Web application for Intensity of Erosion and Outflow

Name of the River Basin: Bijeli Potok

Country: Montenegro

Year: 2018

GPS coordinates, latitude and longitude with Google Maps: 42.608963,19.927246

INPUT DATA

Geometric characteristics of the river basins

 $F = 2.93072 \text{ km}^2$ (Surface area of the drainage basin)

O = 8.8377 km (Length of the watershed)

Fv = 1.66941 km² (Surface area of greater portion of the drainage basin)

Fm = 1.26131 km² (Surface area of smaller portion of the drainage basin)

Lv = 2.6891 km (Natural length of main water course)

Lb = 3.73001 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["0.259726 ","0.7709245 ","0.7897265 ","0.7963905 ","0.8544795 ","0.953394 ","1.075335 ","1.129429 ","1.2246205 ","1.302132 ","1.5839155 ","1.560719 ","1.4873385 ","1.46047 ","1.3958955 ","1.351942 ","1.3419545 ","1.2875715 ","1.209958

The area between the two neighboring contour lines - f [km²]: ["0.019194 ","0.0530775 ","0.0605325 ","0.046683 ","0.056154 ","0.071862 ","0.107583 ","0.074088 ","0.0976395 ","0.0867615 ","0.1995735 ","0.11592 ","0.1190385 ","0.213948 ","0.14385 ","0.134085 ","0.194523 ","0.1463595 ","0.1594845 ","

h0 = 900 m (Altitude of the initial contour)

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

Hmin = 890 (Lowest altitude in the drainage basin)

Hydrological characteristics of the river basins

 $\Sigma L = 7.9001$ km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 2.30494 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.045477513895907 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.42678120262759 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.527741283476503 (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 = 0.5026 (Part of the surface area of the drainage basin under the forest)

ft = 0.422 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.0754 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 89.4 mm (Level of torrent rain)

Up (years) = 100

to = 8.1 °C (Average annual air temperature)

Hgod = 1182.3 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 0.418595 (Types of soil structures and allied types)

0.68 % (Sand, gravel and incoherent soils)

0.68 % (Saline soils)

1.38 % (Decomposed limestone and marls)

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1.38 % (Serpentines, red sand stones, flishe deposits)
6.88 % (Podzols and parapodzols, decomposed schist)
3.44 % (Solid and Schist limestone, Terra Rosa and Humic soil)
6.88 % (Brown forest soils and Mountain soils)
0 % (Epieugleysol and Marshlands)
4.35 % (Good structured Chernozems and alluvial well-structured deposits)
74.33 % (Bare, compact igneous)
Xa = 0.39804 (Planning of the drainage basin, rate of drainage basin regulation)
7.04 % (Bare lands)
0.5 % (Plough-lands)
2.01 % (Orchards and vineyards)
20.1 % (Mountain pastures)
20.1 % (Meadows)
15.08 % (Degraded forests)
35.18 % (Well-constituted forests)
\phi = 0.38333 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
8.16 % (Depth erosion)
0 % (80% of the river basin under rill and gully erosion)
0 % (50% of the river basin under rill and gully erosion)
29.63 % (100% of the river basin under surface erosion)
0 % (100% of the river basin under surface erosion, without visible furrows, ravines and land
slides)
7.55 % (50% of the river basin under surface erosion)
0 % (20% of the river basin under surface erosion)
0 % (There are smaller slides in the watercourse beds)
3.82 % (The river basin mostly under plough-land)
50.84 % (The river basin under forests and perennial vegetation)
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INPUT DATA

A = 0.64086553121862 (Coefficient of the river basin form)

m = 0.44311337256912 (Coefficient of the watershed development)

B = 0.78571371122329 km (Average river basin width)

a = 0.27849811650379 ((A)symmetry of the river basin) **G** = 2.6956174591909 (Density of the river network of the basin) K = 1.1666681128359 (Coefficient of the river basin tortuousness) $H_{sr} = 1583.2574787083$ m (Average river basin altitude) D = 693.2574787083 m (Average elevation difference of the river basin) $I_{sr} = 47.388430999891$ % (Average river basin decline) $H_{leb} = 1321$ m (The height of the local erosion base of the river basin) $E_r = 321.37298223072$ (Coefficient of the erosion energy of the river basins relief) $S_1 = 0.84467913087418$ (Coefficient of the regions permeability) $S_2 = 0.71456$ (Coefficient of the vegetation cover) W = 1.1211873686047 m (Analytical presentation of the water retention in inflow) $2gDF^{1/2} = 199.6567269289 \text{ m km s}^{-1}$ (Energetic potential of water flow during torrent rains) $Q_{max} = 86.588361799373 \text{ m}^3 \text{ s}^{-1}$ (Maximal outflow from the river basin) T = 0.95393920141695 (Temperature coefficient of the region) Z = 0.17856779049295 (Coefficient of the river basin erosion) $W_{god} = 783.56905057397 \text{ m}^3 \text{ god}^{-1}$ (Production of erosion material in the river basin $R_u = 0.39013605212536$ (Coefficient of the deposit retention)

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 $G_{god} = 305.69853595854 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$

 G_{god} km⁻² = 104.30833923355 m³ km⁻² god⁻¹ (Real soil losses per km²)