# Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S4-1

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.78,57.51

### **INPUT DATA**

#### Geometric characteristics of the river basins

 $F = 15.24 \text{ km}^2$  (Surface area of the drainage basin)

O = 18.52 km (Length of the watershed)

 $Fv = 9.77 \text{ km}^2$  (Surface area of greater portion of the drainage basin)

Fm = 5.47 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)

Contour line length - Liz [km]: ["10.11 ","12.66 ","10.53 ","10.35 ","0.39 "]

Lv = 6.53 km (Natural length of main water course)

Lb = 6.03 km (Length of the drainage basin measured by a series of paraller lines)

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

The area between the two neighboring contour lines - f [km $^2$ ]: ["2.97 ","5.28 ","3.39 ","3.18 ","0.41 ","0.01 "] h0 = 1200 m (Altitude of the initial contour)

**∆**h = 100 m (Equidistance)

**Hmin = 1145 (Lowest altitude in the drainage basin)** 

Hmax = 1603 (Highest altitude in the draigane basin

# Hydrological characteristics of the river basins

 $\Sigma L = 22.42$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

Lm = 5.5 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 = 0.57 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.36 (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 = 1.00000 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.00000 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

# Meteorological data

hb = 33.47 mm (Level of torrent rain)

Up (years) = 100

to = 11.80 °C (Average annual air temperature)

**Hgod = 302.4 mm (Average annual quantity of precipitation)** 

# **Erosion coefficients**

**Y** = 1.068 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

1.6 % (Decomposed limestone and marls)

91.68 % (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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6.72 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.64554 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
0 % (Plough-lands)
45.54 % (Orchards and vineyards)
54.46 % (Mountain pastures)
0 % (Meadows)
0 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.49279 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
0.54 % (80% of the river basin under rill and gully erosion)
24.23 % (50% of the river basin under rill and gully erosion)
0 % (100% of the river basin under surface erosion)
22.8 % (100% of the river basin under surface erosion, without visible furrows, ravines and
land slides)
0 % (50% of the river basin under surface erosion)
52.43 % (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 = 0.55304747320061 (Coefficient of the river basin form)

m = 0.4718628275059 (Coefficient of the watershed development)

**B** = 2.5273631840796 km (Average river basin width)

a = 0.56430446194226 ((A)symmetry of the river basin)

G = 1.4711286089239 (Density of the river network of the basin)

**K** = 1.187272727272 (Coefficient of the river basin tortuousness)

 $H_{sr} = 1307.1745406824 \text{ m}$  (Average river basin altitude)

D = 162.1745406824 m (Average elevation difference of the river basin)  $I_{sr} = 28.897637795276$  % (Average river basin decline)

 $H_{leb}$  = 458 m (The height of the local erosion base of the river basin)

 $E_r = 73.785217797759$  (Coefficient of the erosion energy of the river basins relief)

 $S_1 = 0.787$  (Coefficient of the regions permeability)

 $S_2 = 0.8$  (Coefficient of the vegetation cover)

W = 0.45174606467646 m (Analytical presentation of the water retention in inflow)

 $2gDF^{1/2} = 220.2081170166 \text{ m km s}^{-1}$  (Energetic potential of water flow during torrent rains)

 $Q_{max} = 34.638161521521 \text{ m}^3 \text{ s}^{-1}$  (Maximal outflow from the river basin)

T = 1.1313708498985 (Temperature coefficient of the region)

Z = 0.71036473113446 (Coefficient of the river basin erosion)

 $W_{god} = 9807.16987292 \text{ m}^3 \text{ god}^{-1}$  (Production of erosion material in the river basin

 $R_u = 0.20968577618533$  (Coefficient of the deposit retention)

 $G_{god} = 2056.4240269846 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$ 

 $G_{god} \text{ km}^{-2} = 134.9359597759 \text{ m}^3 \text{ km}^{-2} \text{ god}^{-1} \text{ (Real soil losses per km}^2\text{)}$ 

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