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# Web application for Intensity of Erosion and Outflow

**Name of the River Basin: Shirindareh S2-1**

**Country: Iran, Islamic Republic of**

**Year: 2019**

**GPS coordinates, latitude and longitude with Google Maps: 37.87,57.77**

## INPUT DATA

### Geometric characteristics of the river basins

**F = 46.77 km<sup>2</sup> (Surface area of the drainage basin)**

**O = 36.33 km (Length of the watershed)**

**Fv = 31.84 km<sup>2</sup> (Surface area of greater portion of the drainage basin)**

**Fm = 14.94 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)**

**Lv = 12.87 km (Natural length of main water course)**

**Lb = 12.18 km (Length of the drainage basin measured by a series of parallel lines)**

### Topographic characteristics of the river basins

**Contour line length - Liz [km]: ["2.58 ", "12.27 ", "11.36 ", "17.12 ", "20.42 ", "19.10 ", "20.60 ", "14.24 ", "12.27 ", "2.91 ", "0.24 "]**

**The area between the two neighboring contour lines - f [km<sup>2</sup>]: ["0.15 ", "2.44 ", "4.45 ", "9.64 ", "7.35 ", "7.27 ", "5.91 ", "3.94 ", "3.64 ", "1.74 ", "0.12 ", "0.12 "]**

**h0 = 1500 m (Altitude of the initial contour)**

**Δh = 100 m (Equidistance)**

**Hmin = 1471 (Lowest altitude in the drainage basin)**

**Hmax = 2514 (Highest altitude in the drainage basin)**

### Hydrological characteristics of the river basins

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$\Sigma L = 71.79$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

$L_m = 10.59$  km (The shortest distance between the fountain (head and mouth))

### Water permeability

$f_p = 0.15$  (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

$f_{pp} = 0.48$  (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

$f_o = 0.37$  (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

$f_s = 0.30320$  (Part of the surface area of the drainage basin under the forest)

$f_t = 0.55780$  (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

$f_g = 0.13900$  (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

### Meteorological data

$h_b = 37.57$  mm (Level of torrent rain)

$U_p$  (years) = 100

$t_o = 8.70$  °C (Average annual air temperature)

$H_{god} = 352$  mm (Average annual quantity of precipitation)

### Erosion coefficients

$Y = 1.11222$  (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

85.37 % (Decomposed limestone and marls)

0 % (Serpentines, red sand stones, flische 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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**14.63 % (Epieugleysol and Marshlands)**

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

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

**Xa = 0.6417 (Planning of the drainage basin, rate of drainage basin regulation)**

**0 % (Bare lands)**

**13.9 % (Plough-lands)**

**0 % (Orchards and vineyards)**

**55.78 % (Mountain pastures)**

**0 % (Meadows)**

**30.32 % (Degraded forests)**

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

**$\phi = 0.57135$  (Numerical coefficient of visible and clearly pointed processes of soil erosion)**

**0 % (Depth erosion)**

**45 % (80% of the river basin under rill and gully erosion)**

**0.27 % (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)**

**54.73 % (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 = 0.55045454545455 (Coefficient of the river basin form)**

**m = 0.5308721346647 (Coefficient of the watershed development)**

**B = 3.8399014778325 km (Average river basin width)**

**a = 0.7225309961522 ((A)symmetry of the river basin)**

**G = 1.5349583066068 (Density of the river network of the basin)**

**K = 1.2152974504249 (Coefficient of the river basin tortuousness)**

**H<sub>sr</sub> = 1912.5863801582 m (Average river basin altitude)**

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**D = 441.5863801582 m (Average elevation difference of the river basin)**

**I<sub>sr</sub> = 28.460551635664 % (Average river basin decline)**

**H<sub>leb</sub> = 1043 m (The height of the local erosion base of the river basin)**

**E<sub>r</sub> = 126.95289043891 (Coefficient of the erosion energy of the river basins relief)**

**S<sub>1</sub> = 0.766 (Coefficient of the regions permeability)**

**S<sub>2</sub> = 0.76716 (Coefficient of the vegetation cover)**

**W = 0.49206242514935 m (Analytical presentation of the water retention in inflow)**

**2gDF<sup>1/2</sup> = 636.56245718702 m km s<sup>-1</sup> (Energetic potential of water flow during torrent rains)**

**Q<sub>max</sub> = 101.32051920829 m<sup>3</sup> s<sup>-1</sup> (Maximal outflow from the river basin)**

**T = 0.98488578017961 (Temperature coefficient of the region)**

**Z = 0.78853303930945 (Coefficient of the river basin erosion)**

**W<sub>god</sub> = 35667.741914723 m<sup>3</sup> god<sup>-1</sup> (Production of erosion material in the river basin)**

**R<sub>u</sub> = 0.35027114738243 (Coefficient of the deposit retention)**

**G<sub>god</sub> = 12493.38088501 m<sup>3</sup> god<sup>-1</sup> (Real soil losses)**

**G<sub>god</sub> km<sup>-2</sup> = 267.12381622858 m<sup>3</sup> km<sup>-2</sup> god<sup>-1</sup> (Real soil losses per km<sup>2</sup>)**

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