# Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S1-3

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.69,57.84

#### **INPUT DATA**

#### Geometric characteristics of the river basins

 $F = 28.68 \text{ km}^2$  (Surface area of the drainage basin)

O = 29.16 km (Length of the watershed)

 $Fv = 22.22 \text{ km}^2$  (Surface area of greater portion of the drainage basin)

Fm = 6.46 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)

Lv = 7.03 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]: ["16.76","24.17","18.01","7.36","1.10"]

The area between the two neighboring contour lines - f [km²]: ["4.36 ","11.64 ","8.34 ","3.34 ","0.90 ","0.10 "]

h0 = 1700 m (Altitude of the initial contour)

Ah = 100 m (Equidistance)

**Hmin = 1611 (Lowest altitude in the drainage basin)** 

Hmax = 2189 (Highest altitude in the draigane basin

## Hydrological characteristics of the river basins

 $\Sigma L = 47.7$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

Lm = 6.43 km (The shortest distance between the fountain (head and mouth))

### **Water permeability**

fp = 0.07 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.42 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.51 (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 = 0.98 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.02 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

# Meteorological data

hb = 36.84 mm (Level of torrent rain)

Up (years) = 100

to = 9.30 °C (Average annual air temperature)

**Hgod = 343 mm (Average annual quantity of precipitation)** 

## **Erosion coefficients**

**Y = 1.09509 (Types of soil structures and allied types)** 

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

59.07 % (Decomposed limestone and marls)

3.19 % (Serpentines, red sand stones, flishe deposits)

31.18 % (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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6.56 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.608 (Planning of the drainage basin, rate of drainage basin regulation)
2 % (Bare lands)
0 % (Plough-lands)
0 % (Orchards and vineyards)
98 % (Mountain pastures)
0 % (Meadows)
0 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.63843 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
53.82 % (80% of the river basin under rill and gully erosion)
2.55 % (50% of the river basin under rill and gully erosion)
0 % (100% of the river basin under surface erosion)
0.92 % (100% of the river basin under surface erosion, without visible furrows, ravines and
land slides)
0 % (50% of the river basin under surface erosion)
42.71 % (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 = 0.80884779516358 (Coefficient of the river basin form)
m = 0.37030606020712 (Coefficient of the watershed development)

**B** = 3.6257901390645 km (Average river basin width)

a = 1.0990237099024 ((A)symmetry of the river basin)

**G** = 1.663179916318 (Density of the river network of the basin)

**K** = 1.0933125972006 (Coefficient of the river basin tortuousness)

 $H_{sr} = 1798.7946304045 \text{ m}$  (Average river basin altitude)

D = 187.7946304045 m (Average elevation difference of the river basin)  $I_{sr} = 23.50069735007 \% \text{ (Average river basin decline)}$   $H_{leb} = 578 \text{ m (The height of the local erosion base of the river basin)}$   $E_r = 79.502938154065 \text{ (Coefficient of the erosion energy of the river basins relief)}$   $S_1 = 0.832 \text{ (Coefficient of the regions permeability)}$   $S_2 = 0.804 \text{ (Coefficient of the vegetation cover)}$  W = 0.49343848135089 m (Analytical presentation of the water retention in inflow)  $2gDF^{1/2} = 325.07282107248 \text{ m km s}^{-1} \text{ (Energetic potential of water flow during torrent rains)}}$   $Q_{max} = 86.788035237179 \text{ m}^3 \text{ s}^{-1} \text{ (Maximal outflow from the river basin)}}$  T = 1.0148891565092 (Temperature coefficient of the region)  $Z = 0.74784654129573 \text{ (Coefficient of the river basin erosion)}}$   $W_{god} = 20284.321540986 \text{ m}^3 \text{ god}^{-1} \text{ (Production of erosion material in the river basin)}$ 

 $R_u = 0.27482149177594$  (Coefficient of the deposit retention)

 $G_{god} = 5574.5675055566 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$ 

 $G_{god} \text{ km}^{-2} = 194.37125193712 \text{ m}^3 \text{ km}^{-2} \text{ god}^{-1} \text{ (Real soil losses per km}^2\text{)}$ 

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