T = 1 (Temperature coefficient of the region)
Z = 0.55016088165538 (Coefficient of the river basin erosion)
W_{god} = 21342.4499804 m³ god⁻¹ (Production of erosion material in the river basin)
R_u = 0.38859007104188 (Coefficient of the deposit retention)
G_{god} = 8293.4641540913 m³ god⁻¹ (Real soil losses)
G_{god} km⁻² = 470.4203741423 m³ km⁻² god⁻¹ (Real soil losses per km²)