Web application for Intensity of Erosion and Outflow

Name of the River Basin: Bistrica (kod Bijelog Polja)

Country: Montenegro

Year: 2018

GPS coordinates, latitude and longitude with Google Maps: 43.133479,19.779412

INPUT DATA

Geometric characteristics of the river basins

F = 208.3548 km^2 (Surface area of the drainage basin)

O = 77.39176 km (Length of the watershed)

Fv = 147.54953 km^2 (Surface area of greater portion of the drainage basin)

Fm = 60.80527 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 20.19917 km (Natural length of main water course)

Lb = 30.99341 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["26.51452 ","41.17613 ","41.07684 ","45.57509 ","56.40767 ","88.75072 ","118.59031 ","39.30942 ","30.28807 ","23.72393 "]

The area between the two neighboring contour lines - f [km^2]: ["6.23615 ","11.18257 ","13.47651 ","11.78466 ","12.85439 ","21.73429 ","58.83183 ","39.38577 ","13.62419 ","13.51338 ","5.57253 "]

h0 = 600 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 535 (Lowest altitude in the drainage basin)

Hmax = 1503 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 45.63539 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 9.85582 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.4971 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.3062 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.1967 (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 = 0.596205635 (Part of the surface area of the drainage basin under the forest)

ft = 0.355037885 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.048756480 (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 = 873.7 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.03199 (Types of soil structures and allied types)

2.41 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

52.74 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

44.85 % (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 = 0.456625 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

4.88 % (Plough-lands)

2.27 % (Orchards and vineyards)

10.46 % (Mountain pastures)

22.78 % (Meadows)

38.75 % (Degraded forests)

20.87 % (Well-constituted forests)

ϕ = 0.28985 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

2.69 % (Depth erosion)

2.39 % (80% of the river basin under rill and gully erosion)

2.09 % (50% of the river basin under rill and gully erosion)

1.79 % (100% of the river basin under surface erosion)

22.78 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

0.9 % (50% of the river basin under surface erosion)

0.6 % (20% of the river basin under surface erosion)

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

4.88 % (The river basin mostly under plough-land)

61.89 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 0.74712937214747 (Coefficient of the river basin form)

m = 0.39475427079801 (Coefficient of the watershed development)

B = 6.7225516650152 km (Average river basin width)

a = 0.83265909880646 ((A)symmetry of the river basin)

G = 0.21902730342665 (Density of the river network of the basin)

K = 2.0494662037253 (Coefficient of the river basin tortuousness)

H_{sr} = 1100.0837629851 m (Average river basin altitude)

D = 565.0837629851 m (Average elevation difference of the river basin)

I_{sr} = 24.545280454302 % (Average river basin decline)

H_{leb} = 968 m (The height of the local erosion base of the river basin)

E_r = 81.100700817794 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.60988 (Coefficient of the regions permeability)

S_2 = 0.690510169 (Coefficient of the vegetation cover)

W = 1.6050764747116 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 1519.8742977367 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 767.56238013145 m^3 s^{-1} (Maximal outflow from the river basin)

T = 0.99498743710662 (Temperature coefficient of the region)

Z = 0.37005031851576 (Coefficient of the river basin erosion)

W_{god} = 128092.73222197 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.4379643540408 (Coefficient of the deposit retention)

G_{god} = 56100.050724915 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 269.25249970202 m^3 km^{-2} god^{-1} (Real soil losses per km^2)