Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S5-2

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.82,57.5

INPUT DATA

Geometric characteristics of the river basins

F = 60.33 km² (Surface area of the drainage basin)

O = 39.67 km (Length of the watershed)

 $Fv = 41.78 \text{ km}^2$ (Surface area of greater portion of the drainage basin)

 $Fm = 18.55 \text{ km}^2$ (Surface area of smaller portion of the drainage basin)

Lv = 14.29 km (Natural length of main water course)

Lb = 14.55 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["8.27 ","27.19 ","42.20 ","51.81 ","32.19 ","16.83 ","18.43 ","20.10 ","8.06 "]

The area between the two neighboring contour lines - f [km²]: ["3.20 ","0.90 ","9.96 ","14.76 ","10.40 ","4.69 ","3.66 ","4.47 ","2.76 ","5.53 "]

h0 = 1200 m (Altitude of the initial contour)

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

Hmin = 1114 (Lowest altitude in the drainage basin)

Hmax = 2045 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

 $\Sigma L = 109.19$ km (The total length of the main watercourse with tributaries of 1^{st} and 2^{nd} class)

Lm = 12.53 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 = 0.5 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.41 (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 = 0.96410 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.03590 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 34.8 mm (Level of torrent rain)

Up (years) = 100

to = 11.80 °C (Average annual air temperature)

Hgod = 318.6 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.078 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

23.15 % (Decomposed limestone and marls)

67.82 % (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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9.03 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.61975 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
3.59 % (Plough-lands)
8.98 % (Orchards and vineyards)
87.43 % (Mountain pastures)
0 % (Meadows)
0 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.46455 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
1.18 % (80% of the river basin under rill and gully erosion)
30.27 % (50% of the river basin under rill and gully erosion)
0 % (100% of the river basin under surface erosion)
2.04 % (100% of the river basin under surface erosion, without visible furrows, ravines and
land slides)
0 % (50% of the river basin under surface erosion)
66.51 % (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)
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INPUT DATA

A = 0.54133310006998 (Coefficient of the river basin form)

m = 0.51899196492862 (Coefficient of the watershed development)

B = 4.1463917525773 km (Average river basin width)

a = 0.77009779545831 ((A)symmetry of the river basin)

G = 1.8098789988397 (Density of the river network of the basin)

K = 1.1404628890662 (Coefficient of the river basin tortuousness)

 $H_{sr} = 1570.9402453174 \text{ m}$ (Average river basin altitude)

D = 456.9402453174 m (Average elevation difference of the river basin) $I_{sr} = 37.308138571192 \% \text{ (Average river basin decline)}$ $H_{leb} = 931 \text{ m (The height of the local erosion base of the river basin)}$ $E_r = 106.33261071548 \text{ (Coefficient of the erosion energy of the river basins relief)}$ $S_1 = 0.796 \text{ (Coefficient of the regions permeability)}$ $S_2 = 0.80718 \text{ (Coefficient of the vegetation cover)}$ W = 0.45589171053804 m (Analytical presentation of the water retention in inflow) $2gDF^{1/2} = 735.43766703914 \text{ m km s}^{-1} \text{ (Energetic potential of water flow during torrent rains)}$ $Q_{max} = 116.61531998994 \text{ m}^3 \text{ s}^{-1} \text{ (Maximal outflow from the river basin)}$ T = 1.1313708498985 (Temperature coefficient of the region) Z = 0.71843371458673 (Coefficient of the river basin erosion) $W_{god} = 41601.980997877 \text{ m}^3 \text{ god}^{-1} \text{ (Production of erosion material in the river basin)}$

 $R_u = 0.35056074757386$ (Coefficient of the deposit retention)

 $G_{god} = 14584.021559169 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$

 G_{god} km⁻² = 241.73746990169 m³ km⁻² god⁻¹ (Real soil losses per km²)

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