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# Web application for Intensity of Erosion and Outflow

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

**Country: Montenegro**

**Year: 2018**

**GPS coordinates, latitude and longitude with Google Maps:  
42.922158,19.860094**

## INPUT DATA

### Geometric characteristics of the river basins

**F = 77.74127 km<sup>2</sup> (Surface area of the drainage basin)**

**O = 47.69818 km (Length of the watershed)**

**Fv = 45.31309 km<sup>2</sup> (Surface area of greater portion of the drainage basin)**

**Fm = 32.42818 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)**

**Lv = 18.63097 km (Natural length of main water course)**

**Lb = 16.9459 km (Length of the drainage basin measured by a series of parallel lines)**

### Topographic characteristics of the river basins

**Contour line length - Liz [km]: ["5.10930 ", "7.81371 ", "19.51511 ", "29.49667 ", "35.41558 ", "34.12410 ", "34.91699 ", "38.16232 ", "37.39740 ", "35.58561 ", "19.90150 ", "21.86124 ", "5.85499 "]**

**The area between the two neighboring contour lines - f [km<sup>2</sup>]: ["1.89333 ", "2.81206 ", "3.89692 ", "4.81249 ", "6.64300 ", "7.76400 ", "7.31605 ", "7.67770 ", "8.51072 ", "8.20787 ", "8.21651 ", "5.50208 ", "3.77999 ", "0.70854 "]**

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

**Δh = 100 m (Equidistance)**

**Hmin = 681 (Lowest altitude in the drainage basin)**

**Hmax = 1963 (Highest altitude in the drainage basin)**

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## Hydrological characteristics of the river basins

$\Sigma L = 32.92231$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

$L_m = 12.67805$  km (The shortest distance between the fountain (head and mouth))

### Water permeability

$f_p = 0.7834$  (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

$f_{pp} = 0.1577$  (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

$f_o = 0.0589$  (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

$f_s = 0.494437420$  (Part of the surface area of the drainage basin under the forest)

$f_t = 0.477727166$  (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

$f_g = 0.027835414$  (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

$Y = 1.13401$  (Types of soil structures and allied types)

5.87 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

84.72 % (Serpentines, red sand stones, flishe deposits)

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

**9.41 % (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 = 0.47594 (Planning of the drainage basin, rate of drainage basin regulation)**

**0 % (Bare lands)**

**2.78 % (Plough-lands)**

**1.03 % (Orchards and vineyards)**

**34.42 % (Mountain pastures)**

**12.32 % (Meadows)**

**29.67 % (Degraded forests)**

**19.78 % (Well-constituted forests)**

**$\phi$  = 0.4049 (Numerical coefficient of visible and clearly pointed processes of soil erosion)**

**8.85 % (Depth erosion)**

**7.87 % (80% of the river basin under rill and gully erosion)**

**6.88 % (50% of the river basin under rill and gully erosion)**

**5.9 % (100% of the river basin under surface erosion)**

**12.32 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)**

**2.95 % (50% of the river basin under surface erosion)**

**1.97 % (20% of the river basin under surface erosion)**

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

**2.78 % (The river basin mostly under plough-land)**

**50.48 % (The river basin under forests and perennial vegetation)**

## **INPUT DATA**

**A = 0.49923031919433 (Coefficient of the river basin form)**

**m = 0.59608023138098 (Coefficient of the watershed development)**

**B = 4.5876152933748 km (Average river basin width)**

**a = 0.33148184998779 ((A)symmetry of the river basin)**

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**G = 0.42348562095783 (Density of the river network of the basin)**  
**K = 1.4695453953881 (Coefficient of the river basin tortuousness)**  
**H<sub>sr</sub> = 1329.0816431864 m (Average river basin altitude)**  
**D = 648.0816431864 m (Average elevation difference of the river basin)**  
**I<sub>sr</sub> = 41.825213300477 % (Average river basin decline)**  
**H<sub>leb</sub> = 1282 m (The height of the local erosion base of the river basin)**  
**E<sub>r</sub> = 137.42800585229 (Coefficient of the erosion energy of the river basins relief)**  
**S<sub>1</sub> = 0.48265 (Coefficient of the regions permeability)**  
**S<sub>2</sub> = 0.7066795988 (Coefficient of the vegetation cover)**  
**W = 1.2851355546211 m (Analytical presentation of the water retention in inflow)**  
**2gDF<sup>1/2</sup> = 994.23758624287 m km s<sup>-1</sup> (Energetic potential of water flow during torrent rains)**  
**Q<sub>max</sub> = 217.56795692625 m<sup>3</sup> s<sup>-1</sup> (Maximal outflow from the river basin)**  
**T = 1 (Temperature coefficient of the region)**  
**Z = 0.56758334561869 (Coefficient of the river basin erosion)**  
**W<sub>god</sub> = 98617.947375407 m<sup>3</sup> god<sup>-1</sup> (Production of erosion material in the river basin)**  
**R<sub>u</sub> = 0.38838254028279 (Coefficient of the deposit retention)**  
**G<sub>god</sub> = 38301.488919135 m<sup>3</sup> god<sup>-1</sup> (Real soil losses)**  
**G<sub>god</sub> km<sup>-2</sup> = 492.67897114538 m<sup>3</sup> km<sup>-2</sup> god<sup>-1</sup> (Real soil losses per km<sup>2</sup>)**