Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S1-4

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.77,57.88

INPUT DATA

Geometric characteristics of the river basins

F = 59.05 km² (Surface area of the drainage basin)

O = 39.92 km (Length of the watershed)

 $Fv = 40.01 \text{ km}^2$ (Surface area of greater portion of the drainage basin)

Fm = 19.04 km² (Surface area of smaller portion of the drainage basin)

Lv = 13.3 km (Natural length of main water course)

Lb = 7.91 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["0.37 ","20.94 ","39.66 ","45.89 ","36.11 ","21.08 ","19.30 ","18.97 ","16.05 ","3.71 ","1.07 "]

The area between the two neighboring contour lines - f [km²]: ["0.009 ","5.239 ","10.458 ","10.044 ","9.478 ","5.985 ","5.239 ","4.871 ","4.312 ","2.799 ","0.542 ","0.076 "]

h0 = 1600 m (Altitude of the initial contour)

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

Hmin = 1595 (Lowest altitude in the drainage basin)

Hmax = 2687 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

 $\Sigma L = 109.12$ km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 11.03 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.13 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.31 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.56 (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 = 0.00 (Part of the surface area of the drainage basin under the forest)

ft = 0.77120 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.22880 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 38.07 mm (Level of torrent rain)

Up (years) = 100

to = 8.30 °C (Average annual air temperature)

Hgod = 358 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.09655 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

63.25 % (Decomposed limestone and marls)

23.41 % (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)

```
13.34 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.67293 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
22.88 % (Plough-lands)
4.29 % (Orchards and vineyards)
72.83 % (Mountain pastures)
0 % (Meadows)
0 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.39964 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
14.9 % (80% of the river basin under rill and gully erosion)
2.61 % (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)
79.68 % (20% of the river basin under surface erosion)
2.81 % (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 = 0.58529323308271 (Coefficient of the river basin form)

m = 0.48824382350408 (Coefficient of the watershed development)

B = 7.4652338811631 km (Average river basin width)

a = 0.71024555461473 ((A)symmetry of the river basin)

G = 1.8479254868755 (Density of the river network of the basin)

K = 1.2058023572076 (Coefficient of the river basin tortuousness)

 H_{sr} = 1982.9014987299 m (Average river basin altitude)

D = 387.9014987299 m (Average elevation difference of the river basin) $I_{sr} = 37.790008467401 \%$ (Average river basin decline) H_{leb} = 1092 m (The height of the local erosion base of the river basin) E_r = 125.39141122125 (Coefficient of the erosion energy of the river basins relief) $S_1 = 0.829$ (Coefficient of the regions permeability)

 $S_2 = 0.84576$ (Coefficient of the vegetation cover)

W = 0.49751341878769 m (Analytical presentation of the water retention in inflow)

 $2gDF^{1/2} = 670.37866036294 \text{ m km s}^{-1}$ (Energetic potential of water flow during torrent rains)

 $Q_{max} = 136.8674434718 \text{ m}^3 \text{ s}^{-1}$ (Maximal outflow from the river basin)

T = 0.9643650760993 (Temperature coefficient of the region)

Z = 0.74850930284395 (Coefficient of the river basin erosion)

 $W_{god} = 41475.351858459 \text{ m}^3 \text{ god}^{-1}$ (Production of erosion material in the river basin

 $R_u = 0.33777699656861$ (Coefficient of the deposit retention)

 $G_{god} = 14009.419782377 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$

 G_{god} km⁻² = 237.2467363654 m³ km⁻² god⁻¹ (Real soil losses per km²)

http://www.wintero.me