Web application for Intensity of Erosion and Outflow

Name of the River Basin: Bistrica (kod Berana)

Country: Montenegro

Year: 2018

GPS coordinates, latitude and longitude with Google Maps: 42.833783,19.836532

INPUT DATA

Geometric characteristics of the river basins

F = 133.88747 km^2 (Surface area of the drainage basin)

O = 62.49592 km (Length of the watershed)

Fv = 80.94424 km^2 (Surface area of greater portion of the drainage basin)

Fm = 52.94323 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 26.90531 km (Natural length of main water course)

Lb = 21.98716 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["2.20982 ","6.71367 ","7.20292 ","19.79409 ","31.53289 ","41.96885 ","48.15472 ","63.55594 ","67.04959 ","73.48834 ","59.50381 ","49.90986 ","29.13672 ","16.76063 ","2.21565 "]

The area between the two neighboring contour lines - f [km^2]: ["2.47489 ","1.44993 ","1.15302 ","3.48991 ","5.32819 ","8.18507 ","10.87748 ","14.87302 ","16.16024 ","17.61977 ","17.89506 ","14.90414 ","9.97085 ","6.48003 ","2.83956 ","0.18631 "]

h0 = 700 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 685 (Lowest altitude in the drainage basin)

Hmax = 2139 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 69.1736 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 22.4919 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.3166 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.0501 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.6333 (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 = 0.523996482 (Part of the surface area of the drainage basin under the forest)

ft = 0.444460878 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.031542639 (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 = 944.3 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.06969 (Types of soil structures and allied types)

3.21 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

74.92 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

6.49 % (Solid and Schist limestone, Terra Rosa and Humic soil)

15.37 % (Brown forest soils and Mountain soils)

0 % (Epieugleysol and Marshlands)

0 % (Good structured Chernozems and alluvial well-structured deposits)

0 % (Bare, compact igneous)

Xa = 0.45767 (Planning of the drainage basin, rate of drainage basin regulation)

0.01 % (Bare lands)

3.15 % (Plough-lands)

1.04 % (Orchards and vineyards)

24.61 % (Mountain pastures)

18.79 % (Meadows)

31.44 % (Degraded forests)

20.96 % (Well-constituted forests)

ϕ = 0.368575 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

6.33 % (Depth erosion)

5.63 % (80% of the river basin under rill and gully erosion)

4.92 % (50% of the river basin under rill and gully erosion)

4.22 % (100% of the river basin under surface erosion)

18.79 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

2.11 % (50% of the river basin under surface erosion)

1.41 % (20% of the river basin under surface erosion)

0.01 % (There are smaller slides in the watercourse beds)

3.15 % (The river basin mostly under plough-land)

53.44 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 0.45294792737939 (Coefficient of the river basin form)

m = 0.65593846742225 (Coefficient of the watershed development)

B = 6.0893480558653 km (Average river basin width)

a = 0.41827678124025 ((A)symmetry of the river basin)

G = 0.51665476986009 (Density of the river network of the basin)

K = 1.196222195546 (Coefficient of the river basin tortuousness)

H_{sr} = 1489.5333063654 m (Average river basin altitude)

D = 804.5333063654 m (Average elevation difference of the river basin)

I_{sr} = 38.778647471642 % (Average river basin decline)

H_{leb} = 1454 m (The height of the local erosion base of the river basin)

E_r = 136.05971285542 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.79501 (Coefficient of the regions permeability)

S_2 = 0.7015092306 (Coefficient of the vegetation cover)

W = 1.2550973659666 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 1453.7558754517 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 460.91745924746 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1 (Temperature coefficient of the region)

Z = 0.48530582590298 (Coefficient of the river basin erosion)

W_{god} = 134283.62442727 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.38427221591528 (Coefficient of the deposit retention)

G_{god} = 51601.465919802 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 385.40922402822 m^3 km^{-2} god^{-1} (Real soil losses per km^2)