
Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S2-2

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.88,57.71

INPUT DATA

Geometric characteristics of the river basins

F = 22.3 km² (Surface area of the drainage basin)

O = 28.29 km (Length of the watershed)

Fv = 14.72 km² (Surface area of greater portion of the drainage basin)

Fm = 7.58 km² (Surface area of smaller portion of the drainage basin)

Lv = 11.28 km (Natural length of main water course)

Lb = 9.96 km (Length of the drainage basin measured by a series of parallel lines)

Topographic characteristics of the river basins

Contour line length - Liz [km]: ["2.26 ", "2.02 ", "8.62 ", "15.76 ", "3.69 ", "4.13 "]

The area between the two neighboring contour lines - f [km²]: ["0.14 ", "1.88 ", "13.73 ", "3.95 ", "1.55 ", "0.97 ", "0.08 "]

h0 = 1500 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 1469 (Lowest altitude in the drainage basin)

Hmax = 2075 (Highest altitude in the drainage basin)

Hydrological characteristics of the river basins

$\Sigma L = 23.27$ km (The total length of the main watercourse with tributaries of 1st and 2nd class)

$L_m = 6.77$ km (The shortest distance between the fountain (head and mouth))

Water permeability

$f_p = 0.38$ (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

$f_{pp} = 0.24$ (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

$f_o = 0.38$ (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

$f_s = 0.00$ (Part of the surface area of the drainage basin under the forest)

$f_t = 0.24160$ (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

$f_g = 0.75840$ (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

$h_b = 36.07$ mm (Level of torrent rain)

U_p (years) = 100

$t_o = 9.8$ °C (Average annual air temperature)

$H_{god} = 333.9$ mm (Average annual quantity of precipitation)

Erosion coefficients

$Y = 0.96876$ (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

61.46 % (Decomposed limestone and marls)

0 % (Serpentines, red sand stones, flische deposits)

0 % (Podzols and parapodzols, decomposed schist)

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

0 % (Brown forest soils and Mountain soils)

38.54 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.82752 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

75.84 % (Plough-lands)

0 % (Orchards and vineyards)

24.16 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

$\phi = 0.79663$ (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

82.63 % (80% of the river basin under rill and gully erosion)

0.17 % (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)

17.2 % (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 = 0.48905585106383 (Coefficient of the river basin form)

m = 0.67383216215922 (Coefficient of the watershed development)

B = 2.2389558232932 km (Average river basin width)

a = 0.64035874439462 ((A)symmetry of the river basin)

G = 1.0434977578475 (Density of the river network of the basin)

K = 1.6661742983752 (Coefficient of the river basin tortuousness)

H_{sr} = 1686.5843049327 m (Average river basin altitude)

D = 217.5843049327 m (Average elevation difference of the river basin)

I_{sr} = 16.358744394619 % (Average river basin decline)

H_{leb} = 606 m (The height of the local erosion base of the river basin)

E_r = 88.765976637371 (Coefficient of the erosion energy of the river basins relief)

S₁ = 0.7 (Coefficient of the regions permeability)

S₂ = 0.95168 (Coefficient of the vegetation cover)

W = 0.47608391405909 m (Analytical presentation of the water retention in inflow)

2gDF^{1/2} = 308.54301256062 m km s⁻¹ (Energetic potential of water flow during torrent rains)

Q_{max} = 47.857131619184 m³ s⁻¹ (Maximal outflow from the river basin)

T = 1.0392304845413 (Temperature coefficient of the region)

Z = 0.96287530501894 (Coefficient of the river basin erosion)

W_{god} = 22968.789371764 m³ god⁻¹ (Production of erosion material in the river basin)

R_u = 0.23317856662038 (Coefficient of the deposit retention)

G_{god} = 5355.8293827133 m³ god⁻¹ (Real soil losses)

G_{god} km⁻² = 240.17172119791 m³ km⁻² god⁻¹ (Real soil losses per km²)

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