Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S9-1

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.89,57.22

INPUT DATA

Geometric characteristics of the river basins

F = 39.07 km² (Surface area of the drainage basin)

O = 28.62 km (Length of the watershed)

 $Fv = 28.66 \text{ km}^2$ (Surface area of greater portion of the drainage basin)

Fm = 10.41 km² (Surface area of smaller portion of the drainage basin)

Lv = 10.05 km (Natural length of main water course)

Lb = 6.45 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["2.81 ","24.29 ","33.28 ","23.58 ","17.33 ","8.52 "]

The area between the two neighboring contour lines - f [km²]: ["0.37 ","7.81 ","11.71 ","9.24 ","5.67 ","4.03 ","0.24 "]

h0 = 1100 m (Altitude of the initial contour)

Ah = 100 m (Equidistance)

Hmin = 1065 (Lowest altitude in the drainage basin)

Hmax = 1653 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

 $\Sigma L = 80.86$ km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 8.57 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 = 0.71 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.19 (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 = 0.78990 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.21010 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 33.54 mm (Level of torrent rain)

Up (years) = 100

to = 11.80 °C (Average annual air temperature)

Hgod = 303.3 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.0499 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

89.98 % (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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10.02 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.66529 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
21.01 % (Plough-lands)
2.26 % (Orchards and vineyards)
76.73 % (Mountain pastures)
0 % (Meadows)
0 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.43649 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
7.74 % (80% of the river basin under rill and gully erosion)
18.01 % (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)
74.25 % (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 = 0.55531343283582 (Coefficient of the river basin form)
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m = 0.45356488503326 (Coefficient of the watershed development)

B = 6.0573643410853 km (Average river basin width)

a = 0.93422062963911 ((A)symmetry of the river basin)

G = 2.0696186332224 (Density of the river network of the basin)

K = 1.1726954492415 (Coefficient of the river basin tortuousness)

 $H_{sr} = 1314.3558996673$ m (Average river basin altitude)

D = 249.3558996673 m (Average elevation difference of the river basin) $I_{sr} = 28.105963654978 \% \text{ (Average river basin decline)}$ $H_{leb} = 588 \text{ m (The height of the local erosion base of the river basin)}$ $E_r = 74.862892070305 \text{ (Coefficient of the erosion energy of the river basins relief)}$ $S_1 = 0.727 \text{ (Coefficient of the regions permeability)}$ $S_2 = 0.84202 \text{ (Coefficient of the vegetation cover)}$ W = 0.4464532190749 m (Analytical presentation of the water retention in inflow) $2gDF^{1/2} = 437.20088369081 \text{ m km s}^{-1} \text{ (Energetic potential of water flow during torrent rains)}$ $Q_{max} = 66.35168967821 \text{ m}^3 \text{ s}^{-1} \text{ (Maximal outflow from the river basin)}$ T = 1.1313708498985 (Temperature coefficient of the region) Z = 0.6751868168014 (Coefficient of the river basin erosion) $W_{god} = 23367.196466658 \text{ m}^3 \text{ god}^{-1} \text{ (Production of erosion material in the river basin)}$

 $G_{god} \text{ km}^{-2} = 159.37619575857 \text{ m}^3 \text{ km}^{-2} \text{ god}^{-1} \text{ (Real soil losses per km}^2\text{)}$

 $R_u = 0.2664773233354$ (Coefficient of the deposit retention)

 $G_{god} = 6226.8279682875 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$

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