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# Web application for Intensity of Erosion and Outflow

**Name of the River Basin: Shirindareh S5-2**

**Country: Iran, Islamic Republic of**

**Year: 2019**

**GPS coordinates, latitude and longitude with Google Maps: 37.82,57.5**

## INPUT DATA

### Geometric characteristics of the river basins

**F = 60.33 km<sup>2</sup> (Surface area of the drainage basin)**

**O = 39.67 km (Length of the watershed)**

**Fv = 41.78 km<sup>2</sup> (Surface area of greater portion of the drainage basin)**

**Fm = 18.55 km<sup>2</sup> (Surface area of smaller portion of the drainage basin)**

**Lv = 14.29 km (Natural length of main water course)**

**Lb = 14.55 km (Length of the drainage basin measured by a series of parallel lines)**

### Topographic characteristics of the river basins

**Contour line length - Liz [km]: ["8.27 ", "27.19 ", "42.20 ", "51.81 ", "32.19 ", "16.83 ", "18.43 ", "20.10 ", "8.06 "]**

**The area between the two neighboring contour lines - f [km<sup>2</sup>]: ["3.20 ", "0.90 ", "9.96 ", "14.76 ", "10.40 ", "4.69 ", "3.66 ", "4.47 ", "2.76 ", "5.53 "]**

**h0 = 1200 m (Altitude of the initial contour)**

**Δh = 100 m (Equidistance)**

**Hmin = 1114 (Lowest altitude in the drainage basin)**

**Hmax = 2045 (Highest altitude in the drainage basin)**

### Hydrological characteristics of the river basins

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$\Sigma L = 109.19$  km (The total length of the main watercourse with tributaries of 1<sup>st</sup> and 2<sup>nd</sup> class)

$L_m = 12.53$  km (The shortest distance between the fountain (head and mouth))

### Water permeability

$f_p = 0.09$  (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

$f_{pp} = 0.5$  (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

$f_o = 0.41$  (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

$f_s = 0$  (Part of the surface area of the drainage basin under the forest)

$f_t = 0.96410$  (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

$f_g = 0.03590$  (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

### Meteorological data

$h_b = 34.8$  mm (Level of torrent rain)

$U_p$  (years) = 100

$t_o = 11.80$  °C (Average annual air temperature)

$H_{god} = 318.6$  mm (Average annual quantity of precipitation)

### Erosion coefficients

$Y = 1.078$  (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

23.15 % (Decomposed limestone and marls)

67.82 % (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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**9.03 % (Epieugleysol and Marshlands)**

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

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

**Xa = 0.61975 (Planning of the drainage basin, rate of drainage basin regulation)**

**0 % (Bare lands)**

**3.59 % (Plough-lands)**

**8.98 % (Orchards and vineyards)**

**87.43 % (Mountain pastures)**

**0 % (Meadows)**

**0 % (Degraded forests)**

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

**$\phi = 0.46455$  (Numerical coefficient of visible and clearly pointed processes of soil erosion)**

**0 % (Depth erosion)**

**1.18 % (80% of the river basin under rill and gully erosion)**

**30.27 % (50% of the river basin under rill and gully erosion)**

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

**2.04 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)**

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

**66.51 % (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 = 0.54133310006998 (Coefficient of the river basin form)**

**m = 0.51899196492862 (Coefficient of the watershed development)**

**B = 4.1463917525773 km (Average river basin width)**

**a = 0.77009779545831 ((A)symmetry of the river basin)**

**G = 1.8098789988397 (Density of the river network of the basin)**

**K = 1.1404628890662 (Coefficient of the river basin tortuousness)**

**H<sub>sr</sub> = 1570.9402453174 m (Average river basin altitude)**

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**D = 456.9402453174 m (Average elevation difference of the river basin)**

**I<sub>sr</sub> = 37.308138571192 % (Average river basin decline)**

**H<sub>leb</sub> = 931 m (The height of the local erosion base of the river basin)**

**E<sub>r</sub> = 106.33261071548 (Coefficient of the erosion energy of the river basins relief)**

**S<sub>1</sub> = 0.796 (Coefficient of the regions permeability)**

**S<sub>2</sub> = 0.80718 (Coefficient of the vegetation cover)**

**W = 0.45589171053804 m (Analytical presentation of the water retention in inflow)**

**2gDF<sup>1/2</sup> = 735.43766703914 m km s<sup>-1</sup> (Energetic potential of water flow during torrent rains)**

**Q<sub>max</sub> = 116.61531998994 m<sup>3</sup> s<sup>-1</sup> (Maximal outflow from the river basin)**

**T = 1.1313708498985 (Temperature coefficient of the region)**

**Z = 0.71843371458673 (Coefficient of the river basin erosion)**

**W<sub>god</sub> = 41601.980997877 m<sup>3</sup> god<sup>-1</sup> (Production of erosion material in the river basin)**

**R<sub>u</sub> = 0.35056074757386 (Coefficient of the deposit retention)**

**G<sub>god</sub> = 14584.021559169 m<sup>3</sup> god<sup>-1</sup> (Real soil losses)**

**G<sub>god</sub> km<sup>-2</sup> = 241.73746990169 m<sup>3</sup> km<sup>-2</sup> god<sup>-1</sup> (Real soil losses per km<sup>2</sup>)**

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