# Web application for Intensity of Erosion and Outflow

## Name of the River Basin: Shirindareh S1-2

## Country: Iran, Islamic Republic of

## Year: 2019

## GPS coordinates, latitude and longitude with Google Maps: 37.71,57.78

## INPUT DATA

### Geometric characteristics of the river basins

**F = 56.06 km$^2$ (Surface area of the drainage basin)**

**O = 40.28 km (Length of the watershed)**

**Fv = 31.64 km$^2$ (Surface area of greater portion of the drainage basin)**

**Fm = 24.42 km$^2$ (Surface area of smaller portion of the drainage basin)**

**Lv = 7.54 km (Natural length of main water course)**

**Lb = 11.81 km (Length of the drainage basin measured by a series of paraller lines)**

### Topograpfic characteristics of the river basins

**Contour line length - Liz [km]: ["6.76 ","36.28 ","45.62 ","28.27 ","16.62 ","10.44 ","1.85 "]**

**The area between the two neighboring contour lines - f [km$^2$]: ["1.18 ","11.25 ","20.24 ","11.58 ","6.66 ","3.78 ","1.35 ","0.02 "]**

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

**Δh = 100 m (Equidistance)**

**Hmin = 1426 (Lowest altitude in the drainage basin)**

**Hmax = 2189 (Highest altitude in the draigane basin**

### Hydrological characteristics of the river basins

**ΣL = 128.97 km (The total length of the main watercourse with tributaries of 1st and 2nd class)**

**Lm = 6.59 km (The shortest distance between the fountain (head and mouth))**

## Water permeability

**fp = 0.062 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))**

**fpp = 0.406 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))**

**fo = 0.532 (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 = 0.50690 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)**

**fg = 0.49310 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)**

## Meteorological data

**hb = 36.16 mm (Level of torrent rain)**

**Up (years) = 100**

**to = 9.80 °C (Average annual air temperature)**

**Hgod = 335 mm (Average annual quantity of precipitation)**

## Erosion coefficients

**Y = 1.1049 (Types of soil structures and allied types)**

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

**0 % (Saline soils)**

**64.93 % (Decomposed limestone and marls)**

**0 % (Serpentines, red sand stones, flishe deposits)**

**28.83 % (Podzols and parapodzols, decomposed schist)**

**0 % (Solid and Schist limestone, Terra Rosa and Humic soil)**

**0 % (Brown forest soils and Mountain soils)**

6.24 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.75421 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

49.31 % (Plough-lands)

6.28 % (Orchards and vineyards)

44.41 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

$\phi$ = 0.59008 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

46.9 % (80% of the river basin under rill and gully erosion)

1.89 % (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)

50.44 % (20% of the river basin under surface erosion)

0.77 % (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 = 1.041724137931 (Coefficient of the river basin form)

m = 0.28407948184259 (Coefficient of the watershed development)

B = 4.7468247248095 km (Average river basin width)

a = 0.2575811630396 ((A)symmetry of the river basin)

G = 2.3005708169818 (Density of the river network of the basin)

K = 1.144157814871 (Coefficient of the river basin tortuousness)

$H_{sr}$ = 1700.4500535141 m (Average river basin altitude)

**D = 274.4500535141 m (Average elevation difference of the river basin)**

**$I_{sr}$ = 26.014983945772 % (Average river basin decline)**

**$H_{leb}$ = 763 m (The height of the local erosion base of the river basin)**

**$E_r$ = 88.758793842919 (Coefficient of the erosion energy of the river basins relief)**

**$S_1$ = 0.841 (Coefficient of the regions permeability)**

**$S_2$ = 0.89862 (Coefficient of the vegetation cover)**

**W = 0.48384640803958 m (Analytical presentation of the water retention in inflow)**

**$2gDF^{1/2}$ = 549.42410340283 m km $s^{-1}$ (Energetic potential of water flow during torrent rains)**

**$Q_{max}$ = 209.28593022603 $m^3$ $s^{-1}$ (Maximal outflow from the river basin)**

**T = 1.0392304845413 (Temperature coefficient of the region)**

**Z = 0.91676667426356 (Coefficient of the river basin erosion)**

**$W_{god}$ = 53820.518508813 $m^3$ $god^{-1}$ (Production of erosion material in the river basin**

**$R_u$ = 0.37912008885213 (Coefficient of the deposit retention)**

**$G_{god}$ = 20404.439759129 $m^3$ $god^{-1}$ (Real soil losses)**

**$G_{god}$ $km^{-2}$ = 363.97502246039 $m^3$ $km^{-2}$ $god^{-1}$ (Real soil losses per $km^2$)**