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# Web application for Intensity of Erosion and Outflow

**Name of the River Basin: Shirindareh S1-1**

**Country: Iran, Islamic Republic of**

**Year: 2019**

**GPS coordinates, latitude and longitude with Google Maps: 37.71,57.71**

## INPUT DATA

### Geometric characteristics of the river basins

**F = 14.96 km<sup>2</sup> (Surface area of the drainage basin)**

**O = 18.21 km (Length of the watershed)**

**Fv = 9.27 km<sup>2</sup> (Surface area of greater portion of the drainage basin)**

**Fm = 5.68 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)**

**Lv = 7.06 km (Natural length of main water course)**

**Lb = 8.56 km (Length of the drainage basin measured by a series of parallel lines)**

### Topographic characteristics of the river basins

**Contour line length - Liz [km]: ["1.58 ", "9.34 ", "10.65 ", "7.89 ", "5.84 ", "2.32 "]**

**The area between the two neighboring contour lines - f [km<sup>2</sup>]: ["0.3089 ", "2.606 ", "3.84 ", "4.586 ", "2.156 ", "1.452 ", "0.01 "]**

**h0 = 1400 m (Altitude of the initial contour)**

**Δh = 100 m (Equidistance)**

**Hmin = 1361 (Lowest altitude in the drainage basin)**

**Hmax = 1963 (Highest altitude in the drainage basin)**

### Hydrological characteristics of the river basins

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$\Sigma L = 28.33$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

$L_m = 6.72$  km (The shortest distance between the fountain (head and mouth))

### Water permeability

$f_p = 0.117$  (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

$f_{pp} = 0.517$  (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

$f_o = 0.366$  (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

$f_s = 0.00$  (Part of the surface area of the drainage basin under the forest)

$f_t = 1.00$  (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

$f_g = 0.00$  (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

### Meteorological data

$h_b = 35.61$  mm (Level of torrent rain)

$U_p$  (years) = 100

$t_o = 10.20$  °C (Average annual air temperature)

$H_{god} = 328.4$  mm (Average annual quantity of precipitation)

### Erosion coefficients

$Y = 1.11203$  (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

78.14 % (Decomposed limestone and marls)

2.39 % (Serpentines, red sand stones, flishe deposits)

7.81 % (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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**11.66 % (Epieugleysol and Marshlands)**

**0 % (Good structured Chernozems and alluvial well-structured deposits)**

**0 % (Bare, compact igneous)**

**Xa = 0.6 (Planning of the drainage basin, rate of drainage basin regulation)**

**0 % (Bare lands)**

**0 % (Plough-lands)**

**0 % (Orchards and vineyards)**

**100 % (Mountain pastures)**

**0 % (Meadows)**

**0 % (Degraded forests)**

**0 % (Well-constituted forests)**

**$\phi = 0.80121$  (Numerical coefficient of visible and clearly pointed processes of soil erosion)**

**1.79 % (Depth erosion)**

**79.43 % (80% of the river basin under rill and gully erosion)**

**2.42 % (50% of the river basin under rill and gully erosion)**

**0 % (100% of the river basin under surface erosion)**

**0 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)**

**0 % (50% of the river basin under surface erosion)**

**16.36 % (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**

**A = 0.50296742209632 (Coefficient of the river basin form)**

**m = 0.51491313716007 (Coefficient of the watershed development)**

**B = 1.7476635514019 km (Average river basin width)**

**a = 0.48026755852843 ((A)symmetry of the river basin)**

**G = 1.8937165775401 (Density of the river network of the basin)**

**K = 1.0505952380952 (Coefficient of the river basin tortuousness)**

**H<sub>sr</sub> = 1617.8176102941 m (Average river basin altitude)**

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**D = 256.8176102941 m (Average elevation difference of the river basin)**

**I<sub>sr</sub> = 25.147058823529 % (Average river basin decline)**

**H<sub>leb</sub> = 602 m (The height of the local erosion base of the river basin)**

**E<sub>r</sub> = 97.434715227798 (Coefficient of the erosion energy of the river basins relief)**

**S<sub>1</sub> = 0.7747 (Coefficient of the regions permeability)**

**S<sub>2</sub> = 0.8 (Coefficient of the vegetation cover)**

**W = 0.47786697717591 m (Analytical presentation of the water retention in inflow)**

**2gDF<sup>1/2</sup> = 274.55395143577 m km s<sup>-1</sup> (Energetic potential of water flow during torrent rains)**

**Q<sub>max</sub> = 40.897627725282 m<sup>3</sup> s<sup>-1</sup> (Maximal outflow from the river basin)**

**T = 1.0583005244258 (Temperature coefficient of the region)**

**Z = 0.86917049800409 (Coefficient of the river basin erosion)**

**W<sub>god</sub> = 13235.827277893 m<sup>3</sup> god<sup>-1</sup> (Production of erosion material in the river basin)**

**R<sub>u</sub> = 0.25352357013502 (Coefficient of the deposit retention)**

**G<sub>god</sub> = 3355.5941851818 m<sup>3</sup> god<sup>-1</sup> (Real soil losses)**

**G<sub>god</sub> km<sup>-2</sup> = 224.30442414317 m<sup>3</sup> km<sup>-2</sup> god<sup>-1</sup> (Real soil losses per km<sup>2</sup>)**

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<http://www.wintero.me>