# Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S9-int

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.83,57.26

#### **INPUT DATA**

### Geometric characteristics of the river basins

F = 25 km<sup>2</sup> (Surface area of the drainage basin)

O = 24.83 km (Length of the watershed)

 $Fv = 15.16 \text{ km}^2$  (Surface area of greater portion of the drainage basin)

Fm = 9.84 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)

Lv = 5.81 km (Natural length of main water course)

Lb = 10.52 km (Length of the drainage basin measured by a series of paraller lines)

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

Contour line length - Liz [km]: ["10.06 ","22.66 ","29.53 ","12.84 ","2.76 "]

The area between the two neighboring contour lines - f [km²]: ["1.98 ","7.62 ","8.66 ","5.30 ","1.42 ","0.02 "]

h0 = 1000 m (Altitude of the initial contour)

Ah = 100 m (Equidistance)

**Hmin = 959 (Lowest altitude in the drainage basin)** 

Hmax = 1487 (Highest altitude in the draigane basin

# Hydrological characteristics of the river basins

 $\Sigma L = 50.74$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

Lm = 5.39 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 = 0.41 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.46 (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 = 0.05110 (Part of the surface area of the drainage basin under the forest)

ft = 0.94890 (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 = 32.29 mm (Level of torrent rain)

Up (years) = 100

to = 12.70 °C (Average annual air temperature)

Hgod = 288.1 mm (Average annual quantity of precipitation)

# **Erosion coefficients**

**Y = 1.04663 (Types of soil structures and allied types)** 

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

12.53 % (Decomposed limestone and marls)

74.29 % (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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13.18 % (Epieugleysol and Marshlands)
0 % (Good structured Chernozems and alluvial well-structured deposits)
0 % (Bare, compact igneous)
Xa = 0.60386 (Planning of the drainage basin, rate of drainage basin regulation)
0 % (Bare lands)
0 % (Plough-lands)
3.86 % (Orchards and vineyards)
91.03 % (Mountain pastures)
0 % (Meadows)
5.11 % (Degraded forests)
0 % (Well-constituted forests)
\phi = 0.40624 (Numerical coefficient of visible and clearly pointed processes of soil erosion)
0 % (Depth erosion)
0.36 % (80% of the river basin under rill and gully erosion)
15.23 % (50% of the river basin under rill and gully erosion)
0 % (100% of the river basin under surface erosion)
9.31 % (100% of the river basin under surface erosion, without visible furrows, ravines and
land slides)
0 % (50% of the river basin under surface erosion)
75.1 % (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 = 0.83336488812392 (Coefficient of the river basin form)

m = 0.32779414804125 (Coefficient of the watershed development)

B = 2.3764258555133 km (Average river basin width)

a = 0.4256 ((A)symmetry of the river basin)

**G** = 2.0296 (Density of the river network of the basin)

K = 1.0779220779221 (Coefficient of the river basin tortuousness)

 $H_{sr} = 1138.8112 \text{ m}$  (Average river basin altitude)

D = 179.8112 m (Average elevation difference of the river basin)  $I_{sr} = 31.14$  % (Average river basin decline)  $H_{leb} = 528$  m (The height of the local erosion base of the river basin)

 $E_r = 75.162124584854$  (Coefficient of the erosion energy of the river basins relief)

 $S_1 = 0.799$  (Coefficient of the regions permeability)

 $S_2 = 0.78978$  (Coefficient of the vegetation cover)

W = 0.43806234158527 m (Analytical presentation of the water retention in inflow)

 $2gDF^{1/2} = 296.98045996328 \text{ m km s}^{-1}$  (Energetic potential of water flow during torrent rains)

 $Q_{max} = 68.415090430654 \text{ m}^3 \text{ s}^{-1}$  (Maximal outflow from the river basin)

T = 1.170469991072 (Temperature coefficient of the region)

**Z** = 0.60943741550111 (Coefficient of the river basin erosion)

 $W_{qod} = 12600.480122475 \text{ m}^3 \text{ god}^{-1}$  (Production of erosion material in the river basin

 $R_u = 0.26729747435063$  (Coefficient of the deposit retention)

 $G_{god} = 3368.076512343 \text{ m}^3 \text{ god}^{-1} \text{ (Real soil losses)}$ 

 $G_{god} \text{ km}^{-2} = 134.72306049372 \text{ m}^3 \text{ km}^{-2} \text{ god}^{-1} \text{ (Real soil losses per km}^2\text{)}$ 

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