Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S2-4

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.79,57.61

INPUT DATA

Geometric characteristics of the river basins

F = 17.21 km^2 (Surface area of the drainage basin)

O = 19.84 km (Length of the watershed)

Fv = 9.79 km^2 (Surface area of greater portion of the drainage basin)

Fm = 7.42 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 7.81 km (Natural length of main water course)

Lb = 7.57 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["6.31 ","19.10 ","17.65 ","5.10 "]

The area between the two neighboring contour lines - f [km^2]: ["2.42 ","6.75 ","5.80 ","2.14 ","0.10 "]

h0 = 1300 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 1213 (Lowest altitude in the drainage basin)

Hmax = 1659 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 31.79 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 7.06 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.193877551020408 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.520408163265306 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.285714285714286 (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 = 0.93830 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.06170 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 34.14 mm (Level of torrent rain)

Up (years) = 100

to = 11.30 °C (Average annual air temperature)

Hgod = 310.4 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.00305 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

80.61 % (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)

19.39 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.65579 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

6.17 % (Plough-lands)

37.28 % (Orchards and vineyards)

56.55 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.65081 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

2.11 % (80% of the river basin under rill and gully erosion)

63.91 % (50% of the river basin under rill and gully erosion)

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

6.2 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

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

27.78 % (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 = 0.49536491677337 (Coefficient of the river basin form)

m = 0.53107476634373 (Coefficient of the watershed development)

B = 2.2734478203435 km (Average river basin width)

a = 0.2754212667054 ((A)symmetry of the river basin)

G = 1.8471818710052 (Density of the river network of the basin)

K = 1.1062322946176 (Coefficient of the river basin tortuousness)

H_{sr} = 1397.0470656595 m (Average river basin altitude)

D = 184.0470656595 m (Average elevation difference of the river basin)

I_{sr} = 27.983730389309 % (Average river basin decline)

H_{leb} = 446 m (The height of the local erosion base of the river basin)

E_r = 69.701121889657 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.72755102040816 (Coefficient of the regions permeability)

S_2 = 0.81234 (Coefficient of the vegetation cover)

W = 0.45783544924619 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 249.2897290303 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 33.414913389225 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.1090536506409 (Temperature coefficient of the region)

Z = 0.77606511009219 (Coefficient of the river basin erosion)

W_{god} = 12724.837646759 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.21458598745198 (Coefficient of the deposit retention)

G_{god} = 2730.571851596 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 158.66193210901 m^3 km^{-2} god^{-1} (Real soil losses per km^2)