Web application for Intensity of Erosion and Outflow

Name of the River Basin: Provala

Country: Montenegro

Year: 2018

GPS coordinates, latitude and longitude with Google Maps: 42.73322,19.819346

INPUT DATA

Geometric characteristics of the river basins

F = 12.61614 km^2 (Surface area of the drainage basin)

O = 20.72708 km (Length of the watershed)

Fv = 7.50101 km^2 (Surface area of greater portion of the drainage basin)

Fm = 5.11513 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 1.23533 km (Natural length of main water course)

Lb = 7.30658 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["10.37621 ","9.57327 ","9.01633 ","8.24128 ","7.30547 ","7.26588 ","5.03096 ","3.59283 ","0.36841 "]

The area between the two neighboring contour lines - f [km^2]: ["2.16541 ","1.92023 ","1.58165 ","1.46163 ","1.31788 ","1.30616 ","1.14610 ","0.93213 ","0.49041 ","0.29454 "]

h0 = 800 m (Altitude of the initial contour)

▲h = 100 m (Equidistance)

Hmin = 726 (Lowest altitude in the drainage basin)

Hmax = 1601 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 1.23533 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 1.20294 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.691 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.087 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.222 (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 = 0.499253578 (Part of the surface area of the drainage basin under the forest)

ft = 0.484862241 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.015884181 (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 = 1.26371 (Types of soil structures and allied types)

23.37 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

53.32 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

23.31 % (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 = 0.35381 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

3.7 % (Plough-lands)

3.02 % (Orchards and vineyards)

19.94 % (Mountain pastures)

28.24 % (Meadows)

8.04 % (Degraded forests)

37.06 % (Well-constituted forests)

ϕ = 0.38328 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

5.13 % (Depth erosion)

4.56 % (80% of the river basin under rill and gully erosion)

3.99 % (50% of the river basin under rill and gully erosion)

3.42 % (100% of the river basin under surface erosion)

28.24 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

1.71 % (50% of the river basin under surface erosion)

1.14 % (20% of the river basin under surface erosion)

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

3.7 % (The river basin mostly under plough-land)

48.12 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 3.2718225899152 (Coefficient of the river basin form)

m = 0.098110345826308 (Coefficient of the watershed development)

B = 1.7266819770672 km (Average river basin width)

a = 0.37822662082063 ((A)symmetry of the river basin)

G = 0.097916636942837 (Density of the river network of the basin)

K = 1.0269256987048 (Coefficient of the river basin tortuousness)

H_{sr} = 1078.0091692071 m (Average river basin altitude)

D = 352.0091692071 m (Average elevation difference of the river basin)

I_{sr} = 48.168964516881 % (Average river basin decline)

H_{leb} = 875 m (The height of the local erosion base of the river basin)

E_r = 147.7837067373 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.5593 (Coefficient of the regions permeability)

S_2 = 0.7033261206 (Coefficient of the vegetation cover)

W = 1.3957048369087 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 295.1819106165 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 530.24262386875 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1 (Temperature coefficient of the region)

Z = 0.48168342602173 (Coefficient of the river basin erosion)

W_{god} = 15684.135105938 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.48082851234902 (Coefficient of the deposit retention)

G_{god} = 7541.3793504691 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 597.75647309471 m^3 km^{-2} god^{-1} (Real soil losses per km^2)