Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S7-4

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.86,57.46

INPUT DATA

Geometric characteristics of the river basins

F = 36.4 km² (Surface area of the drainage basin)

O = 26.83 km (Length of the watershed)

 $Fv = 23.51 \text{ km}^2$ (Surface area of greater portion of the drainage basin)

 $Fm = 12.89 \text{ km}^2$ (Surface area of smaller portion of the drainage basin)

Lv = 13.77 km (Natural length of main water course)

Lb = 10.65 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 ","15.98 ","21.82 ","24.49 ","21.73 ","14.26 ","15.73 ","6.07 ","0.39 "]

The area between the two neighboring contour lines - f [km²]: ["0.55 ","5.63 ","6.41 ","7.17 ","6.34 ","3.73 ","4.09 ","2.11 ","0.36 ","0.01 "]

h0 = 1200 m (Altitude of the initial contour)

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

Hmin = 1171 (Lowest altitude in the drainage basin)

Hmax = 2030 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

 $\Sigma L = 81.74$ km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 11.47 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 = 0.2 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.71 (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 = 0.90310 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.09690 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 34.78 mm (Level of torrent rain)

Up (years) = 100

to = 10.80 °C (Average annual air temperature)

Hgod = 318.3 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.10366 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

49.86 % (Decomposed limestone and marls)

40.9 % (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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9.24 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.62907 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
9.69 % (Plough-lands)
0 % (Orchards and vineyards)
90.31 % (Mountain pastures)
0 % (Meadows)
0 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.43109 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
4.84 % (80% of the river basin under rill and gully erosion)
20.41 % (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)
74.75 % (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 = 0.37994553376906 (Coefficient of the river basin form)
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m = 0.64384053624519 (Coefficient of the watershed development) **B** = 3.4178403755869 km (Average river basin width)

a = 0.58351648351648 ((A)symmetry of the river basin)

G = 2.2456043956044 (Density of the river network of the basin)

K = 1.2005231037489 (Coefficient of the river basin tortuousness)

 $H_{sr} = 1497.3674450549 \text{ m}$ (Average river basin altitude)

D = 326.3674450549 m (Average elevation difference of the river basin) $I_{sr} = 33.868131868132 \% \text{ (Average river basin decline)}$ $H_{leb} = 859 \text{ m (The height of the local erosion base of the river basin)}$ $E_r = 111.31865368363 \text{ (Coefficient of the erosion energy of the river basins relief)}$ $S_1 = 0.886 \text{ (Coefficient of the regions permeability)}$ $S_2 = 0.81938 \text{ (Coefficient of the vegetation cover)}$ W = 0.45636929951207 m (Analytical presentation of the water retention in inflow) $2gDF^{1/2} = 482.78482318727 \text{ m km s}^{-1} \text{ (Energetic potential of water flow during torrent rains)}$ $Q_{max} = 60.772969193942 \text{ m}^3 \text{ s}^{-1} \text{ (Maximal outflow from the river basin)}$ T = 1.08627804912 (Temperature coefficient of the region) Z = 0.70334205499652 (Coefficient of the river basin erosion) $W_{god} = 23322.697402516 \text{ m}^3 \text{ god}^{-1} \text{ (Production of erosion material in the river basin)}$ $R_u = 0.24898005933052 \text{ (Coefficient of the deposit retention)}$

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 $G_{god} = 5806.8865830263 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$

 G_{god} km⁻² = 159.52985118204 m³ km⁻² god⁻¹ (Real soil losses per km²)