# Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S6-2

Country: Iran, Islamic Republic of

**Year: 2019** 

GPS coordinates, latitude and longitude with Google Maps: 37.82,57.38

#### **INPUT DATA**

#### Geometric characteristics of the river basins

 $F = 27.53 \text{ km}^2$  (Surface area of the drainage basin)

O = 32.76 km (Length of the watershed)

 $Fv = 17.73 \text{ km}^2$  (Surface area of greater portion of the drainage basin)

Fm = 9.8 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)

Lv = 14.64 km (Natural length of main water course)

Lb = 13.57 km (Length of the drainage basin measured by a series of paraller lines)

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

Contour line length - Liz [km]: ["10.62 ","15.30 ","21.72 ","13.46 ","7.93 ","1.99 "]

The area between the two neighboring contour lines - f [km²]: ["4.53 ","4.27 ","7.73 ","6.13 ","3.58 ","1.28 ","0.01 "]

h0 = 1100 m (Altitude of the initial contour)

Ah = 100 m (Equidistance)

**Hmin = 1021 (Lowest altitude in the drainage basin)** 

Hmax = 1647 (Highest altitude in the draigane basin

### Hydrological characteristics of the river basins

 $\Sigma L = 46.69$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

Lm = 10.53 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 = 0.79 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.08 (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 = 0.86990 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.13010 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

## Meteorological data

hb = 33.2 mm (Level of torrent rain)

Up (years) = 100

to = 12 °C (Average annual air temperature)

Hgod = 299.2 mm (Average annual quantity of precipitation)

### **Erosion coefficients**

**Y = 1.03825 (Types of soil structures and allied types)** 

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

87.65 % (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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12.35 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.6621 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
13.01 % (Plough-lands)
23.07 % (Orchards and vineyards)
63.92 % (Mountain pastures)
0 % (Meadows)
0 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.55362 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
4.54 % (80% of the river basin under rill and gully erosion)
39.72 % (50% of the river basin under rill and gully erosion)
0 % (100% of the river basin under surface erosion)
9.26 % (100% of the river basin under surface erosion, without visible furrows, ravines and
land slides)
0 % (50% of the river basin under surface erosion)
46.48 % (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 = 0.43635245901639 (Coefficient of the river basin form) m = 0.78710566659336 (Coefficient of the watershed development)

**B** = 2.0287398673545 km (Average river basin width)

a = 0.57609880130766 ((A)symmetry of the river basin)

G = 1.695968034871 (Density of the river network of the basin)

**K** = 1.3903133903134 (Coefficient of the river basin tortuousness)

 $H_{sr}$  = 1265.6665455866 m (Average river basin altitude)

D = 244.6665455866 m (Average elevation difference of the river basin)  $I_{sr} = 25.797312023247 \% \text{ (Average river basin decline)}$   $H_{leb} = 626 \text{ m (The height of the local erosion base of the river basin)}$   $E_r = 86.990716447599 \text{ (Coefficient of the erosion energy of the river basins relief)}$   $S_1 = 0.685 \text{ (Coefficient of the regions permeability)}$   $S_2 = 0.82602 \text{ (Coefficient of the vegetation cover)}$  W = 0.43564151607234 m (Analytical presentation of the water retention in inflow)  $2gDF^{1/2} = 363.52970360066 \text{ m km s}^{-1} \text{ (Energetic potential of water flow during torrent rains)}$   $Q_{max} = 39.100987449575 \text{ m}^3 \text{ s}^{-1} \text{ (Maximal outflow from the river basin)}$  T = 1.1401754250991 (Temperature coefficient of the region) Z = 0.72972297888593 (Coefficient of the river basin erosion)  $W_{god} = 18391.890938273 \text{ m}^3 \text{ god}^{-1} \text{ (Production of erosion material in the river basin)}$ 

 $R_u = 0.22979921132724$  (Coefficient of the deposit retention)

 $G_{god} = 4226.4420324318 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$ 

 $G_{god} \text{ km}^{-2} = 153.52132337202 \text{ m}^3 \text{ km}^{-2} \text{ god}^{-1} \text{ (Real soil losses per km}^2\text{)}$ 

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