Web application for Intensity of Erosion and Outflow

Name of the River Basin: Krastica

Country: Montenegro

Year: 2018

GPS coordinates, latitude and longitude with Google Maps: 42.74235,19.792534

INPUT DATA

Geometric characteristics of the river basins

F = 44.05881 km^2 (Surface area of the drainage basin)

O = 27.36432 km (Length of the watershed)

Fv = 23.82638 km^2 (Surface area of greater portion of the drainage basin)

Fm = 20.23243 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 10.24067 km (Natural length of main water course)

Lb = 11.25792 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["6.44885 ","12.57735 ","19.76763 ","23.14434 ","27.10301 ","24.37377 ","20.28158 ","15.87463 ","12.09835 ","3.15286 ","1.47232 "]

The area between the two neighboring contour lines - f [km^2]: ["1.51419 ","2.60295 ","4.46934 ","4.95093 ","6.51077 ","6.73748 ","5.76083 ","4.53210 ","3.68423 ","2.39605 ","0.69707 ","0.20287 "]

h0 = 800 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 731 (Lowest altitude in the drainage basin)

Hmax = 1876 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 15.98938 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 8.98506 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 = 0.0308 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.9692 (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 = 0.476828095 (Part of the surface area of the drainage basin under the forest)

ft = 0.498173460 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.024998445 (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 = 1183.7 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.12642 (Types of soil structures and allied types)

3.13 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

96.26 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

0 % (Solid and Schist limestone, Terra Rosa and Humic soil)

0.62 % (Brown forest soils and Mountain soils)

0 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.363695 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

2.5 % (Plough-lands)

1.11 % (Orchards and vineyards)

32.43 % (Mountain pastures)

16.28 % (Meadows)

9.07 % (Degraded forests)

38.61 % (Well-constituted forests)

ϕ = 0.4106 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

8.34 % (Depth erosion)

7.41 % (80% of the river basin under rill and gully erosion)

6.49 % (50% of the river basin under rill and gully erosion)

5.56 % (100% of the river basin under surface erosion)

16.28 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

2.78 % (50% of the river basin under surface erosion)

1.85 % (20% of the river basin under surface erosion)

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

2.5 % (The river basin mostly under plough-land)

48.79 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 0.52106379758356 (Coefficient of the river basin form)

m = 0.4352182095501 (Coefficient of the watershed development)

B = 3.9135835038799 km (Average river basin width)

a = 0.16314330777431 ((A)symmetry of the river basin)

G = 0.36290993787622 (Density of the river network of the basin)

K = 1.1397441975902 (Coefficient of the river basin tortuousness)

H_{sr} = 1233.1394562177 m (Average river basin altitude)

D = 502.1394562177 m (Average elevation difference of the river basin)

I_{sr} = 37.743799707709 % (Average river basin decline)

H_{leb} = 1145 m (The height of the local erosion base of the river basin)

E_r = 141.46448512192 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.99076 (Coefficient of the regions permeability)

S_2 = 0.70963407 (Coefficient of the vegetation cover)

W = 1.3236463883403 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 658.83711528714 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 319.48013469615 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1 (Temperature coefficient of the region)

Z = 0.41989869715635 (Coefficient of the river basin erosion)

W_{god} = 44580.103656996 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.36627697229008 (Coefficient of the deposit retention)

G_{god} = 16328.665391863 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 370.61067677185 m^3 km^{-2} god^{-1} (Real soil losses per km^2)