Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S1-intA

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.75,57.79

INPUT DATA

Geometric characteristics of the river basins

F = 21.94 km^2 (Surface area of the drainage basin)

O = 26.31 km (Length of the watershed)

Fv = 11.32 km^2 (Surface area of greater portion of the drainage basin)

Fm = 10.62 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 9.13 km (Natural length of main water course)

Lb = 8.48 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["10.96 ","38.43 ","21.16 ","10.80 ","3.48 ","0.24 "]

The area between the two neighboring contour lines - f [km^2]: ["2.118 ","8.905 ","6.028 ","3.478 ","1.165 ","0.236 ","0.01 "]

h0 = 1500 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 1426 (Lowest altitude in the drainage basin)

Hmax = 2007 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 52.89 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 8.4 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 = 0.00 (Part of the surface area of the drainage basin under the forest)

ft = 0.75200 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.24800 (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 = 1.07585 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

47.79 % (Decomposed limestone and marls)

37.81 % (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)

14.41 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.6744 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

24.8 % (Plough-lands)

0 % (Orchards and vineyards)

75.2 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.39414 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

9.49 % (80% of the river basin under rill and gully erosion)

8.5 % (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)

76.71 % (20% of the river basin under surface erosion)

5.3 % (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 = 0.56193318729463 (Coefficient of the river basin form)

m = 0.54985418378271 (Coefficient of the watershed development)

B = 2.5872641509434 km (Average river basin width)

a = 0.063810391978122 ((A)symmetry of the river basin)

G = 2.4106654512306 (Density of the river network of the basin)

K = 1.0869047619048 (Coefficient of the river basin tortuousness)

H_{sr} = 1621.2201002735 m (Average river basin altitude)

D = 195.2201002735 m (Average elevation difference of the river basin)

I_{sr} = 38.773928896992 % (Average river basin decline)

H_{leb} = 581 m (The height of the local erosion base of the river basin)

E_r = 85.450991031702 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.784 (Coefficient of the regions permeability)

S_2 = 0.8496 (Coefficient of the vegetation cover)

W = 0.47923010485089 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 289.88789381416 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 51.998332828571 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.0440306508911 (Temperature coefficient of the region)

Z = 0.73776223448115 (Coefficient of the river basin erosion)

W_{god} = 15248.974705374 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.23693963518222 (Coefficient of the deposit retention)

G_{god} = 3613.0865035941 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 164.68033288943 m^3 km^{-2} god^{-1} (Real soil losses per km^2)