

---

# Web application for Intensity of Erosion and Outflow

**Name of the River Basin: Rakljanska rijeka**

**Country: Montenegro**

**Year: 2018**

**GPS coordinates, latitude and longitude with Google Maps:  
42.978454,19.762097**

## INPUT DATA

### Geometric characteristics of the river basins

**F = 11.59289 km<sup>2</sup> (Surface area of the drainage basin)**

**O = 15.51315 km (Length of the watershed)**

**Fv = 7.25637 km<sup>2</sup> (Surface area of greater portion of the drainage basin)**

**Fm = 4.33652 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)**

**Lv = 5.94182 km (Natural length of main water course)**

**Lb = 7.01044 km (Length of the drainage basin measured by a series of parallel lines)**

### Topographic characteristics of the river basins

**Contour line length - Liz [km]: ["0.36384 ", "10.12389 ", "13.01776 ", "5.28770 ", "2.56176 "]**

**The area between the two neighboring contour lines - f [km<sup>2</sup>]: ["0.04403 ", "2.54123 ", "3.65344 ", "3.38590 ", "1.47726 ", "0.49102 "]**

**h0 = 600 m (Altitude of the initial contour)**

**Δh = 100 m (Equidistance)**

**Hmin = 593 (Lowest altitude in the drainage basin)**

**Hmax = 1026 (Highest altitude in the drainage basin)**

### Hydrological characteristics of the river basins

---

$\Sigma L = 5.94182$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

$L_m = 5.38445$  km (The shortest distance between the fountain (head and mouth))

### Water permeability

$f_p = 0$  (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

$f_{pp} = 0.0934$  (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

$f_o = 0.9066$  (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

$f_s = 0.558266472$  (Part of the surface area of the drainage basin under the forest)

$f_t = 0.357922474$  (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

$f_g = 0.083811054$  (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

### Meteorological data

$h_b = 157.6$  mm (Level of torrent rain)

$U_p$  (years) = 100

$t_o = 8.9$  °C (Average annual air temperature)

$H_{god} = 983.7$  mm (Average annual quantity of precipitation)

### Erosion coefficients

$Y = 1.20197$  (Types of soil structures and allied types)

11.33 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

88.67 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

---

**0 % (Solid and Schist limestone, Terra Rosa and Humic soil)**

**0 % (Brown forest soils and Mountain soils)**

**0 % (Epieugleysol and Marshlands)**

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

**0 % (Bare, compact igneous)**

**Xa = 0.47814 (Planning of the drainage basin, rate of drainage basin regulation)**

**0 % (Bare lands)**

**8.38 % (Plough-lands)**

**4.97 % (Orchards and vineyards)**

**8.55 % (Mountain pastures)**

**22.28 % (Meadows)**

**36.29 % (Degraded forests)**

**19.54 % (Well-constituted forests)**

**$\phi = 0.27568$  (Numerical coefficient of visible and clearly pointed processes of soil erosion)**

**2.2 % (Depth erosion)**

**1.95 % (80% of the river basin under rill and gully erosion)**

**1.71 % (50% of the river basin under rill and gully erosion)**

**1.47 % (100% of the river basin under surface erosion)**

**22.28 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)**

**0.73 % (50% of the river basin under surface erosion)**

**0.49 % (20% of the river basin under surface erosion)**

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

**8.38 % (The river basin mostly under plough-land)**

**60.79 % (The river basin under forests and perennial vegetation)**

## **INPUT DATA**

**A = 0.50911408457341 (Coefficient of the river basin form)**

**m = 0.49228737901982 (Coefficient of the watershed development)**

**B = 1.653660825854 km (Average river basin width)**

**a = 0.50373116625794 ((A)symmetry of the river basin)**

**G = 0.51254001374981 (Density of the river network of the basin)**

---

---

**K = 1.1035147508102 (Coefficient of the river basin tortuousness)**

**H<sub>sr</sub> = 793.32751841862 m (Average river basin altitude)**

**D = 200.32751841862 m (Average elevation difference of the river basin)**

**I<sub>sr</sub> = 27.046707076493 % (Average river basin decline)**

**H<sub>leb</sub> = 433 m (The height of the local erosion base of the river basin)**

**E<sub>r</sub> = 74.694752899571 (Coefficient of the erosion energy of the river basins relief)**

**S<sub>1</sub> = 0.97198 (Coefficient of the regions permeability)**

**S<sub>2</sub> = 0.7051089164 (Coefficient of the vegetation cover)**

**W = 1.7023202673314 m (Analytical presentation of the water retention in inflow)**

**2gDF<sup>1/2</sup> = 213.4595869098 m km s<sup>-1</sup> (Energetic potential of water flow during torrent rains)**

**Q<sub>max</sub> = 126.79016925308 m<sup>3</sup> s<sup>-1</sup> (Maximal outflow from the river basin)**

**T = 0.99498743710662 (Temperature coefficient of the region)**

**Z = 0.45732226310679 (Coefficient of the river basin erosion)**

**W<sub>god</sub> = 11024.410407001 m<sup>3</sup> god<sup>-1</sup> (Production of erosion material in the river basin)**

**R<sub>u</sub> = 0.22116296110144 (Coefficient of the deposit retention)**

**G<sub>god</sub> = 2438.1912500099 m<sup>3</sup> god<sup>-1</sup> (Real soil losses)**

**G<sub>god</sub> km<sup>-2</sup> = 210.3178111765 m<sup>3</sup> km<sup>-2</sup> god<sup>-1</sup> (Real soil losses per km<sup>2</sup>)**