Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S2-1

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.87,57.77

INPUT DATA

Geometric characteristics of the river basins

F = 46.77 km^2 (Surface area of the drainage basin)

O = 36.33 km (Length of the watershed)

Fv = 31.84 km^2 (Surface area of greater portion of the drainage basin)

Fm = 14.94 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 12.87 km (Natural length of main water course)

Lb = 12.18 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["2.58 ","12.27 ","11.36 ","17.12 ","20.42 ","19.10 ","20.60 ","14.24 ","12.27 ","2.91 ","0.24 "]

The area between the two neighboring contour lines - f [km^2]: ["0.15 ","2.44 ","4.45 ","9.64 ","7.35 ","7.27 ","5.91 ","3.94 ","3.64 ","1.74 ","0.12 ","0.12 "]

h0 = 1500 m (Altitude of the initial contour)

▲h = 100 m (Equidistance)

Hmin = 1471 (Lowest altitude in the drainage basin)

Hmax = 2514 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 71.79 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 10.59 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.15 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.48 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.37 (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 = 0.30320 (Part of the surface area of the drainage basin under the forest)

ft = 0.55780 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.13900 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 37.57 mm (Level of torrent rain)

Up (years) = 100

to = 8.70 °C (Average annual air temperature)

Hgod = 352 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.11222 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

85.37 % (Decomposed limestone and marls)

0 % (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)

14.63 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.6417 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

13.9 % (Plough-lands)

0 % (Orchards and vineyards)

55.78 % (Mountain pastures)

0 % (Meadows)

30.32 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.57135 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

45 % (80% of the river basin under rill and gully erosion)

0.27 % (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)

54.73 % (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 = 0.55045454545455 (Coefficient of the river basin form)

m = 0.5308721346647 (Coefficient of the watershed development)

B = 3.8399014778325 km (Average river basin width)

a = 0.7225309961522 ((A)symmetry of the river basin)

G = 1.5349583066068 (Density of the river network of the basin)

K = 1.2152974504249 (Coefficient of the river basin tortuousness)

H_{sr} = 1912.5863801582 m (Average river basin altitude)

D = 441.5863801582 m (Average elevation difference of the river basin)

I_{sr} = 28.460551635664 % (Average river basin decline)

H_{leb} = 1043 m (The height of the local erosion base of the river basin)

E_r = 126.95289043891 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.766 (Coefficient of the regions permeability)

S_2 = 0.76716 (Coefficient of the vegetation cover)

W = 0.49206242514935 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 636.56245718702 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 101.32051920829 m^3 s^{-1} (Maximal outflow from the river basin)

T = 0.98488578017961 (Temperature coefficient of the region)

Z = 0.78853303930945 (Coefficient of the river basin erosion)

W_{god} = 35667.741914723 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.35027114738243 (Coefficient of the deposit retention)

G_{god} = 12493.38088501 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 267.12381622858 m^3 km^{-2} god^{-1} (Real soil losses per km^2)