Web application for Intensity of Erosion and Outflow

Name of the River Basin: Lukcka rijeka (Crepulja)

Country: Montenegro

Year: 2018

GPS coordinates, latitude and longitude with Google Maps: 42.987693,19.773726

INPUT DATA

Geometric characteristics of the river basins

F = 4.65292 km^2 (Surface area of the drainage basin)

O = 11.07977 km (Length of the watershed)

Fv = 2.75596 km^2 (Surface area of greater portion of the drainage basin)

Fm = 1.89696 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 4.76456 km (Natural length of main water course)

Lb = 3.96822 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["0.79468 ","1.50078 ","3.04743 ","4.27864 ","4.16313 ","2.95749 ","1.17954 ","0.28877 "]

The area between the two neighboring contour lines - f [km^2]: ["0.24581 ","0.22639 ","0.46940 ","0.88665 ","1.03811 ","0.98855 ","0.55123 ","0.22046 ","0.02633 "]

h0 = 700 m (Altitude of the initial contour)

▲h = 100 m (Equidistance)

Hmin = 670 (Lowest altitude in the drainage basin)

Hmax = 1474 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 4.76456 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 4.19401 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.2051 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.1695 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.6254 (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 = 0.508302294 (Part of the surface area of the drainage basin under the forest)

ft = 0.415338468 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.076359238 (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 = 1.0978 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

98.9 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

1.1 % (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 = 0.453565 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

7.64 % (Plough-lands)

0.98 % (Orchards and vineyards)

11.29 % (Mountain pastures)

29.26 % (Meadows)

30.5 % (Degraded forests)

20.33 % (Well-constituted forests)

ϕ = 0.32951 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

2.9 % (Depth erosion)

2.58 % (80% of the river basin under rill and gully erosion)

2.26 % (50% of the river basin under rill and gully erosion)

1.94 % (100% of the river basin under surface erosion)

29.26 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

0.97 % (50% of the river basin under surface erosion)

0.65 % (20% of the river basin under surface erosion)

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

7.64 % (The river basin mostly under plough-land)

51.81 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 0.45346373012408 (Coefficient of the river basin form)

m = 0.62309616112878 (Coefficient of the watershed development)

B = 1.1725458769927 km (Average river basin width)

a = 0.36923050471532 ((A)symmetry of the river basin)

G = 1.0239935352424 (Density of the river network of the basin)

K = 1.1360392559865 (Coefficient of the river basin tortuousness)

H_{sr} = 1038.2346053661 m (Average river basin altitude)

D = 368.2346053661 m (Average elevation difference of the river basin)

I_{sr} = 39.137702775891 % (Average river basin decline)

H_{leb} = 804 m (The height of the local erosion base of the river basin)

E_r = 174.2507996024 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.82609 (Coefficient of the regions permeability)

S_2 = 0.7136113888 (Coefficient of the vegetation cover)

W = 1.3587438412877 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 183.34733174824 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 66.595345477816 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1 (Temperature coefficient of the region)

Z = 0.47557252773271 (Coefficient of the river basin erosion)

W_{god} = 4527.0009568078 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.273613271579 (Coefficient of the deposit retention)

G_{god} = 1238.6475422334 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 266.20864795299 m^3 km^{-2} god^{-1} (Real soil losses per km^2)