Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S5-int

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.77,57.43

INPUT DATA

Geometric characteristics of the river basins

F = 61.06 km^2 (Surface area of the drainage basin)

O = 50.58 km (Length of the watershed)

Fv = 37.3 km^2 (Surface area of greater portion of the drainage basin)

Fm = 23.77 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 9.23 km (Natural length of main water course)

Lb = 7.41 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["17.40 ","32.66 ","50.60 ","28.29 ","10.11 ","1.39 "]

The area between the two neighboring contour lines - f [km^2]: ["7.35 ","15.76 ","16.83 ","11.28 ","8.80 ","1.03 ","0.01 "]

h0 = 1100 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 1036 (Lowest altitude in the drainage basin)

Hmax = 1664 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 114.5 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 6.99 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 = 0.38 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.47 (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 = 0.77280 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.22720 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 33.06 mm (Level of torrent rain)

Up (years) = 100

to = 12.10 °C (Average annual air temperature)

Hgod = 297.5 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.07752 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

50.32 % (Decomposed limestone and marls)

35.12 % (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)

14.56 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.66822 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

22.72 % (Plough-lands)

0.06 % (Orchards and vineyards)

77.22 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.48283 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

2.59 % (80% of the river basin under rill and gully erosion)

31.04 % (50% of the river basin under rill and gully erosion)

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

4.03 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

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

62.34 % (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 = 1.0685915492958 (Coefficient of the river basin form)

m = 0.3332102627401 (Coefficient of the watershed development)

B = 8.2402159244265 km (Average river basin width)

a = 0.44309808416571 ((A)symmetry of the river basin)

G = 1.8752047166721 (Density of the river network of the basin)

K = 1.3204577968526 (Coefficient of the river basin tortuousness)

H_{sr} = 1254.7022600721 m (Average river basin altitude)

D = 218.7022600721 m (Average elevation difference of the river basin)

I_{sr} = 23.001965280052 % (Average river basin decline)

H_{leb} = 628 m (The height of the local erosion base of the river basin)

E_r = 71.510624551889 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.796 (Coefficient of the regions permeability)

S_2 = 0.84544 (Coefficient of the vegetation cover)

W = 0.44172300924158 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 511.86394207841 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 162.5968597843 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.144552314226 (Temperature coefficient of the region)

Z = 0.69297186928059 (Coefficient of the river basin erosion)

W_{god} = 37679.288914678 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.34591290092798 (Coefficient of the deposit retention)

G_{god} = 13033.75213338 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 213.45810896462 m^3 km^{-2} god^{-1} (Real soil losses per km^2)