Web application for Intensity of Erosion and Outflow

Name of the River Basin: Ljesnica

Country: Montenegro

Year: 2018

GPS coordinates, latitude and longitude with Google Maps: 42.930473,19.861783

INPUT DATA

Geometric characteristics of the river basins

F = 207.80982 km^2 (Surface area of the drainage basin)

O = 70.78064 km (Length of the watershed)

Fv = 119.90225 km^2 (Surface area of greater portion of the drainage basin)

Fm = 87.90757 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 26.82035 km (Natural length of main water course)

Lb = 26.83658 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["19.71679 ","59.22214 ","70.36777 ","66.38101 ","66.86189 ","85.90636 ","75.20515 ","57.83770 ","51.75069 ","15.78357 ","3.37545 "]

The area between the two neighboring contour lines - f [km^2]: ["3.23978 ","12.59470 ","22.48905 ","21.76435 ","18.73432 ","21.47152 ","29.89405 ","24.17672 ","28.32979 ","20.96133 ","3.66651 ","0.48771 "]

h0 = 700 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 635 (Lowest altitude in the drainage basin)

Hmax = 1758 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 45.62923 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 20.9632 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.4405 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.1875 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.372 (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 = 0.500071451 (Part of the surface area of the drainage basin under the forest)

ft = 0.372352518 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.127576031 (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 = 983.7 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.07829 (Types of soil structures and allied types)

3.22 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

71.48 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

25.29 % (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 = 0.49868 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

12.76 % (Plough-lands)

0.9 % (Orchards and vineyards)

21.09 % (Mountain pastures)

15.25 % (Meadows)

30 % (Degraded forests)

20 % (Well-constituted forests)

ϕ = 0.33081 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

5.42 % (Depth erosion)

4.82 % (80% of the river basin under rill and gully erosion)

4.22 % (50% of the river basin under rill and gully erosion)

3.61 % (100% of the river basin under surface erosion)

15.25 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

1.81 % (50% of the river basin under surface erosion)

1.2 % (20% of the river basin under surface erosion)

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

12.76 % (The river basin mostly under plough-land)

50.91 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 0.51461762430393 (Coefficient of the river basin form)

m = 0.52483945507354 (Coefficient of the watershed development)

B = 7.7435284227722 km (Average river basin width)

a = 0.3079226958572 ((A)symmetry of the river basin)

G = 0.21957205872177 (Density of the river network of the basin)

K = 1.2794015226683 (Coefficient of the river basin tortuousness)

H_{sr} = 1184.8865984293 m (Average river basin altitude)

D = 549.8865984293 m (Average elevation difference of the river basin)

I_{sr} = 27.544825360034 % (Average river basin decline)

H_{leb} = 1123 m (The height of the local erosion base of the river basin)

E_r = 94.148491743606 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.67945 (Coefficient of the regions permeability)

S_2 = 0.725500916 (Coefficient of the vegetation cover)

W = 1.5727138788396 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 1497.3354345252 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 597.37761593297 m^3 s^{-1} (Maximal outflow from the river basin)

T = 0.99498743710662 (Temperature coefficient of the region)

Z = 0.46009704229773 (Coefficient of the river basin erosion)

W_{god} = 199420.76123502 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.33887216207105 (Coefficient of the deposit retention)

G_{god} = 67578.144521565 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 325.19225762077 m^3 km^{-2} god^{-1} (Real soil losses per km^2)