# Web application for Intensity of Erosion and Outflow

Name of the River Basin: Pepica rijeka

**Country: Montenegro** 

**Year: 2018** 

GPS coordinates, latitude and longitude with Google Maps: 42.999431,19.747604

## **INPUT DATA**

#### Geometric characteristics of the river basins

 $F = 12.9164 \text{ km}^2$  (Surface area of the drainage basin)

O = 16.30059 km (Length of the watershed)

 $Fv = 8.89711 \text{ km}^2$  (Surface area of greater portion of the drainage basin)

 $Fm = 4.01929 \text{ km}^2$  (Surface area of smaller portion of the drainage basin)

Lv = 3.82415 km (Natural length of main water course)

Lb = 6.60463 km (Length of the drainage basin measured by a series of paraller lines)

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

Contour line length - Liz [km]: ["4.61578 ","8.13069 ","9.28506 ","7.10253 ","6.31298 ","4.30832 ","1.23246 "]

The area between the two neighboring contour lines - f [km²]: ["1.33140 ","1.68526 ","2.49675 ","2.67643 ","2.18208 ","1.74259 ","0.69747 ","0.10442 "]

h0 = 600 m (Altitude of the initial contour)

 $\Delta h = 100 \text{ m (Equidistance)}$ 

Hmin = 578 (Lowest altitude in the drainage basin)

Hmax = 1264 (Highest altitude in the draigane basin

## Hydrological characteristics of the river basins

 $\Sigma L = 3.82415$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

Lm = 3.45558 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 = 0.1342 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.8658 (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 = 0.572645755 (Part of the surface area of the drainage basin under the forest)

ft = 0.372279326 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.055074919 (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 = 893.3 mm (Average annual quantity of precipitation)

#### **Erosion coefficients**

Y = 1.172 (Types of soil structures and allied types)

8 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

92 % (Serpentines, red sand stones, flishe deposits)

```
0 % (Podzols and parapodzols, decomposed schist)
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 = 0.47634 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
5.51 % (Plough-lands)
8.67 % (Orchards and vineyards)
9.24 % (Mountain pastures)
19.32 % (Meadows)
37.22 % (Degraded forests)
20.04 % (Well-constituted forests)
\phi = 0.264305 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
2.38 % (Depth erosion)
2.11 % (80% of the river basin under rill and gully erosion)
1.85 % (50% of the river basin under rill and gully erosion)
1.58 % (100% of the river basin under surface erosion)
19.32 % (100% of the river basin under surface erosion, without visible furrows, ravines and
land slides)
0.79 % (50% of the river basin under surface erosion)
0.53 % (20% of the river basin under surface erosion)
0 % (There are smaller slides in the watercourse beds)
5.51 % (The river basin mostly under plough-land)
65.93 % (The river basin under forests and perennial vegetation)
INPUT DATA
```

A = 0.83119518062837 (Coefficient of the river basin form)

m = 0.30016444214948 (Coefficient of the watershed development)

**B** = **1.9556583790462** km (Average river basin width)

a = 0.75529094794215 ((A)symmetry of the river basin)

 $\overline{G}$  = 0.29606933820569 (Density of the river network of the basin) K = 1.1066593741138 (Coefficient of the river basin tortuousness)

D = 262.83591712861 m (Average elevation difference of the river basin)

 $I_{sr} = 31.733160942678 \%$  (Average river basin decline)

 $H_{sr}$  = 840.83591712861 m (Average river basin altitude)

 $H_{leb}$  = 686 m (The height of the local erosion base of the river basin)

 $E_r = 115.18312883334$  (Coefficient of the erosion energy of the river basins relief)

 $S_1 = 0.95974$  (Coefficient of the regions permeability)

 $S_2 = 0.6964858328$  (Coefficient of the vegetation cover)

W = 1.7251111879185 m (Analytical presentation of the water retention in inflow)

 $2gDF^{1/2} = 258.08490296955 \text{ m km s}^{-1}$  (Energetic potential of water flow during torrent rains)

 $Q_{max} = 247.37088988456 \text{ m}^3 \text{ s}^{-1}$  (Maximal outflow from the river basin)

T = 0.99498743710662 (Temperature coefficient of the region)

Z = 0.46203968971942 (Coefficient of the river basin erosion)

 $W_{god} = 11327.269025408 \text{ m}^3 \text{ god}^{-1}$  (Production of erosion material in the river basin

 $R_u = 0.29945776319159$  (Coefficient of the deposit retention)

 $G_{god} = 3392.0386454182 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$ 

 $G_{god} \text{ km}^{-2} = 262.6148652425 \text{ m}^3 \text{ km}^{-2} \text{ god}^{-1} \text{ (Real soil losses per km}^2\text{)}$ 

http://www.wintero.me