
Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S7-intA

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.91,57.48

INPUT DATA

Geometric characteristics of the river basins

F = 84.84 km² (Surface area of the drainage basin)

O = 30.93 km (Length of the watershed)

Fv = 65.33 km² (Surface area of greater portion of the drainage basin)

Fm = 19.51 km² (Surface area of smaller portion of the drainage basin)

Lv = 14.83 km (Natural length of main water course)

Lb = 11.54 km (Length of the drainage basin measured by a series of parallel lines)

Topographic characteristics of the river basins

Contour line length - Liz [km]: ["17.54 ", "31.82 ", "65.71 ", "52.77 ", "44.33 ", "43.34 ", "30.02 ", "12.12 ", "11.21 ", "8.13 ", "5.44 ", "0.32 "]

The area between the two neighboring contour lines - f [km²]: ["5.03 ", "9.64 ", "15.73 ", "16.21 ", "11.60 ", "10.69 ", "7.90 ", "2.28 ", "2.16 ", "1.63 ", "1.70 ", "0.26 ", "0.01 "]

h0 = 1300 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 1201 (Lowest altitude in the drainage basin)

Hmax = 2405 (Highest altitude in the drainage basin)

Hydrological characteristics of the river basins

$\Sigma L = 154.83$ km (The total length of the main watercourse with tributaries of 1st and 2nd class)

$L_m = 14.23$ 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))

$f_{pp} = 0.06$ (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

$f_o = 0.85$ (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

$f_s = 0.38530$ (Part of the surface area of the drainage basin under the forest)

$f_t = 0.42850$ (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

$f_g = 0.18610$ (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

$h_b = 35.52$ mm (Level of torrent rain)

U_p (years) = 100

$t_o = 10.30$ °C (Average annual air temperature)

$H_{god} = 327.3$ mm (Average annual quantity of precipitation)

Erosion coefficients

$Y = 1.0725$ (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

40.75 % (Decomposed limestone and marls)

45.6 % (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)

13.65 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.65734 (Planning of the drainage basin, rate of drainage basin regulation)

0.19 % (Bare lands)

18.42 % (Plough-lands)

1.38 % (Orchards and vineyards)

41.47 % (Mountain pastures)

0 % (Meadows)

38.53 % (Degraded forests)

0 % (Well-constituted forests)

$\phi = 0.48982$ (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

11.92 % (80% of the river basin under rill and gully erosion)

23.66 % (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)

64.42 % (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 = 0.40669925826028 (Coefficient of the river basin form)

m = 0.45418824415151 (Coefficient of the watershed development)

B = 7.3518197573657 km (Average river basin width)

a = 1.0801508722301 ((A)symmetry of the river basin)

G = 1.8249646393211 (Density of the river network of the basin)

K = 1.0421644413212 (Coefficient of the river basin tortuousness)

H_{sr} = 1609.3710513909 m (Average river basin altitude)

D = 408.3710513909 m (Average elevation difference of the river basin)

I_{sr} = 38.042197076851 % (Average river basin decline)

H_{leb} = 1204 m (The height of the local erosion base of the river basin)

E_r = 126.27763781647 (Coefficient of the erosion energy of the river basins relief)

S₁ = 0.928 (Coefficient of the regions permeability)

S₂ = 0.76008 (Coefficient of the vegetation cover)

W = 0.46400727329183 m (Analytical presentation of the water retention in inflow)

2gDF^{1/2} = 824.47464727551 m km s⁻¹ (Energetic potential of water flow during torrent rains)

Q_{max} = 109.74449776998 m³ s⁻¹ (Maximal outflow from the river basin)

T = 1.0630145812735 (Temperature coefficient of the region)

Z = 0.78015236219917 (Coefficient of the river basin erosion)

W_{god} = 63900.594893718 m³ god⁻¹ (Production of erosion material in the river basin)

R_u = 0.28626661998858 (Coefficient of the deposit retention)

G_{god} = 18292.607315484 m³ god⁻¹ (Real soil losses)

G_{god} km⁻² = 215.61300466153 m³ km⁻² god⁻¹ (Real soil losses per km²)

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