# 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

 $F = 23.81316 \text{ km}^2$  (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 paraller lines)

#### **Topograpfic 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 [km²]: ["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)

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

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

Hmax = 2211 (Highest altitude in the draigane basin

# 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)

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

## Water permeability

fp = 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))

fpp = 0.0405 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 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

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

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

fg = 0.020949025 (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 = 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
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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)

G = 0.36477015230234 (Density of the river network of the basin) **K** = 1.049214763923 (Coefficient of the river basin tortuousness)  $H_{sr} = 1554.2428600404 \text{ m}$  (Average river basin altitude) D = 724.2428600404 m (Average elevation difference of the river basin)  $I_{sr} = 52.827142638776 \%$  (Average river basin decline)  $H_{leb}$  = 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)  $S_1 = 0.81103$  (Coefficient of the regions permeability)  $S_2 = 0.6680415804$  (Coefficient of the vegetation cover)

W = 1.3480171403329 m (Analytical presentation of the water retention in inflow)

 $2gDF^{1/2} = 581.70142502842 \text{ m km s}^{-1}$  (Energetic potential of water flow during torrent rains)

 $Q_{max} = 268.14683809524 \text{ m}^3 \text{ s}^{-1}$  (Maximal outflow from the river basin)

**T = 1 (Temperature coefficient of the region)** 

Z = 0.32719744107024 (Coefficient of the river basin erosion)

 $W_{god} = 16573.84977357 \text{ m}^3 \text{ god}^{-1}$  (Production of erosion material in the river basin

 $R_u = 0.47082104556721$  (Coefficient of the deposit retention)

 $G_{aod} = 7803.317279466 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$ 

 $G_{god}$  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>)

http://www.wintero.me