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# Web application for Intensity of Erosion and Outflow

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

**Country: Montenegro**

**Year: 2018**

**GPS coordinates, latitude and longitude with Google Maps:  
42.662417,19.885632**

## INPUT DATA

### Geometric characteristics of the river basins

**F = 23.81316 km<sup>2</sup> (Surface area of the drainage basin)**

**O = 20.12763 km (Length of the watershed)**

**Fv = 12.06184 km<sup>2</sup> (Surface area of greater portion of the drainage basin)**

**Fm = 11.75132 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)**

**Lv = 6.21857 km (Natural length of main water course)**

**Lb = 7.29624 km (Length of the drainage basin measured by a series of parallel lines)**

### Topographic characteristics of the river basins

**Contour line length - Liz [km]: ["3.66252 ", "6.85066 ", "7.65354 ", "9.41269 ", "9.90799 ", "9.82903 ", "12.1316 ", "14.00802 ", "15.05212 ", "14.57022 ", "12.36504 ", "7.36179 ", "2.99289 ", "0.00001 "]**

**The area between the two neighboring contour lines - f [km<sup>2</sup>]: ["0.45239 ", "1.1597 ", "1.31044 ", "1.72803 ", "1.58075 ", "1.49243 ", "1.63147 ", "2.16386 ", "2.58594 ", "3.24771 ", "2.91651 ", "2.20469 ", "0.9558 ", "0.39092 ", "0.00001 "]**

**h0 = 900 m (Altitude of the initial contour)**

**Δh = 100 m (Equidistance)**

**Hmin = 830 (Lowest altitude in the drainage basin)**

**Hmax = 2211 (Highest altitude in the drainage basin)**

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## Hydrological characteristics of the river basins

$\Sigma L = 8.68633$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

$L_m = 5.92688$  km (The shortest distance between the fountain (head and mouth))

### Water permeability

$f_p = 0.2947$  (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

$f_{pp} = 0.0405$  (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

$f_o = 0.6648$  (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

$f_s = 0.680741123$  (Part of the surface area of the drainage basin under the forest)

$f_t = 0.298309852$  (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

$f_g = 0.020949025$  (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)

$H_{god} = 1183.7$  mm (Average annual quantity of precipitation)

### Erosion coefficients

$Y = 1.05523$  (Types of soil structures and allied types)

2.19 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

65.57 % (Serpentines, red sand stones, flishe deposits)

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

**32.24 % (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 = 0.309695 (Planning of the drainage basin, rate of drainage basin regulation)**

**0 % (Bare lands)**

**2.09 % (Plough-lands)**

**2.38 % (Orchards and vineyards)**

**17.81 % (Mountain pastures)**

**9.64 % (Meadows)**

**17.23 % (Degraded forests)**

**50.85 % (Well-constituted forests)**

**$\phi = 0.274395$  (Numerical coefficient of visible and clearly pointed processes of soil erosion)**

**4.58 % (Depth erosion)**

**4.07 % (80% of the river basin under rill and gully erosion)**

**3.56 % (50% of the river basin under rill and gully erosion)**

**3.05 % (100% of the river basin under surface erosion)**

**9.64 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)**

**1.53 % (50% of the river basin under surface erosion)**

**1.02 % (20% of the river basin under surface erosion)**

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

**2.09 % (The river basin mostly under plough-land)**

**70.45 % (The river basin under forests and perennial vegetation)**

## **INPUT DATA**

**A = 0.63115601335998 (Coefficient of the river basin form)**

**m = 0.35948194298402 (Coefficient of the watershed development)**

**B = 3.2637577711259 km (Average river basin width)**

**a = 0.026079697108658 ((A)symmetry of the river basin)**

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**G = 0.36477015230234 (Density of the river network of the basin)**  
**K = 1.049214763923 (Coefficient of the river basin tortuousness)**  
**H<sub>sr</sub> = 1554.2428600404 m (Average river basin altitude)**  
**D = 724.2428600404 m (Average elevation difference of the river basin)**  
**I<sub>sr</sub> = 52.827142638776 % (Average river basin decline)**  
**H<sub>leb</sub> = 1381 m (The height of the local erosion base of the river basin)**  
**E<sub>r</sub> = 198.99380136113 (Coefficient of the erosion energy of the river basins relief)**  
**S<sub>1</sub> = 0.81103 (Coefficient of the regions permeability)**  
**S<sub>2</sub> = 0.6680415804 (Coefficient of the vegetation cover)**  
**W = 1.3480171403329 m (Analytical presentation of the water retention in inflow)**  
**2gDF<sup>1/2</sup> = 581.70142502842 m km s<sup>-1</sup> (Energetic potential of water flow during torrent rains)**  
**Q<sub>max</sub> = 268.14683809524 m<sup>3</sup> s<sup>-1</sup> (Maximal outflow from the river basin)**  
**T = 1 (Temperature coefficient of the region)**  
**Z = 0.32719744107024 (Coefficient of the river basin erosion)**  
**W<sub>god</sub> = 16573.84977357 m<sup>3</sup> god<sup>-1</sup> (Production of erosion material in the river basin)**  
**R<sub>u</sub> = 0.47082104556721 (Coefficient of the deposit retention)**  
**G<sub>god</sub> = 7803.317279466 m<sup>3</sup> god<sup>-1</sup> (Real soil losses)**  
**G<sub>god</sub> km<sup>-2</sup> = 327.68928103057 m<sup>3</sup> km<sup>-2</sup> god<sup>-1</sup> (Real soil losses per km<sup>2</sup>)**