Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S2-2

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.88,57.71

INPUT DATA

Geometric characteristics of the river basins

F = 22.3 km² (Surface area of the drainage basin)

O = 28.29 km (Length of the watershed)

 $Fv = 14.72 \text{ km}^2$ (Surface area of greater portion of the drainage basin)

Fm = 7.58 km² (Surface area of smaller portion of the drainage basin)

Lv = 11.28 km (Natural length of main water course)

Lb = 9.96 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["2.26 ","2.02 ","8.62 ","15.76 ","3.69 ","4.13 "]

The area between the two neighboring contour lines - f [km²]: ["0.14 ","1.88 ","13.73 ","3.95 ","1.55 ","0.97 ","0.08 "]

h0 = 1500 m (Altitude of the initial contour)

Ah = 100 m (Equidistance)

Hmin = 1469 (Lowest altitude in the drainage basin)

Hmax = 2075 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

 $\Sigma L = 23.27$ km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 6.77 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.38 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.24 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.38 (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 = 0.24160 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.75840 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 36.07 mm (Level of torrent rain)

Up (years) = 100

to = 9.8 °C (Average annual air temperature)

Hgod = 333.9 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 0.96876 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

61.46 % (Decomposed limestone and marls)

0 % (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)

```
38.54 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.82752 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
75.84 % (Plough-lands)
0 % (Orchards and vineyards)
24.16 % (Mountain pastures)
0 % (Meadows)
0 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.79663 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
82.63 % (80% of the river basin under rill and gully erosion)
0.17 % (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)
17.2 % (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 = 0.48905585106383 (Coefficient of the river basin form)
```

m = 0.67383216215922 (Coefficient of the watershed development)

B = 2.2389558232932 km (Average river basin width)

a = 0.64035874439462 ((A)symmetry of the river basin)

G = 1.0434977578475 (Density of the river network of the basin)

K = 1.6661742983752 (Coefficient of the river basin tortuousness)

 $H_{sr} = 1686.5843049327$ m (Average river basin altitude)

D = 217.5843049327 m (Average elevation difference of the river basin) $I_{sr} = 16.358744394619 \% \text{ (Average river basin decline)}$ $H_{leb} = 606 \text{ m (The height of the local erosion base of the river basin)}$ $E_r = 88.765976637371 \text{ (Coefficient of the erosion energy of the river basins relief)}$ $S_1 = 0.7 \text{ (Coefficient of the regions permeability)}$ $S_2 = 0.95168 \text{ (Coefficient of the vegetation cover)}$ W = 0.47608391405909 m (Analytical presentation of the water retention in inflow) $2gDF^{1/2} = 308.54301256062 \text{ m km s}^{-1} \text{ (Energetic potential of water flow during torrent rains)}$ $Q_{max} = 47.857131619184 \text{ m}^3 \text{ s}^{-1} \text{ (Maximal outflow from the river basin)}$ T = 1.0392304845413 (Temperature coefficient of the region) Z = 0.96287530501894 (Coefficient of the river basin erosion) $W_{god} = 22968.789371764 \text{ m}^3 \text{ god}^{-1} \text{ (Production of erosion material in the river basin)}$

 $R_u = 0.23317856662038$ (Coefficient of the deposit retention)

 $G_{god} = 5355.8293827133 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$

 G_{god} km⁻² = 240.17172119791 m³ km⁻² god⁻¹ (Real soil losses per km²)

http://www.wintero.me