# Web application for Intensity of Erosion and Outflow

Name of the River Basin: Sekularska rijeka

**Country: Montenegro** 

Year: 2018

GPS coordinates, latitude and longitude with Google Maps: 42.781727,19.835325

# **INPUT DATA**

### Geometric characteristics of the river basins

F = 64.93593 km<sup>2</sup> (Surface area of the drainage basin)

O = 40.61151 km (Length of the watershed)

Fv = 44.52282 km<sup>2</sup> (Surface area of greater portion of the drainage basin)

 $Fm = 20.41311 \text{ km}^2$  (Surface area of smaller portion of the drainage basin)

Lv = 15.17969 km (Natural length of main water course)

Lb = 17.4308 km (Length of the drainage basin measured by a series of paraller lines)

# **Topograpfic characteristics of the river basins**

Contour line length - Liz [km]: ["9.15953 ","15.16561 ","20.38885 ","25.65009 ","29.77258 ","32.39267 ","34.84162 ","31.79902 ","26.31041 ","22.16719 ","21.64608 ","12.82036 ","0.22610 "]

The area between the two neighboring contour lines - f [km²]: ["1.46373 ","2.30328 ","2.93086 ","4.49297 ","5.76601 ","7.91851 ","7.96642 ","7.82193 ","6.58029 ","5.40123 ","4.88961 ","5.41711 ","1.97717 ","0.00679 "]

h0 = 800 m (Altitude of the initial contour)

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

**Hmin = 710 (Lowest altitude in the drainage basin)** 

Hmax = 2003 (Highest altitude in the draigane basin

# Hydrological characteristics of the river basins

 $\Sigma L = 21.70965$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

Lm = 13.02266 km (The shortest distance between the fountain (head and mouth))

# Water permeability

fp = 0.4286 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.1223 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.4491 (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 = 0.552708356 (Part of the surface area of the drainage basin under the forest)

ft = 0.422843164 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.024448480 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

# Meteorological data

**hb** = 115 mm (Level of torrent rain)

Up (years) = 100

to = 9.0 °C (Average annual air temperature)

Hgod = 944.3 mm (Average annual quantity of precipitation)

# **Erosion coefficients**

Y = 1.03459 (Types of soil structures and allied types)

0.98 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

61.86 % (Serpentines, red sand stones, flishe deposits)

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0 % (Podzols and parapodzols, decomposed schist)
37.17 % (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 = 0.34842 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
3.7 % (Plough-lands)
3.02 % (Orchards and vineyards)
19.94 % (Mountain pastures)
28.24 % (Meadows)
7.06 % (Degraded forests)
38.04 % (Well-constituted forests)
\phi = 0.38328 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
5.13 % (Depth erosion)
4.56 % (80% of the river basin under rill and gully erosion)
3.99 % (50% of the river basin under rill and gully erosion)
3.42 % (100% of the river basin under surface erosion)
28.24 % (100% of the river basin under surface erosion, without visible furrows, ravines and
land slides)
1.71 % (50% of the river basin under surface erosion)
1.14 % (20% of the river basin under surface erosion)
0 % (There are smaller slides in the watercourse beds)
3.7 % (The river basin mostly under plough-land)
48.12 % (The river basin under forests and perennial vegetation)
INPUT DATA
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A = 0.52170001166032 (Coefficient of the river basin form)

m = 0.53139252144067 (Coefficient of the watershed development)

**B** = 3.725355692223 km (Average river basin width)

a = 0.74256917549344 ((A)symmetry of the river basin)

G = 0.33432415613359 (Density of the river network of the basin) K = 1.1656366671632 (Coefficient of the river basin tortuousness)  $H_{sr} = 1397.521770074 \text{ m}$  (Average river basin altitude) D = 687.521770074 m (Average elevation difference of the river basin)  $I_{sr} = 43.479797702135 \%$  (Average river basin decline)  $H_{leb}$  = 1293 m (The height of the local erosion base of the river basin)  $E_r = 144.98643989094$  (Coefficient of the erosion energy of the river basins relief)  $S_1 = 0.70615$  (Coefficient of the regions permeability)  $S_2 = 0.6943480248$  (Coefficient of the vegetation cover) W = 1.2996341303175 m (Analytical presentation of the water retention in inflow)  $2gDF^{1/2} = 935.9125289239 \text{ m km s}^{-1}$  (Energetic potential of water flow during torrent rains)  $Q_{max} = 311.13680196408 \text{ m}^3 \text{ s}^{-1}$  (Maximal outflow from the river basin) **T = 1 (Temperature coefficient of the region)** Z = 0.3758539482342 (Coefficient of the river basin erosion)

 $W_{god} = 44388.820212213 \text{ m}^3 \text{ god}^{-1}$  (Production of erosion material in the river basin

 $R_u = 0.41970815980843$  (Coefficient of the deposit retention)

 $G_{god} = 18630.350047335 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$ 

 $G_{god}$  km<sup>-2</sup> = 286.90356859962 m<sup>3</sup> km<sup>-2</sup> god<sup>-1</sup> (Real soil losses per km<sup>2</sup>)

http://www.wintero.me