Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S8-3

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.93,57.26

INPUT DATA

Geometric characteristics of the river basins

F = 59.14 km^2 (Surface area of the drainage basin)

O = 32.95 km (Length of the watershed)

Fv = 32.09 km^2 (Surface area of greater portion of the drainage basin)

Fm = 27.05 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 12.73 km (Natural length of main water course)

Lb = 11.44 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["19.26 ","30.85 ","44.80 ","33.88 ","27.73 ","10.85 "]

The area between the two neighboring contour lines - f [km^2]: ["4.57 ","11.85 ","14.72 ","11.18 ","8.72 ","7.31 ","0.79 "]

h0 = 1200 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 1109 (Lowest altitude in the drainage basin)

Hmax = 1790 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 118.12 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 11.69 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.21 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.2 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.59 (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 = 0.87580 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.12420 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 34.15 mm (Level of torrent rain)

Up (years) = 100

to = 11.30 °C (Average annual air temperature)

Hgod = 310.7 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.02605 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

85.21 % (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)

14.79 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.64028 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

12.42 % (Plough-lands)

3.02 % (Orchards and vineyards)

84.56 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.50469 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

2.34 % (80% of the river basin under rill and gully erosion)

38.13 % (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)

59.53 % (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 = 0.50473291437549 (Coefficient of the river basin form)

m = 0.46696336677464 (Coefficient of the watershed development)

B = 5.1695804195804 km (Average river basin width)

a = 0.17044301657085 ((A)symmetry of the river basin)

G = 1.9972945552925 (Density of the river network of the basin)

K = 1.0889649272883 (Coefficient of the river basin tortuousness)

H_{sr} = 1405.6072877917 m (Average river basin altitude)

D = 296.6072877917 m (Average elevation difference of the river basin)

I_{sr} = 28.300642543118 % (Average river basin decline)

H_{leb} = 681 m (The height of the local erosion base of the river basin)

E_r = 78.16762362605 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.814 (Coefficient of the regions permeability)

S_2 = 0.82484 (Coefficient of the vegetation cover)

W = 0.45003984087421 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 586.65269546813 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 89.472130328288 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.1090536506409 (Temperature coefficient of the region)

Z = 0.68105227903486 (Coefficient of the river basin erosion)

W_{god} = 35982.859885038 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.27507376908659 (Coefficient of the deposit retention)

G_{god} = 9897.9408910921 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 167.36457374183 m^3 km^{-2} god^{-1} (Real soil losses per km^2)