Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S9-int

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.83,57.26

INPUT DATA

Geometric characteristics of the river basins

F = 25 km^2 (Surface area of the drainage basin)

O = 24.83 km (Length of the watershed)

Fv = 15.16 km^2 (Surface area of greater portion of the drainage basin)

Fm = 9.84 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 5.81 km (Natural length of main water course)

Lb = 10.52 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["10.06 ","22.66 ","29.53 ","12.84 ","2.76 "]

The area between the two neighboring contour lines - f [km^2]: ["1.98 ","7.62 ","8.66 ","5.30 ","1.42 ","0.02 "]

h0 = 1000 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 959 (Lowest altitude in the drainage basin)

Hmax = 1487 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 50.74 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 5.39 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.13 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.41 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.46 (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 = 0.05110 (Part of the surface area of the drainage basin under the forest)

ft = 0.94890 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.00000 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 32.29 mm (Level of torrent rain)

Up (years) = 100

to = 12.70 °C (Average annual air temperature)

Hgod = 288.1 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.04663 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

12.53 % (Decomposed limestone and marls)

74.29 % (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)

13.18 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.60386 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

0 % (Plough-lands)

3.86 % (Orchards and vineyards)

91.03 % (Mountain pastures)

0 % (Meadows)

5.11 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.40624 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

0.36 % (80% of the river basin under rill and gully erosion)

15.23 % (50% of the river basin under rill and gully erosion)

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

9.31 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

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

75.1 % (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 = 0.83336488812392 (Coefficient of the river basin form)

m = 0.32779414804125 (Coefficient of the watershed development)

B = 2.3764258555133 km (Average river basin width)

a = 0.4256 ((A)symmetry of the river basin)

G = 2.0296 (Density of the river network of the basin)

K = 1.0779220779221 (Coefficient of the river basin tortuousness)

H_{sr} = 1138.8112 m (Average river basin altitude)

D = 179.8112 m (Average elevation difference of the river basin)

I_{sr} = 31.14 % (Average river basin decline)

H_{leb} = 528 m (The height of the local erosion base of the river basin)

E_r = 75.162124584854 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.799 (Coefficient of the regions permeability)

S_2 = 0.78978 (Coefficient of the vegetation cover)

W = 0.43806234158527 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 296.98045996328 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 68.415090430654 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.170469991072 (Temperature coefficient of the region)

Z = 0.60943741550111 (Coefficient of the river basin erosion)

W_{god} = 12600.480122475 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.26729747435063 (Coefficient of the deposit retention)

G_{god} = 3368.076512343 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 134.72306049372 m^3 km^{-2} god^{-1} (Real soil losses per km^2)