Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S7-intA

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.91,57.48

INPUT DATA

Geometric characteristics of the river basins

F = 84.84 km² (Surface area of the drainage basin)

O = 30.93 km (Length of the watershed)

 $Fv = 65.33 \text{ km}^2$ (Surface area of greater portion of the drainage basin)

 $Fm = 19.51 \text{ km}^2$ (Surface area of smaller portion of the drainage basin)

Lv = 14.83 km (Natural length of main water course)

Lb = 11.54 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["17.54 ","31.82 ","65.71 ","52.77 ","44.33 ","43.34 ","30.02 ","12.12 ","11.21 ","8.13 ","5.44 ","0.32 "]

The area between the two neighboring contour lines - f [km 2]: ["5.03 ","9.64 ","15.73 ","16.21 ","11.60 ","10.69 ","7.90 ","2.28 ","2.16 ","1.63 ","1.70 ","0.26 ","0.01 "]

h0 = 1300 m (Altitude of the initial contour)

 $\Delta h = 100 \text{ m (Equidistance)}$

Hmin = 1201 (Lowest altitude in the drainage basin)

Hmax = 2405 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

 $\Sigma L = 154.83$ km (The total length of the main watercourse with tributaries of 1^{st} and 2^{nd} class)

Lm = 14.23 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.09 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.06 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.85 (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 = 0.38530 (Part of the surface area of the drainage basin under the forest)

ft = 0.42850 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.18610 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 35.52 mm (Level of torrent rain)

Up (years) = 100

to = 10.30 °C (Average annual air temperature)

Hgod = 327.3 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.0725 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

40.75 % (Decomposed limestone and marls)

45.6 % (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)

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13.65 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.65734 (Planning of the drainage basin, rate of drainage basin regulation)
0.19 % (Bare lands)
18.42 % (Plough-lands)
1.38 % (Orchards and vineyards)
41.47 % (Mountain pastures)
0 % (Meadows)
38.53 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.48982 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
11.92 % (80% of the river basin under rill and gully erosion)
23.66 % (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)
64.42 % (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 = 0.40669925826028 (Coefficient of the river basin form)
m = 0.45418824415151 (Coefficient of the watershed development)
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B = 7.3518197573657 km (Average river basin width)

a = 1.0801508722301 ((A)symmetry of the river basin)

G = 1.8249646393211 (Density of the river network of the basin)

K = 1.0421644413212 (Coefficient of the river basin tortuousness)

 $H_{sr} = 1609.3710513909 \text{ m}$ (Average river basin altitude)

D = 408.3710513909 m (Average elevation difference of the river basin) $I_{sr} = 38.042197076851 \% \text{ (Average river basin decline)}$ $H_{leb} = 1204 \text{ m (The height of the local erosion base of the river basin)}$ $E_r = 126.27763781647 \text{ (Coefficient of the erosion energy of the river basins relief)}$ $S_1 = 0.928 \text{ (Coefficient of the regions permeability)}$ $S_2 = 0.76008 \text{ (Coefficient of the vegetation cover)}$ W = 0.46400727329183 m (Analytical presentation of the water retention in inflow) $2gDF^{1/2} = 824.47464727551 \text{ m km s}^{-1} \text{ (Energetic potential of water flow during torrent rains)}$ $Q_{max} = 109.74449776998 \text{ m}^3 \text{ s}^{-1} \text{ (Maximal outflow from the river basin)}$ T = 1.0630145812735 (Temperature coefficient of the region) Z = 0.78015236219917 (Coefficient of the river basin erosion) $W_{god} = 63900.594893718 \text{ m}^3 \text{ god}^{-1} \text{ (Production of erosion material in the river basin}$

 $R_u = 0.28626661998858$ (Coefficient of the deposit retention)

 $G_{god} = 18292.607315484 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$

 $G_{god} \text{ km}^{-2} = 215.61300466153 \text{ m}^3 \text{ km}^{-2} \text{ god}^{-1} \text{ (Real soil losses per km}^2\text{)}$

http://www.wintero.me