# Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S10-2

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.74,57.22

## **INPUT DATA**

#### Geometric characteristics of the river basins

F = 15.23 km<sup>2</sup> (Surface area of the drainage basin)

O = 21.91 km (Length of the watershed)

 $Fv = 8.9 \text{ km}^2$  (Surface area of greater portion of the drainage basin)

Fm = 6.33 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)

Lv = 9.72 km (Natural length of main water course)

Lb = 20.96 km (Length of the drainage basin measured by a series of paraller lines)

#### **Topograpfic characteristics of the river basins**

Contour line length - Liz [km]: ["1.63 ","12.23 ","10.84 ","8.49 ","6.22 ","3.77 ","1.10 "]

The area between the two neighboring contour lines - f [km²]: ["0.46 ","3.73 ","4.03 ","3.33 ","1.75 ","1.41 ","0.51 ","0.01 "]

h0 = 800 m (Altitude of the initial contour)

Ah = 100 m (Equidistance)

**Hmin = 760 (Lowest altitude in the drainage basin)** 

Hmax = 1460 (Highest altitude in the draigane basin

#### Hydrological characteristics of the river basins

 $\Sigma L = 41.26$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

Lm = 6.31 km (The shortest distance between the fountain (head and mouth))

#### **Water permeability**

fp = 0.11 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.03 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.86 (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 = 0.96610 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.03390 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

### Meteorological data

hb = 31.37 mm (Level of torrent rain)

Up (years) = 100

to = 13.40 °C (Average annual air temperature)

Hgod = 277.1 mm (Average annual quantity of precipitation)

#### **Erosion coefficients**

**Y = 1.11304 (Types of soil structures and allied types)** 

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

69.99 % (Decomposed limestone and marls)

18.62 % (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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11.39 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.61017 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
3.39 % (Plough-lands)
0 % (Orchards and vineyards)
96.61 % (Mountain pastures)
0 % (Meadows)
0 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.48385 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
21.85 % (80% of the river basin under rill and gully erosion)
10.55 % (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)
67.6 % (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 = 0.4395524691358 (Coefficient of the river basin form)
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m = 0.70260523487049 (Coefficient of the watershed development) **B** = 0.72662213740458 km (Average river basin width)

a = 0.33749179251477 ((A)symmetry of the river basin)

G = 2.7091267235719 (Density of the river network of the basin)

**K** = 1.540412044374 (Coefficient of the river basin tortuousness)

 $H_{sr} = 1006.703873933 \text{ m}$  (Average river basin altitude)

D = 246.703873933 m (Average elevation difference of the river basin)  $I_{sr} = 29.074195666448 \% \text{ (Average river basin decline)}$ 

 $H_{leb}$  = 700 m (The height of the local erosion base of the river basin)

 $E_r = 112.79067390144$  (Coefficient of the erosion energy of the river basins relief)

 $S_1 = 0.925$  (Coefficient of the regions permeability)

 $S_2 = 0.80678$  (Coefficient of the vegetation cover)

W = 0.41955971392994 m (Analytical presentation of the water retention in inflow)

 $2gDF^{1/2} = 271.5110053018 \text{ m km s}^{-1}$  (Energetic potential of water flow during torrent rains)

 $Q_{max} = 37.367048755796 \text{ m}^3 \text{ s}^{-1}$  (Maximal outflow from the river basin)

T = 1.2 (Temperature coefficient of the region)

Z = 0.69480122542599 (Coefficient of the river basin erosion)

 $W_{god} = 9214.2164814557 \text{ m}^3 \text{ god}^{-1}$  (Production of erosion material in the river basin

 $R_u = 0.23579373317688$  (Coefficient of the deposit retention)

 $G_{god} = 2172.6545024624 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$ 

 $G_{god}$  km<sup>-2</sup> = 142.65623785045 m<sup>3</sup> km<sup>-2</sup> god<sup>-1</sup> (Real soil losses per km<sup>2</sup>)

http://www.wintero.me