
Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S9-2

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.86,57.18

INPUT DATA

Geometric characteristics of the river basins

F = 36.21 km² (Surface area of the drainage basin)

O = 28 km (Length of the watershed)

Fv = 21.32 km² (Surface area of greater portion of the drainage basin)

Fm = 14.89 km² (Surface area of smaller portion of the drainage basin)

Lv = 10.58 km (Natural length of main water course)

Lb = 10.39 km (Length of the drainage basin measured by a series of parallel lines)

Topographic characteristics of the river basins

Contour line length - Liz [km]: ["3.39 ", "13.71 ", "23.70 ", "24.22 ", "24.65 ", "16.37 ", "0.13 "]

The area between the two neighboring contour lines - f [km²]: ["0.49 ", "4.56 ", "7.46 ", "5.97 ", "7.39 ", "9.26 ", "0.82 ", "0.26 "]

h0 = 1100 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 1065 (Lowest altitude in the drainage basin)

Hmax = 1701 (Highest altitude in the drainage basin)

Hydrological characteristics of the river basins

$\Sigma L = 76.54$ km (The total length of the main watercourse with tributaries of 1st and 2nd class)

$L_m = 8.95$ km (The shortest distance between the fountain (head and mouth))

Water permeability

$f_p = 0.23$ (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

$f_{pp} = 0.32$ (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

$f_o = 0.45$ (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

$f_s = 0.47360$ (Part of the surface area of the drainage basin under the forest)

$f_t = 0.33710$ (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

$f_g = 0.18920$ (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

$h_b = 34$ mm (Level of torrent rain)

U_p (years) = 100

$t_o = 11.40$ °C (Average annual air temperature)

$H_{god} = 308.8$ mm (Average annual quantity of precipitation)

Erosion coefficients

$Y = 1.00402$ (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

20.67 % (Decomposed limestone and marls)

56 % (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)

23.33 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.6567 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

18.92 % (Plough-lands)

0 % (Orchards and vineyards)

33.71 % (Mountain pastures)

0 % (Meadows)

47.36 % (Degraded forests)

0 % (Well-constituted forests)

$\phi = 0.62915$ (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

31.62 % (80% of the river basin under rill and gully erosion)

19.72 % (50% of the river basin under rill and gully erosion)

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

13.61 % (100% of the river basin under surface erosion, without visible furrows, ravines and land slides)

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

35.05 % (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 = 0.51606805293006 (Coefficient of the river basin form)

m = 0.49598263698763 (Coefficient of the watershed development)

B = 3.4850818094321 km (Average river basin width)

a = 0.35515051090859 ((A)symmetry of the river basin)

G = 2.113780723557 (Density of the river network of the basin)

K = 1.1821229050279 (Coefficient of the river basin tortuousness)

H_{sr} = 1381.4569179785 m (Average river basin altitude)

D = 316.4569179785 m (Average elevation difference of the river basin)

I_{sr} = 29.320629660315 % (Average river basin decline)

H_{leb} = 636 m (The height of the local erosion base of the river basin)

E_r = 82.527770312302 (Coefficient of the erosion energy of the river basins relief)

S₁ = 0.766 (Coefficient of the regions permeability)

S₂ = 0.74304 (Coefficient of the vegetation cover)

W = 0.45139054982673 m (Analytical presentation of the water retention in inflow)

2gDF^{1/2} = 474.15579306809 m km s⁻¹ (Energetic potential of water flow during torrent rains)

Q_{max} = 62.866815511318 m³ s⁻¹ (Maximal outflow from the river basin)

T = 1.113552872566 (Temperature coefficient of the region)

Z = 0.77184658103654 (Coefficient of the river basin erosion)

W_{god} = 26525.465178389 m³ god⁻¹ (Production of erosion material in the river basin)

R_u = 0.28928168466253 (Coefficient of the deposit retention)

G_{god} = 7673.3312532614 m³ god⁻¹ (Real soil losses)

G_{god} km⁻² = 211.91193740021 m³ km⁻² god⁻¹ (Real soil losses per km²)

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