# Web application for Intensity of Erosion and Outflow

## Name of the River Basin: Shirindareh S4-int

## Country: Iran, Islamic Republic of

## Year: 2019

## GPS coordinates, latitude and longitude with Google Maps: 37.75,57.48

## INPUT DATA

### Geometric characteristics of the river basins

**F = 14.53 km$^2$ (Surface area of the drainage basin)**

**O = 25.5 km (Length of the watershed)**

**Fv = 8.02 km$^2$ (Surface area of greater portion of the drainage basin)**

**Fm = 6.51 km$^2$ (Surface area of smaller portion of the drainage basin)**

**Lv = 3.9 km (Natural length of main water course)**

**Lb = 4.53 km (Length of the drainage basin measured by a series of paraller lines)**

### Topograpfic characteristics of the river basins

**Contour line length - Liz [km]: ["14.07 ","11.33 ","5.06 ","2.92 ","0.67 "]**

**The area between the two neighboring contour lines - f [km$^2$]: ["6.06 ","3.92 ","2.33 ","1.48 ","0.73 ","0.01 "]**

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

**Δh = 100 m (Equidistance)**

**Hmin = 1113 (Lowest altitude in the drainage basin)**

**Hmax = 1659 (Highest altitude in the draigane basin**

### Hydrological characteristics of the river basins

**ΣL = 33.05 km (The total length of the main watercourse with tributaries of 1st and 2nd class)**

**Lm = 2.97 km (The shortest distance between the fountain (head and mouth))**

## Water permeability

**fp = 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))**

**fpp = 0.25 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))**

**fo = 0.6 (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 (Part of the surface area of the drainage basin under the forest)**

**ft = 0.95360 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)**

**fg = 0.04640 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)**

## Meteorological data

**hb = 33.1 mm (Level of torrent rain)**

**Up (years) = 100**

**to = 12.10 °C (Average annual air temperature)**

**Hgod = 297.9 mm (Average annual quantity of precipitation)**

## Erosion coefficients

**Y = 1.07916 (Types of soil structures and allied types)**

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

**0 % (Saline soils)**

**51.26 % (Decomposed limestone and marls)**

**34.32 % (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)**

**14.42 % (Epieugleysol and Marshlands)**

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

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

**Xa = 0.61963 (Planning of the drainage basin, rate of drainage basin regulation)**

**0 % (Bare lands)**

**4.64 % (Plough-lands)**

**5.71 % (Orchards and vineyards)**

**89.65 % (Mountain pastures)**

**0 % (Meadows)**

**0 % (Degraded forests)**

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

**ϕ = 0.45604 (Numerical coefficient of visible and clearly pointed processes of soil erosion)**

**0 % (Depth erosion)**

**1.26 % (80% of the river basin under rill and gully erosion)**

**11.75 % (50% of the river basin under rill and gully erosion)**

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

**29.91 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)**

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

**57.08 % (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 = 1.275 (Coefficient of the river basin form)**

**m = 0.28862029607638 (Coefficient of the watershed development)**

**B = 3.2075055187638 km (Average river basin width)**

**a = 0.20784583620096 ((A)symmetry of the river basin)**

**G = 2.2746042670337 (Density of the river network of the basin)**

**K = 1.3131313131313 (Coefficient of the river basin tortuousness)**

**$H_{sr}$ = 1262.7450103235 m (Average river basin altitude)**

**D = 149.7450103235 m (Average elevation difference of the river basin)**

**$I_{sr}$ = 23.434273916036 % (Average river basin decline)**

**$H_{leb}$ = 546 m (The height of the local erosion base of the river basin)**

**$E_r$ = 89.017699478055 (Coefficient of the erosion energy of the river basins relief)**

**$S_1$ = 0.835 (Coefficient of the regions permeability)**

**$S_2$ = 0.80928 (Coefficient of the vegetation cover)**

**W = 0.45278640126548 m (Analytical presentation of the water retention in inflow)**

**$2gDF^{1/2}$ = 206.61340203387 m km $s^{-1}$ (Energetic potential of water flow during torrent rains)**

**$Q_{max}$ = 80.602280886468 $m^3$ $s^{-1}$ (Maximal outflow from the river basin)**

**T = 1.144552314226 (Temperature coefficient of the region)**

**Z = 0.62864577591656 (Coefficient of the river basin erosion)**

**$W_{god}$ = 7757.6581967986 $m^3$ $god^{-1}$ (Production of erosion material in the river basin**

**$R_u$ = 0.28116513455914 (Coefficient of the deposit retention)**

**$G_{god}$ = 2181.1830107667 $m^3$ $god^{-1}$ (Real soil losses)**

**$G_{god}$ $km^{-2}$ = 150.11583005965 $m^3$ $km^{-2}$ $god^{-1}$ (Real soil losses per $km^2$)**