Web application for Intensity of Erosion and Outflow

Name of the River Basin: Ljesnica (Bijelo Polje)

Country: Montenegro

Year: 2018

GPS coordinates, latitude and longitude with Google Maps: 43.038387,19.743472

INPUT DATA

Geometric characteristics of the river basins

F = 50.00087 km^2 (Surface area of the drainage basin)

O = 36.85641 km (Length of the watershed)

Fv = 28.69098 km^2 (Surface area of greater portion of the drainage basin)

Fm = 21.30989 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 15.49564 km (Natural length of main water course)

Lb = 15.97933 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["4.01904 ","12.39459 ","27.80832 ","37.80433 ","40.80435 ","28.20570 ","14.65344 ","4.51312 ","2.27256 ","0.35564 "]

The area between the two neighboring contour lines - f [km^2]: ["1.01231 ","2.88213 ","6.47270 ","8.58959 ","10.72667 ","10.17325 ","5.68381 ","3.16581 ","0.90257 ","0.38062 ","0.01141 "]

h0 = 600 m (Altitude of the initial contour)

▲h = 100 m (Equidistance)

Hmin = 572 (Lowest altitude in the drainage basin)

Hmax = 1503 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 21.13298 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 13.62535 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 = 0.0246 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.9754 (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 = 0.556605141 (Part of the surface area of the drainage basin under the forest)

ft = 0.407351930 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.036042929 (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 = 0.91 (Types of soil structures and allied types)

0.73 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

1.03 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

98.23 % (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 = 0.46831 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

3.6 % (Plough-lands)

3.11 % (Orchards and vineyards)

18.4 % (Mountain pastures)

19.23 % (Meadows)

36.18 % (Degraded forests)

19.48 % (Well-constituted forests)

ϕ = 0.32719 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

4.73 % (Depth erosion)

4.2 % (80% of the river basin under rill and gully erosion)

3.68 % (50% of the river basin under rill and gully erosion)

3.15 % (100% of the river basin under surface erosion)

19.23 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

1.58 % (50% of the river basin under surface erosion)

1.05 % (20% of the river basin under surface erosion)

0 % (There are smaller slides in the watercourse beds)

3.6 % (The river basin mostly under plough-land)

58.77 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 0.46380788079744 (Coefficient of the river basin form)

m = 0.61818121763477 (Coefficient of the watershed development)

B = 3.1290967768987 km (Average river basin width)

a = 0.29523846285075 ((A)symmetry of the river basin)

G = 0.42265224585092 (Density of the river network of the basin)

K = 1.1372654647404 (Coefficient of the river basin tortuousness)

H_{sr} = 955.49673985673 m (Average river basin altitude)

D = 383.49673985673 m (Average elevation difference of the river basin)

I_{sr} = 34.565616558272 % (Average river basin decline)

H_{leb} = 931 m (The height of the local erosion base of the river basin)

E_r = 111.44367319391 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.99262 (Coefficient of the regions permeability)

S_2 = 0.6958875576 (Coefficient of the vegetation cover)

W = 1.6314539156074 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 613.36518311582 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 320.59308252475 m^3 s^{-1} (Maximal outflow from the river basin)

T = 0.99498743710662 (Temperature coefficient of the region)

Z = 0.38998746060057 (Coefficient of the river basin erosion)

W_{god} = 34003.085683756 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.2949181023796 (Coefficient of the deposit retention)

G_{god} = 10028.125504904 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 200.55902037113 m^3 km^{-2} god^{-1} (Real soil losses per km^2)