Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S9-1

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.89,57.22

INPUT DATA

Geometric characteristics of the river basins

F = 39.07 km^2 (Surface area of the drainage basin)

O = 28.62 km (Length of the watershed)

Fv = 28.66 km^2 (Surface area of greater portion of the drainage basin)

Fm = 10.41 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 10.05 km (Natural length of main water course)

Lb = 6.45 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["2.81 ","24.29 ","33.28 ","23.58 ","17.33 ","8.52 "]

The area between the two neighboring contour lines - f [km^2]: ["0.37 ","7.81 ","11.71 ","9.24 ","5.67 ","4.03 ","0.24 "]

h0 = 1100 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 1065 (Lowest altitude in the drainage basin)

Hmax = 1653 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 80.86 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 8.57 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.1 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.71 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.19 (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 = 0.78990 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.21010 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 33.54 mm (Level of torrent rain)

Up (years) = 100

to = 11.80 °C (Average annual air temperature)

Hgod = 303.3 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.0499 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

0 % (Decomposed limestone and marls)

89.98 % (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)

10.02 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.66529 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

21.01 % (Plough-lands)

2.26 % (Orchards and vineyards)

76.73 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.43649 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

0 % (Depth erosion)

7.74 % (80% of the river basin under rill and gully erosion)

18.01 % (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)

74.25 % (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 = 0.55531343283582 (Coefficient of the river basin form)

m = 0.45356488503326 (Coefficient of the watershed development)

B = 6.0573643410853 km (Average river basin width)

a = 0.93422062963911 ((A)symmetry of the river basin)

G = 2.0696186332224 (Density of the river network of the basin)

K = 1.1726954492415 (Coefficient of the river basin tortuousness)

H_{sr} = 1314.3558996673 m (Average river basin altitude)

D = 249.3558996673 m (Average elevation difference of the river basin)

I_{sr} = 28.105963654978 % (Average river basin decline)

H_{leb} = 588 m (The height of the local erosion base of the river basin)

E_r = 74.862892070305 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.727 (Coefficient of the regions permeability)

S_2 = 0.84202 (Coefficient of the vegetation cover)

W = 0.4464532190749 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 437.20088369081 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 66.35168967821 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.1313708498985 (Temperature coefficient of the region)

Z = 0.6751868168014 (Coefficient of the river basin erosion)

W_{god} = 23367.196466658 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.2664773233354 (Coefficient of the deposit retention)

G_{god} = 6226.8279682875 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 159.37619575857 m^3 km^{-2} god^{-1} (Real soil losses per km^2)