Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S1-6

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.81,57.74

INPUT DATA

Geometric characteristics of the river basins

F = 42 km^2 (Surface area of the drainage basin)

O = 40.35 km (Length of the watershed)

Fv = 29.67 km^2 (Surface area of greater portion of the drainage basin)

Fm = 12.33 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 16.48 km (Natural length of main water course)

Lb = 15.64 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["4.23 ","28.29 ","28.43 ","23.01 ","12.92 ","8.35 ","6.52 ","4.90 ","5.08 ","3.78 ","2.90 ","0.88 "]

The area between the two neighboring contour lines - f [km^2]: ["1.033 ","9.522 ","9.820 ","7.454 ","3.222 ","4.201 ","2.030 ","1.163 ","1.108 ","0.947 ","0.852 ","0.638 ","0.009 "]

h0 = 1400 m (Altitude of the initial contour)

▲h = 100 m (Equidistance)

Hmin = 1345 (Lowest altitude in the drainage basin)

Hmax = 2515 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 74.55 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 13.19 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.2 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.32 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.48 (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 = 0.05220 (Part of the surface area of the drainage basin under the forest)

ft = 0.78890 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.15890 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 36.03 mm (Level of torrent rain)

Up (years) = 100

to = 9.90 °C (Average annual air temperature)

Hgod = 334.4 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.03149 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

30.19 % (Decomposed limestone and marls)

50.07 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

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

0 % (Brown forest soils and Mountain soils)

19.74 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.66474 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

15.89 % (Plough-lands)

17.07 % (Orchards and vineyards)

61.82 % (Mountain pastures)

0 % (Meadows)

5.22 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.54923 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

20.58 % (80% of the river basin under rill and gully erosion)

25.15 % (50% of the river basin under rill and gully erosion)

0 % (100% of the river basin under surface erosion)

0 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

0 % (50% of the river basin under surface erosion)

54.27 % (20% of the river basin under surface erosion)

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

0 % (The river basin mostly under plough-land)

0 % (The river basin under forests and perennial vegetation)

INPUT DATA

A = 0.47744235436893 (Coefficient of the river basin form)

m = 0.71734426430232 (Coefficient of the watershed development)

B = 2.6854219948849 km (Average river basin width)

a = 0.82571428571429 ((A)symmetry of the river basin)

G = 1.775 (Density of the river network of the basin)

K = 1.2494313874147 (Coefficient of the river basin tortuousness)

H_{sr} = 1680.9192857143 m (Average river basin altitude)

D = 335.9192857143 m (Average elevation difference of the river basin)

I_{sr} = 30.783333333333 % (Average river basin decline)

H_{leb} = 1170 m (The height of the local erosion base of the river basin)

E_r = 146.29304057878 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.784 (Coefficient of the regions permeability)

S_2 = 0.82134 (Coefficient of the vegetation cover)

W = 0.46801071262917 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 526.1282431119 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 75.702006282497 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.0440306508911 (Temperature coefficient of the region)

Z = 0.75702190886789 (Coefficient of the river basin erosion)

W_{god} = 30341.800858902 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.27806815384181 (Coefficient of the deposit retention)

G_{god} = 8437.0885490707 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 200.88306069216 m^3 km^{-2} god^{-1} (Real soil losses per km^2)