Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S10-2

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.74,57.22

INPUT DATA

Geometric characteristics of the river basins

F = 15.23 km^2 (Surface area of the drainage basin)

O = 21.91 km (Length of the watershed)

Fv = 8.9 km^2 (Surface area of greater portion of the drainage basin)

Fm = 6.33 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 9.72 km (Natural length of main water course)

Lb = 20.96 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["1.63 ","12.23 ","10.84 ","8.49 ","6.22 ","3.77 ","1.10 "]

The area between the two neighboring contour lines - f [km^2]: ["0.46 ","3.73 ","4.03 ","3.33 ","1.75 ","1.41 ","0.51 ","0.01 "]

h0 = 800 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 760 (Lowest altitude in the drainage basin)

Hmax = 1460 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 41.26 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 6.31 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.11 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.03 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.86 (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 (Part of the surface area of the drainage basin under the forest)

ft = 0.96610 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.03390 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 31.37 mm (Level of torrent rain)

Up (years) = 100

to = 13.40 °C (Average annual air temperature)

Hgod = 277.1 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.11304 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

69.99 % (Decomposed limestone and marls)

18.62 % (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)

11.39 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.61017 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

3.39 % (Plough-lands)

0 % (Orchards and vineyards)

96.61 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.48385 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

21.85 % (80% of the river basin under rill and gully erosion)

10.55 % (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)

67.6 % (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 = 0.4395524691358 (Coefficient of the river basin form)

m = 0.70260523487049 (Coefficient of the watershed development)

B = 0.72662213740458 km (Average river basin width)

a = 0.33749179251477 ((A)symmetry of the river basin)

G = 2.7091267235719 (Density of the river network of the basin)

K = 1.540412044374 (Coefficient of the river basin tortuousness)

H_{sr} = 1006.703873933 m (Average river basin altitude)

D = 246.703873933 m (Average elevation difference of the river basin)

I_{sr} = 29.074195666448 % (Average river basin decline)

H_{leb} = 700 m (The height of the local erosion base of the river basin)

E_r = 112.79067390144 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.925 (Coefficient of the regions permeability)

S_2 = 0.80678 (Coefficient of the vegetation cover)

W = 0.41955971392994 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 271.5110053018 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 37.367048755796 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.2 (Temperature coefficient of the region)

Z = 0.69480122542599 (Coefficient of the river basin erosion)

W_{god} = 9214.2164814557 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.23579373317688 (Coefficient of the deposit retention)

G_{god} = 2172.6545024624 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 142.65623785045 m^3 km^{-2} god^{-1} (Real soil losses per km^2)