# Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S4-int

**Country: Iran, Islamic Republic of** 

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.75,57.48

# **INPUT DATA**

### Geometric characteristics of the river basins

 $F = 14.53 \text{ km}^2$  (Surface area of the drainage basin)

O = 25.5 km (Length of the watershed)

 $Fv = 8.02 \text{ km}^2$  (Surface area of greater portion of the drainage basin)

Fm = 6.51 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)

Lv = 3.9 km (Natural length of main water course)

Lb = 4.53 km (Length of the drainage basin measured by a series of paraller lines)

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

Contour line length - Liz [km]: ["14.07 ","11.33 ","5.06 ","2.92 ","0.67 "]

The area between the two neighboring contour lines - f [km²]: ["6.06 ","3.92 ","2.33 ","1.48 ","0.73 ","0.01 "]

h0 = 1200 m (Altitude of the initial contour)

Ah = 100 m (Equidistance)

**Hmin = 1113 (Lowest altitude in the drainage basin)** 

Hmax = 1659 (Highest altitude in the draigane basin

# Hydrological characteristics of the river basins

 $\Sigma L = 33.05$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

Lm = 2.97 km (The shortest distance between the fountain (head and mouth))

# Water permeability

fp = 0.15 (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 = 0.6 (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 = 0.95360 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.04640 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

# Meteorological data

hb = 33.1 mm (Level of torrent rain)

Up (years) = 100

to = 12.10 °C (Average annual air temperature)

Hgod = 297.9 mm (Average annual quantity of precipitation)

# **Erosion coefficients**

**Y = 1.07916 (Types of soil structures and allied types)** 

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

51.26 % (Decomposed limestone and marls)

34.32 % (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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14.42 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.61963 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
4.64 % (Plough-lands)
5.71 % (Orchards and vineyards)
89.65 % (Mountain pastures)
0 % (Meadows)
0 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.45604 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
1.26 % (80% of the river basin under rill and gully erosion)
11.75 % (50% of the river basin under rill and gully erosion)
0 % (100% of the river basin under surface erosion)
29.91 % (100% of the river basin under surface erosion, without visible furrows, ravines and
land slides)
0 % (50% of the river basin under surface erosion)
57.08 % (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 = 1.275 (Coefficient of the river basin form)

m = 0.28862029607638 (Coefficient of the watershed development)

**B** = 3.2075055187638 km (Average river basin width)

a = 0.20784583620096 ((A)symmetry of the river basin)

G = 2.2746042670337 (Density of the river network of the basin)

**K = 1.3131313131313 (Coefficient of the river basin tortuousness)** 

 $H_{sr} = 1262.7450103235 \text{ m}$  (Average river basin altitude)

D = 149.7450103235 m (Average elevation difference of the river basin)  $I_{sr} = 23.434273916036 \%$  (Average river basin decline)  $H_{leb}$  = 546 m (The height of the local erosion base of the river basin) E<sub>r</sub> = 89.017699478055 (Coefficient of the erosion energy of the river basins relief)  $S_1 = 0.835$  (Coefficient of the regions permeability)  $S_2 = 0.80928$  (Coefficient of the vegetation cover) W = 0.45278640126548 m (Analytical presentation of the water retention in inflow)  $2gDF^{1/2} = 206.61340203387 \text{ m km s}^{-1}$  (Energetic potential of water flow during torrent rains)  $Q_{max} = 80.602280886468 \text{ m}^3 \text{ s}^{-1}$  (Maximal outflow from the river basin) T = 1.144552314226 (Temperature coefficient of the region) Z = 0.62864577591656 (Coefficient of the river basin erosion)

 $W_{god} = 7757.6581967986 \text{ m}^3 \text{ god}^{-1}$  (Production of erosion material in the river basin

 $R_u = 0.28116513455914$  (Coefficient of the deposit retention)

 $G_{god} = 2181.1830107667 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$ 

 $G_{god}$  km<sup>-2</sup> = 150.11583005965 m<sup>3</sup> km<sup>-2</sup> god<sup>-1</sup> (Real soil losses per km<sup>2</sup>)

http://www.wintero.me