Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S2-3

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.84,57.64

INPUT DATA

Geometric characteristics of the river basins

F = 60.95 km^2 (Surface area of the drainage basin)

O = 48.18 km (Length of the watershed)

Fv = 41.28 km^2 (Surface area of greater portion of the drainage basin)

Fm = 19.67 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 20.47 km (Natural length of main water course)

Lb = 19.28 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["0.12 ","18.24 ","33.15 ","25.62 ","48.67 ","23.36 ","11.15 ","1.73 ","2.86 ","1.97 ","1.48 "]

The area between the two neighboring contour lines - f [km^2]: ["0.03 ","5.98 ","10.42 ","6.86 ","13.99 ","12.73 ","7.85 ","1.57 ","0.62 ","0.44 ","0.39 ","0.07 "]

h0 = 1300 m (Altitude of the initial contour)

▲h = 100 m (Equidistance)

Hmin = 1291 (Lowest altitude in the drainage basin)

Hmax = 2360 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 94.39 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 17.32 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.29 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.11 (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 = 0.71860 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.28140 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 35.78 mm (Level of torrent rain)

Up (years) = 100

to = 10.10 °C (Average annual air temperature)

Hgod = 330.4 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 0.99721 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

44.21 % (Decomposed limestone and marls)

26.39 % (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)

29.4 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.68744 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

28.14 % (Plough-lands)

3.02 % (Orchards and vineyards)

68.84 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.5715 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

40.15 % (80% of the river basin under rill and gully erosion)

6.12 % (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)

53.73 % (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 = 0.45896922325354 (Coefficient of the river basin form)

m = 0.73964964930894 (Coefficient of the watershed development)

B = 3.1613070539419 km (Average river basin width)

a = 0.70910582444627 ((A)symmetry of the river basin)

G = 1.5486464315012 (Density of the river network of the basin)

K = 1.181870669746 (Coefficient of the river basin tortuousness)

H_{sr} = 1641.6155045119 m (Average river basin altitude)

D = 350.6155045119 m (Average elevation difference of the river basin)

I_{sr} = 27.621000820345 % (Average river basin decline)

H_{leb} = 1069 m (The height of the local erosion base of the river basin)

E_r = 121.78236535754 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.793 (Coefficient of the regions permeability)

S_2 = 0.85628 (Coefficient of the vegetation cover)

W = 0.45997073734335 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 647.51810345349 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 92.822801220164 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.0535653752853 (Temperature coefficient of the region)

Z = 0.75205665610719 (Coefficient of the river basin erosion)

W_{god} = 43471.132023509 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.26977797955968 (Coefficient of the deposit retention)

G_{god} = 11727.554166475 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 192.41270166488 m^3 km^{-2} god^{-1} (Real soil losses per km^2)