# Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S-int

Country: Iran, Islamic Republic of

**Year: 2019** 

GPS coordinates, latitude and longitude with Google Maps: 37.72,57.14

## **INPUT DATA**

#### Geometric characteristics of the river basins

 $F = 23.01 \text{ km}^2$  (Surface area of the drainage basin)

O = 27.42 km (Length of the watershed)

 $Fv = 14.52 \text{ km}^2$  (Surface area of greater portion of the drainage basin)

Fm = 8.49 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)

Lv = 5.7 km (Natural length of main water course)

Lb = 0.67 km (Length of the drainage basin measured by a series of paraller lines)

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

Contour line length - Liz [km]: ["0.51 ","39.55 ","17.59 ","0.38 "]

The area between the two neighboring contour lines - f [km<sup>2</sup>]: ["0.02 ","10.82 ","10.73 ","1.28 ","0.16 "]

h0 = 700 m (Altitude of the initial contour)

Ah = 100 m (Equidistance)

**Hmin = 696 (Lowest altitude in the drainage basin)** 

Hmax = 1010 (Highest altitude in the draigane basin

#### Hydrological characteristics of the river basins

 $\Sigma L = 43.15$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

Lm = 4.78 km (The shortest distance between the fountain (head and mouth))

#### **Water permeability**

fp = 0.06 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.25 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.69 (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 = 0.60260 (Part of the surface area of the drainage basin under the forest)

ft = 0.00020 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.39720 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

### Meteorological data

hb = 30.05 mm (Level of torrent rain)

Up (years) = 100

to = 14.40 °C (Average annual air temperature)

**Hgod = 261.1 mm (Average annual quantity of precipitation)** 

#### **Erosion coefficients**

Y = 1.1182 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

49.85 % (Decomposed limestone and marls)

43.82 % (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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6.33 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.75863 (Planning of the drainage basin, rate of drainage basin regulation)
39.45 % (Bare lands)
0.27 % (Plough-lands)
0.02 % (Orchards and vineyards)
0 % (Mountain pastures)
0 % (Meadows)
60.26 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.4375 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
1.9 % (80% of the river basin under rill and gully erosion)
25.22 % (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)
72.88 % (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
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A = 0.93805263157895 (Coefficient of the river basin form)

m = 0.33520586930498 (Coefficient of the watershed development)

B = 34.34328358209 km (Average river basin width)

a = 0.52411994784876 ((A)symmetry of the river basin)

**G** = 1.8752716210343 (Density of the river network of the basin)

K = 1.1924686192469 (Coefficient of the river basin tortuousness)

 $H_{sr}$  = 809.48544111256 m (Average river basin altitude)

D = 113.48544111256 m (Average elevation difference of the river basin)  $I_{sr} = 25.219469795741 \% \text{ (Average river basin decline)}$   $H_{leb} = 314 \text{ m (The height of the local erosion base of the river basin)}$   $E_r = 45.635269615945 \text{ (Coefficient of the erosion energy of the river basins relief)}$   $S_1 = 0.889 \text{ (Coefficient of the regions permeability)}$   $S_2 = 0.75892 \text{ (Coefficient of the vegetation cover)}$  W = 0.40936092749548 m (Analytical presentation of the water retention in inflow)  $2gDF^{1/2} = 226.34863816688 \text{ m km s}^{-1} \text{ (Energetic potential of water flow during torrent rains)}$   $Q_{max} = 58.642062841749 \text{ m}^3 \text{ s}^{-1} \text{ (Maximal outflow from the river basin)}$  T = 1.2409673645991 (Temperature coefficient of the region) Z = 0.79713900612823 (Coefficient of the river basin erosion)  $W_{god} = 16669.969869438 \text{ m}^3 \text{ god}^{-1} \text{ (Production of erosion material in the river basin)}$ 

 $R_u = 0.22471607647851$  (Coefficient of the deposit retention)

 $G_{god} = 3746.010224075 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$ 

 $G_{god}$  km<sup>-2</sup> = 162.79922746958 m<sup>3</sup> km<sup>-2</sup> god<sup>-1</sup> (Real soil losses per km<sup>2</sup>)

http://www.wintero.me