Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S3-1

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.81,57.57

INPUT DATA

Geometric characteristics of the river basins

F = 50.75 km^2 (Surface area of the drainage basin)

O = 38.26 km (Length of the watershed)

Fv = 25.51 km^2 (Surface area of greater portion of the drainage basin)

Fm = 25.24 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 14.63 km (Natural length of main water course)

Lb = 13.36 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["1.65 ","17.90 ","34.12 ","39.80 ","23.05 ","16.81 ","17.00 ","16.97 ","1.97 "]

The area between the two neighboring contour lines - f [km^2]: ["0.14 ","5.86 ","8.82 ","10.98 ","7.74 ","5.47 ","4.09 ","6.76 ","0.88 ","0.01 "]

h0 = 1200 m (Altitude of the initial contour)

▲h = 100 m (Equidistance)

Hmin = 1187 (Lowest altitude in the drainage basin)

Hmax = 2078 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 83.05 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 12.64 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.1 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.3 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.6 (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 = 0.99630 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.00370 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 35.03 mm (Level of torrent rain)

Up (years) = 100

to = 10.60 °C (Average annual air temperature)

Hgod = 321.2 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.07735 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

26.05 % (Decomposed limestone and marls)

64.21 % (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)

9.74 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.61181 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

0.37 % (Plough-lands)

10.7 % (Orchards and vineyards)

88.93 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.53376 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

11.54 % (80% of the river basin under rill and gully erosion)

31.8 % (50% of the river basin under rill and gully erosion)

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

1.84 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

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

54.82 % (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 = 0.50995898838004 (Coefficient of the river basin form)

m = 0.57932380014075 (Coefficient of the watershed development)

B = 3.7986526946108 km (Average river basin width)

a = 0.01064039408867 ((A)symmetry of the river basin)

G = 1.6364532019704 (Density of the river network of the basin)

K = 1.1574367088608 (Coefficient of the river basin tortuousness)

H_{sr} = 1531.8715270936 m (Average river basin altitude)

D = 344.8715270936 m (Average elevation difference of the river basin)

I_{sr} = 33.353694581281 % (Average river basin decline)

H_{leb} = 891 m (The height of the local erosion base of the river basin)

E_r = 106.25975731499 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.85 (Coefficient of the regions permeability)

S_2 = 0.80074 (Coefficient of the vegetation cover)

W = 0.4582577137876 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 585.99808242007 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 93.207675941772 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.0770329614269 (Temperature coefficient of the region)

Z = 0.73248621413241 (Coefficient of the river basin erosion)

W_{god} = 34577.185002366 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.29496245325745 (Coefficient of the deposit retention)

G_{god} = 10198.971315035 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 200.96495202039 m^3 km^{-2} god^{-1} (Real soil losses per km^2)