Web application for Intensity of Erosion and Outflow

Name of the River Basin: Makva

Country: Montenegro

Year: 2018

GPS coordinates, latitude and longitude with Google Maps: 42.955017,19.852923

INPUT DATA

Geometric characteristics of the river basins

F = 3.5542 km^2 (Surface area of the drainage basin)

O = 10.56262 km (Length of the watershed)

Fv = 1.7953 km^2 (Surface area of greater portion of the drainage basin)

Fm = 1.7589 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 3.377 km (Natural length of main water course)

Lb = 3.13813 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["3.77434 ","1.43496 ","1.25747 "]

The area between the two neighboring contour lines - f [km^2]: ["2.12629 ","0.88502 ","0.32976 ","0.21313 "]

h0 = 700 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 674 (Lowest altitude in the drainage basin)

Hmax = 973 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 6.70854 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 2.80589 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.3788 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.6212 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0 (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 = 0.385405455 (Part of the surface area of the drainage basin under the forest)

ft = 0.491927055 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.122667490 (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 = 1.93895 (Types of soil structures and allied types)

94.45 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

0 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

5.55 % (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 = 0.50161 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

12.27 % (Plough-lands)

5.45 % (Orchards and vineyards)

15.82 % (Mountain pastures)

27.92 % (Meadows)

23.12 % (Degraded forests)

15.42 % (Well-constituted forests)

ϕ = 0.356945 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

4.07 % (Depth erosion)

3.62 % (80% of the river basin under rill and gully erosion)

3.16 % (50% of the river basin under rill and gully erosion)

2.71 % (100% of the river basin under surface erosion)

27.92 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

1.36 % (50% of the river basin under surface erosion)

0.9 % (20% of the river basin under surface erosion)

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

12.27 % (The river basin mostly under plough-land)

43.99 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 0.60992327509624 (Coefficient of the river basin form)

m = 0.50530686364689 (Coefficient of the watershed development)

B = 1.1325853294797 km (Average river basin width)

a = 0.020482809070958 ((A)symmetry of the river basin)

G = 1.8874964830342 (Density of the river network of the basin)

K = 1.203539696852 (Coefficient of the river basin tortuousness)

H_{sr} = 732.7720654437 m (Average river basin altitude)

D = 58.7720654437 m (Average elevation difference of the river basin)

I_{sr} = 18.194727364808 % (Average river basin decline)

H_{leb} = 299 m (The height of the local erosion base of the river basin)

E_r = 69.316376183872 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.58636 (Coefficient of the regions permeability)

S_2 = 0.747452407 (Coefficient of the vegetation cover)

W = 1.3706506762654 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 64.018561242033 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 23.456098777095 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1 (Temperature coefficient of the region)

Z = 0.762027362184 (Coefficient of the river basin erosion)

W_{god} = 7013.8677652118 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.11779926299468 (Coefficient of the deposit retention)

G_{god} = 826.2284534841 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 232.46537996851 m^3 km^{-2} god^{-1} (Real soil losses per km^2)