# Web application for Intensity of Erosion and Outflow

Name of the River Basin: Ramcina

**Country: Montenegro** 

Year: 2018

GPS coordinates, latitude and longitude with Google Maps: 42.98746,19.755437

### **INPUT DATA**

#### Geometric characteristics of the river basins

 $F = 9.88503 \text{ km}^2$  (Surface area of the drainage basin)

O = 14.83463 km (Length of the watershed)

 $Fv = 6.36461 \text{ km}^2$  (Surface area of greater portion of the drainage basin)

Fm = 3.52042 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)

Lv = 3.70578 km (Natural length of main water course)

Lb = 6.26708 km (Length of the drainage basin measured by a series of paraller lines)

#### **Topograpfic characteristics of the river basins**

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Contour line length - Liz [km]: ["0.3181 ","1.31226 ","2.12829 ","4.51802 ","5.523 ","6.75476 ","7.30353 ","7.69399 ","8.05699 ","7.84416 ","4.52585 ","3.23553 ","3.35417 ","3.21198 ","3.23518 ","3.47135 ","3.26101 ","2.82166 ","2.96052 ","2.25237 ","1.84255 ","2.15
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The area between the two neighboring contour lines - f [km²]: ["0.012686275 ","0.075166667 ","0.201147059 ","0.376539216 ","0.475588235 ","0.773588235 ","1.000970588 ","0.838009804 ","0.908764706 ","0.949941176 ","0.919607843 ","0.381372549 ","0.372745098 ","0.271343137 ","0.31872549 ","0.23422549 ",

h0 = 600 m (Altitude of the initial contour)

 $\Delta h = 50 \text{ m (Equidistance)}$ 

**Hmin = 580 (Lowest altitude in the drainage basin)** 

Hmax = 1757 (Highest altitude in the draigane basin

# Hydrological characteristics of the river basins

 $\Sigma L = 10.10603$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

Lm = 2.52952 km (The shortest distance between the fountain (head and mouth))

### Water permeability

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

fpp = 0.1157 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.8843 (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

fs = 0.676996973 (Part of the surface area of the drainage basin under the forest)

ft = 0.261297321 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.061705706 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

#### Meteorological data

**hb** = **157.6 mm** (Level of torrent rain)

Up (years) = 100

to = 8.9 °C (Average annual air temperature)

**Hgod = 983.7 mm (Average annual quantity of precipitation)** 

# **Erosion coefficients**

Y = 0.907145 (Types of soil structures and allied types)

11.39 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

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0 % (Serpentines, red sand stones, flishe deposits)
39.38 % (Podzols and parapodzols, decomposed schist)
0 % (Solid and Schist limestone, Terra Rosa and Humic soil)
29.54 % (Brown forest soils and Mountain soils)
0 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
19.69 % (Bare, compact igneous)
Xa = 0.461275 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
6.17 % (Plough-lands)
5.86 % (Orchards and vineyards)
3.9 % (Mountain pastures)
16.37 % (Meadows)
44 % (Degraded forests)
23.69 % (Well-constituted forests)
\phi = 0.212295 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
1 % (Depth erosion)
0.89 % (80% of the river basin under rill and gully erosion)
0.78 % (50% of the river basin under rill and gully erosion)
0.67 % (100% of the river basin under surface erosion)
16.37 % (100% of the river basin under surface erosion, without visible furrows, ravines and
land slides)
0.33 % (50% of the river basin under surface erosion)
0.22 % (20% of the river basin under surface erosion)
0 % (There are smaller slides in the watercourse beds)
6.17 % (The river basin mostly under plough-land)
73.57 % (The river basin under forests and perennial vegetation)
INPUT DATA
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A = 0.7806056619659 (Coefficient of the river basin form)

m = 0.33249544895342 (Coefficient of the watershed development)

**B** = 1.5772943699458 km (Average river basin width)

a = 0.57545399457564 ((A)symmetry of the river basin) **G** = 1.022357038876 (Density of the river network of the basin) K = 1.4650131250198 (Coefficient of the river basin tortuousness)  $H_{sr} = 1055.6012384204$  m (Average river basin altitude) D = 475.6012384204 m (Average elevation difference of the river basin)  $I_{sr}$  = 45.087627452825 % (Average river basin decline)  $H_{leb} = 1177$  m (The height of the local erosion base of the river basin)  $E_r = 211.29153209166$  (Coefficient of the erosion energy of the river basins relief)  $S_1 = 0.96529$  (Coefficient of the regions permeability)  $S_2 = 0.6769417466$  (Coefficient of the vegetation cover) W = 1.7265533765394 m (Analytical presentation of the water retention in inflow)  $2gDF^{1/2} = 303.71062517259 \text{ m km s}^{-1}$  (Energetic potential of water flow during torrent rains)  $Q_{max} = 267.47352216594 \text{ m}^3 \text{ s}^{-1}$  (Maximal outflow from the river basin) T = 0.99498743710662 (Temperature coefficient of the region) Z = 0.36980689582108 (Coefficient of the river basin erosion)  $W_{god} = 6835.5055602383 \text{ m}^3 \text{ god}^{-1}$  (Production of erosion material in the river basin  $R_u = 0.3876020693761$  (Coefficient of the deposit retention)

 $G_{god} = 2649.4561003802 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$ 

 $G_{god} \text{ km}^{-2} = 268.0271178115 \text{ m}^3 \text{ km}^{-2} \text{ god}^{-1} \text{ (Real soil losses per km}^2\text{)}$ 

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