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# Web application for Intensity of Erosion and Outflow

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

**Country: Montenegro**

**Year: 2018**

**GPS coordinates, latitude and longitude with Google Maps:  
43.070876,19.789726**

## INPUT DATA

### Geometric characteristics of the river basins

**F = 27.41804 km<sup>2</sup> (Surface area of the drainage basin)**

**O = 30.97936 km (Length of the watershed)**

**Fv = 18.45877 km<sup>2</sup> (Surface area of greater portion of the drainage basin)**

**Fm = 8.95927 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)**

**Lv = 6.39141 km (Natural length of main water course)**

**Lb = 12.95975 km (Length of the drainage basin measured by a series of parallel lines)**

### Topographic characteristics of the river basins

**Contour line length - Liz [km]: ["2.49506**

**The area between the two neighboring contour lines - f [km<sup>2</sup>]: ["5.12456 ", "6.41788 ", "7.99236  
", "5.26434 ", "1.74621 ", "0.66440 ", "0.14745 ", "0.05252 ", "0.00833 "]**

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

**Δh = 100 m (Equidistance)**

**Hmin = 550 (Lowest altitude in the drainage basin)**

**Hmax = 1314 (Highest altitude in the drainage basin)**

### Hydrological characteristics of the river basins

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$\Sigma L = 8.66268$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

$L_m = 6.05424$  km (The shortest distance between the fountain (head and mouth))

### Water permeability

$f_p = 0.0281$  (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

$f_{pp} = 0.0747$  (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

$f_o = 0.8972$  (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

$f_s = 0.625657604$  (Part of the surface area of the drainage basin under the forest)

$f_t = 0.233619677$  (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

$f_g = 0.140722719$  (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)

$H_{god} = 873.7$  mm (Average annual quantity of precipitation)

### Erosion coefficients

$Y = 1.24112$  (Types of soil structures and allied types)

15.68 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

84.32 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

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**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 = 0.50131 (Planning of the drainage basin, rate of drainage basin regulation)**

**0 % (Bare lands)**

**14.07 % (Plough-lands)**

**4.25 % (Orchards and vineyards)**

**6.76 % (Mountain pastures)**

**12.35 % (Meadows)**

**40.67 % (Degraded forests)**

**21.9 % (Well-constituted forests)**

**$\phi = 0.216265$  (Numerical coefficient of visible and clearly pointed processes of soil erosion)**

**1.74 % (Depth erosion)**

**1.54 % (80% of the river basin under rill and gully erosion)**

**1.35 % (50% of the river basin under rill and gully erosion)**

**1.16 % (100% of the river basin under surface erosion)**

**12.35 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)**

**0.58 % (50% of the river basin under surface erosion)**

**0.39 % (20% of the river basin under surface erosion)**

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

**14.07 % (The river basin mostly under plough-land)**

**66.81 % (The river basin under forests and perennial vegetation)**

## **INPUT DATA**

**A = 0.94517097166353 (Coefficient of the river basin form)**

**m = 0.34432895375695 (Coefficient of the watershed development)**

**B = 2.1156303169428 km (Average river basin width)**

**a = 0.69293793429436 ((A)symmetry of the river basin)**

**G = 0.31594818593889 (Density of the river network of the basin)**

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**K = 1.0556915484024 (Coefficient of the river basin tortuousness)**

**H<sub>sr</sub> = 736.37018948109 m (Average river basin altitude)**

**D = 186.37018948109 m (Average elevation difference of the river basin)**

**I<sub>sr</sub> = 41.882745812611 % (Average river basin decline)**

**H<sub>leb</sub> = 764 m (The height of the local erosion base of the river basin)**

**E<sub>r</sub> = 106.27580039673 (Coefficient of the erosion energy of the river basins relief)**

**S<sub>1</sub> = 0.96073 (Coefficient of the regions permeability)**

**S<sub>2</sub> = 0.703013023 (Coefficient of the vegetation cover)**

**W = 1.6980395862509 m (Analytical presentation of the water retention in inflow)**

**2gDF<sup>1/2</sup> = 316.63281918052 m km s<sup>-1</sup> (Energetic potential of water flow during torrent rains)**

**Q<sub>max</sub> = 343.22493855429 m<sup>3</sup> s<sup>-1</sup> (Maximal outflow from the river basin)**

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

**Z = 0.53721630879217 (Coefficient of the river basin erosion)**

**W<sub>god</sub> = 29484.243832512 m<sup>3</sup> god<sup>-1</sup> (Production of erosion material in the river basin)**

**R<sub>u</sub> = 0.29318255569147 (Coefficient of the deposit retention)**

**G<sub>god</sub> = 8644.2659594463 m<sup>3</sup> god<sup>-1</sup> (Real soil losses)**

**G<sub>god</sub> km<sup>-2</sup> = 315.27658284277 m<sup>3</sup> km<sup>-2</sup> god<sup>-1</sup> (Real soil losses per km<sup>2</sup>)**