Web application for Intensity of Erosion and Outflow

Name of the River Basin: Vinicka Rijeka

Country: Montenegro

Year: 2018

GPS coordinates, latitude and longitude with Google Maps: 42.801003,19.84483

INPUT DATA

Geometric characteristics of the river basins

F = 17.6299 km^2 (Surface area of the drainage basin)

O = 21.51861 km (Length of the watershed)

Fv = 9.91858 km^2 (Surface area of greater portion of the drainage basin)

Fm = 7.71132 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 7.31913 km (Natural length of main water course)

Lb = 8.29074 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["1.39164 ","7.37748 ","7.37178 ","7.98934 ","4.29275 ","3.63637 ","3.65955 ","3.93973 ","5.37646 ","7.42631 ","7.76852 ","4.28908 "]

The area between the two neighboring contour lines - f [km^2]: ["0.44559 ","2.95570 ","2.12800 ","1.89432 ","1.32803 ","0.62144 ","0.55537 ","0.62253 ","0.76737 ","1.49231 ","2.02380 ","2.20315 ","0.59230 "]

h0 = 700 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 692 (Lowest altitude in the drainage basin)

Hmax = 1838 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 7.31913 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 6.92495 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.2258 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.2585 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.5157 (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 = 0.474821939 (Part of the surface area of the drainage basin under the forest)

ft = 0.484920589 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.040257472 (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 = 1.16876 (Types of soil structures and allied types)

12.22 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

73.57 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

1.41 % (Solid and Schist limestone, Terra Rosa and Humic soil)

12.8 % (Brown forest soils and Mountain soils)

0 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.482745 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

4.03 % (Plough-lands)

5.9 % (Orchards and vineyards)

27.19 % (Mountain pastures)

15.4 % (Meadows)

28.49 % (Degraded forests)

18.99 % (Well-constituted forests)

ϕ = 0.370145 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

6.99 % (Depth erosion)

6.22 % (80% of the river basin under rill and gully erosion)

5.44 % (50% of the river basin under rill and gully erosion)

4.66 % (100% of the river basin under surface erosion)

15.4 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

2.33 % (50% of the river basin under surface erosion)

1.55 % (20% of the river basin under surface erosion)

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

4.03 % (The river basin mostly under plough-land)

53.38 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 0.57330979911547 (Coefficient of the river basin form)

m = 0.49173328302508 (Coefficient of the watershed development)

B = 2.1264567457187 km (Average river basin width)

a = 0.25039960521614 ((A)symmetry of the river basin)

G = 0.4151543684309 (Density of the river network of the basin)

K = 1.0569217106261 (Coefficient of the river basin tortuousness)

H_{sr} = 1218.212714763 m (Average river basin altitude)

D = 526.212714763 m (Average elevation difference of the river basin)

I_{sr} = 36.596356190336 % (Average river basin decline)

H_{leb} = 1146 m (The height of the local erosion base of the river basin)

E_r = 178.02142894264 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.78697 (Coefficient of the regions permeability)

S_2 = 0.7130871066 (Coefficient of the vegetation cover)

W = 1.340714077213 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 426.63363830669 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 184.02693378103 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1 (Temperature coefficient of the region)

Z = 0.55016088165538 (Coefficient of the river basin erosion)

W_{god} = 21342.4499804 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.38859007104188 (Coefficient of the deposit retention)

G_{god} = 8293.4641540913 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 470.4203741423 m^3 km^{-2} god^{-1} (Real soil losses per km^2)