Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S1-5

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.78,57.78

INPUT DATA

Geometric characteristics of the river basins

F = 57.3 km^2 (Surface area of the drainage basin)

O = 42.49 km (Length of the watershed)

Fv = 43.12 km^2 (Surface area of greater portion of the drainage basin)

Fm = 14.18 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 15.22 km (Natural length of main water course)

Lb = 12.75 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["3.51 ","35.33 ","44.38 ","25.14 ","16.95 ","12.00 ","10.00 ","8.86 ","8.45 ","6.31 ","3.73 "]

The area between the two neighboring contour lines - f [km^2]: ["1.285 ","11.653 ","14.969 ","8.733 ","4.976 ","4.051 ","3.346 ","2.421 ","2.506 ","1.678 ","1.629 ","0.053 "]

h0 = 1400 m (Altitude of the initial contour)

▲h = 100 m (Equidistance)

Hmin = 1353 (Lowest altitude in the drainage basin)

Hmax = 2484 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 108.71 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 12.75 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 = 0.44 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.36 (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 = 0.15970 (Part of the surface area of the drainage basin under the forest)

ft = 0.72130 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.11900 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 36.12 mm (Level of torrent rain)

Up (years) = 100

to = 9.80 °C (Average annual air temperature)

Hgod = 334.4 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.06782 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

29.79 % (Decomposed limestone and marls)

49.58 % (Serpentines, red sand stones, flishe deposits)

0 % (Podzols and parapodzols, decomposed schist)

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

20.62 % (Brown forest soils and Mountain soils)

0 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.6364 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

11.9 % (Plough-lands)

0.7 % (Orchards and vineyards)

71.43 % (Mountain pastures)

0 % (Meadows)

15.97 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.60814 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

28.48 % (80% of the river basin under rill and gully erosion)

27.02 % (50% of the river basin under rill and gully erosion)

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

0.72 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

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

43.78 % (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 = 0.54438567674113 (Coefficient of the river basin form)

m = 0.56719502048955 (Coefficient of the watershed development)

B = 4.4941176470588 km (Average river basin width)

a = 1.0101221640489 ((A)symmetry of the river basin)

G = 1.8972076788831 (Density of the river network of the basin)

K = 1.1937254901961 (Coefficient of the river basin tortuousness)

H_{sr} = 1694.3826963351 m (Average river basin altitude)

D = 341.3826963351 m (Average elevation difference of the river basin)

I_{sr} = 30.48167539267 % (Average river basin decline)

H_{leb} = 1131 m (The height of the local erosion base of the river basin)

E_r = 130.85010538145 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.748 (Coefficient of the regions permeability)

S_2 = 0.79186 (Coefficient of the vegetation cover)

W = 0.47082331317497 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 619.50892097695 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 94.050740053501 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.0392304845413 (Temperature coefficient of the region)

Z = 0.78845488876159 (Coefficient of the river basin erosion)

W_{god} = 43797.358346895 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.30202926869874 (Coefficient of the deposit retention)

G_{god} = 13228.084112449 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 230.85661627311 m^3 km^{-2} god^{-1} (Real soil losses per km^2)