# Web application for Intensity of Erosion and Outflow

## Name of the River Basin: Shirindareh S1-4

## Country: Iran, Islamic Republic of

## Year: 2019

## GPS coordinates, latitude and longitude with Google Maps: 37.77,57.88

## INPUT DATA

### Geometric characteristics of the river basins

**F = 59.05 km$^2$ (Surface area of the drainage basin)**

**O = 39.92 km (Length of the watershed)**

**Fv = 40.01 km$^2$ (Surface area of greater portion of the drainage basin)**

**Fm = 19.04 km$^2$ (Surface area of smaller portion of the drainage basin)**

**Lv = 13.3 km (Natural length of main water course)**

**Lb = 7.91 km (Length of the drainage basin measured by a series of paraller lines)**

### Topograpfic characteristics of the river basins

**Contour line length - Liz [km]: ["0.37 ","20.94 ","39.66 ","45.89 ","36.11 ","21.08 ","19.30 ","18.97 ","16.05 ","3.71 ","1.07 "]**

**The area between the two neighboring contour lines - f [km$^2$]: ["0.009 ","5.239 ","10.458 ","10.044 ","9.478 ","5.985 ","5.239 ","4.871 ","4.312 ","2.799 ","0.542 ","0.076 "]**

**h0 = 1600 m (Altitude of the initial contour)**

**▲h = 100 m (Equidistance)**

**Hmin = 1595 (Lowest altitude in the drainage basin)**

**Hmax = 2687 (Highest altitude in the draigane basin**

### Hydrological characteristics of the river basins

**ΣL = 109.12 km (The total length of the main watercourse with tributaries of 1st and 2nd class)**

**Lm = 11.03 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 = 0.31 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))**

**fo = 0.56 (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 = 0.00 (Part of the surface area of the drainage basin under the forest)**

**ft = 0.77120 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)**

**fg = 0.22880 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)**

## Meteorological data

**hb = 38.07 mm (Level of torrent rain)**

**Up (years) = 100**

**to = 8.30 °C (Average annual air temperature)**

**Hgod = 358 mm (Average annual quantity of precipitation)**

## Erosion coefficients

**Y = 1.09655 (Types of soil structures and allied types)**

**0 % (Sand, gravel and incoherent soils)**

**0 % (Saline soils)**

**63.25 % (Decomposed limestone and marls)**

**23.41 % (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)**

**13.34 % (Epieugleysol and Marshlands)**

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

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

**Xa = 0.67293 (Planning of the drainage basin, rate of drainage basin regulation)**

**0 % (Bare lands)**

**22.88 % (Plough-lands)**

**4.29 % (Orchards and vineyards)**

**72.83 % (Mountain pastures)**

**0 % (Meadows)**

**0 % (Degraded forests)**

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

**ϕ = 0.39964 (Numerical coefficient of visible and clearly pointed processes of soil erosion)**

**0 % (Depth erosion)**

**14.9 % (80% of the river basin under rill and gully erosion)**

**2.61 % (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)**

**79.68 % (20% of the river basin under surface erosion)**

**2.81 % (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 = 0.58529323308271 (Coefficient of the river basin form)**

**m = 0.48824382350408 (Coefficient of the watershed development)**

**B = 7.4652338811631 km (Average river basin width)**

**a = 0.71024555461473 ((A)symmetry of the river basin)**

**G = 1.8479254868755 (Density of the river network of the basin)**

**K = 1.2058023572076 (Coefficient of the river basin tortuousness)**

**$H_{sr}$ = 1982.9014987299 m (Average river basin altitude)**

**D = 387.9014987299 m (Average elevation difference of the river basin)**

**$I_{sr}$ = 37.790008467401 % (Average river basin decline)**

**$H_{leb}$ = 1092 m (The height of the local erosion base of the river basin)**

**$E_r$ = 125.39141122125 (Coefficient of the erosion energy of the river basins relief)**

**$S_1$ = 0.829 (Coefficient of the regions permeability)**

**$S_2$ = 0.84576 (Coefficient of the vegetation cover)**

**W = 0.49751341878769 m (Analytical presentation of the water retention in inflow)**

**$2gDF^{1/2}$ = 670.37866036294 m km $s^{-1}$ (Energetic potential of water flow during torrent rains)**

**$Q_{max}$ = 136.8674434718 $m^3$ $s^{-1}$ (Maximal outflow from the river basin)**

**T = 0.9643650760993 (Temperature coefficient of the region)**

**Z = 0.74850930284395 (Coefficient of the river basin erosion)**

**$W_{god}$ = 41475.351858459 $m^3$ $god^{-1}$ (Production of erosion material in the river basin**

**$R_u$ = 0.33777699656861 (Coefficient of the deposit retention)**

**$G_{god}$ = 14009.419782377 $m^3$ $god^{-1}$ (Real soil losses)**

**$G_{god}$ $km^{-2}$ = 237.2467363654 $m^3$ $km^{-2}$ $god^{-1}$ (Real soil losses per $km^2$)**