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# Web application for Intensity of Erosion and Outflow

**Name of the River Basin: Bioricki potok**

**Country: Montenegro**

**Year: 2018**

**GPS coordinates, latitude and longitude with Google Maps:  
42.955118,19.852719**

## INPUT DATA

### Geometric characteristics of the river basins

**F = 6.11104 km<sup>2</sup> (Surface area of the drainage basin)**

**O = 10.73429 km (Length of the watershed)**

**Fv = 3.93309 km<sup>2</sup> (Surface area of greater portion of the drainage basin)**

**Fm = 2.17795 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)**

**Lv = 2.09035 km (Natural length of main water course)**

**Lb = 4.39401 km (Length of the drainage basin measured by a series of parallel lines)**

### Topographic characteristics of the river basins

**Contour line length - Liz [km]: ["2.88744 ", "3.43353 ", "3.45258 ", "3.81288 ", "1.84804 ", "0.37191 "]**

**The area between the two neighboring contour lines - f [km<sup>2</sup>]: ["1.06843 ", "1.12483 ", "1.07040 ", "1.17339 ", "1.22806 ", "0.41565 ", "0.03029 "]**

**h0 = 700 m (Altitude of the initial contour)**

**Δh = 100 m (Equidistance)**

**Hmin = 622 (Lowest altitude in the drainage basin)**

**Hmax = 1218 (Highest altitude in the drainage basin)**

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## Hydrological characteristics of the river basins

$\Sigma L = 2.09035$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

$L_m = 1.98406$  km (The shortest distance between the fountain (head and mouth))

### Water permeability

$f_p = 0.0708$  (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

$f_{pp} = 0.1563$  (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

$f_o = 0.7729$  (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

$f_s = 0.474517649$  (Part of the surface area of the drainage basin under the forest)

$f_t = 0.355936095$  (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

$f_g = 0.169546257$  (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

$Y = 1.14373$  (Types of soil structures and allied types)

6.01 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

88.81 % (Serpentines, red sand stones, flishe deposits)

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**0 % (Podzols and parapodzols, decomposed schist)**

**5.18 % (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 = 0.50327 (Planning of the drainage basin, rate of drainage basin regulation)**

**0 % (Bare lands)**

**16.95 % (Plough-lands)**

**2.95 % (Orchards and vineyards)**

**9.6 % (Mountain pastures)**

**23.04 % (Meadows)**

**28.47 % (Degraded forests)**

**18.98 % (Well-constituted forests)**

**$\phi = 0.291135$  (Numerical coefficient of visible and clearly pointed processes of soil erosion)**

**2.47 % (Depth erosion)**

**2.19 % (80% of the river basin under rill and gully erosion)**

**1.92 % (50% of the river basin under rill and gully erosion)**

**1.65 % (100% of the river basin under surface erosion)**

**23.04 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)**

**0.82 % (50% of the river basin under surface erosion)**

**0.55 % (20% of the river basin under surface erosion)**

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

**16.95 % (The river basin mostly under plough-land)**

**50.4 % (The river basin under forests and perennial vegetation)**

## **INPUT DATA**

**A = 1.0013569737125 (Coefficient of the river basin form)**

**m = 0.23853741774346 (Coefficient of the watershed development)**

**B = 1.3907660656212 km (Average river basin width)**

**a = 0.57441613866052 ((A)symmetry of the river basin)**

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**G = 0.3420612530764 (Density of the river network of the basin)**  
**K = 1.0535719685897 (Coefficient of the river basin tortuousness)**  
**H<sub>sr</sub> = 880.1278243965 m (Average river basin altitude)**  
**D = 258.1278243965 m (Average elevation difference of the river basin)**  
**I<sub>sr</sub> = 25.865286432424 % (Average river basin decline)**  
**H<sub>leb</sub> = 596 m (The height of the local erosion base of the river basin)**  
**E<sub>r</sub> = 120.66119035745 (Coefficient of the erosion energy of the river basins relief)**  
**S<sub>1</sub> = 0.91063 (Coefficient of the regions permeability)**  
**S<sub>2</sub> = 0.7390057224 (Coefficient of the vegetation cover)**  
**W = 1.7492116539043 m (Analytical presentation of the water retention in inflow)**  
**2gDF<sup>1/2</sup> = 175.92375054324 m km s<sup>-1</sup> (Energetic potential of water flow during torrent rains)**  
**Q<sub>max</sub> = 207.36980490112 m<sup>3</sup> s<sup>-1</sup> (Maximal outflow from the river basin)**  
**T = 0.99498743710662 (Temperature coefficient of the region)**  
**Z = 0.46031952466017 (Coefficient of the river basin erosion)**  
**W<sub>god</sub> = 5868.5980086022 m<sup>3</sup> god<sup>-1</sup> (Production of erosion material in the river basin)**  
**R<sub>u</sub> = 0.27535641258408 (Coefficient of the deposit retention)**  
**G<sub>god</sub> = 1615.9560945468 m<sup>3</sup> god<sup>-1</sup> (Real soil losses)**  
**G<sub>god</sub> km<sup>-2</sup> = 264.43225613754 m<sup>3</sup> km<sup>-2</sup> god<sup>-1</sup> (Real soil losses per km<sup>2</sup>)**