Web application for Intensity of Erosion and Outflow

Name of the River Basin: Shirindareh S1-1

Country: Iran, Islamic Republic of

Year: 2019

GPS coordinates, latitude and longitude with Google Maps: 37.71,57.71

INPUT DATA

Geometric characteristics of the river basins

F = 14.96 km^2 (Surface area of the drainage basin)

O = 18.21 km (Length of the watershed)

Fv = 9.27 km^2 (Surface area of greater portion of the drainage basin)

Fm = 5.68 km^2 (Surface area of smaller portion of the drainage basin)

Lv = 7.06 km (Natural length of main water course)

Lb = 8.56 km (Length of the drainage basin measured by a series of paraller lines)

Topograpfic characteristics of the river basins

Contour line length - Liz [km]: ["1.58 ","9.34 ","10.65 ","7.89 ","5.84 ","2.32 "]

The area between the two neighboring contour lines - f [km^2]: ["0.3089 ","2.606 ","3.84 ","4.586 ","2.156 ","1.452 ","0.01 "]

h0 = 1400 m (Altitude of the initial contour)

Δh = 100 m (Equidistance)

Hmin = 1361 (Lowest altitude in the drainage basin)

Hmax = 1963 (Highest altitude in the draigane basin

Hydrological characteristics of the river basins

ΣL = 28.33 km (The total length of the main watercourse with tributaries of 1st and 2nd class)

Lm = 6.72 km (The shortest distance between the fountain (head and mouth))

Water permeability

fp = 0.117 (Part of the surface area of the drainage basin which is composed of highly water permeable structures from the rocks (limestone, sand, gravel))

fpp = 0.517 (Part of the surface area of the drainage basin which is composed of the rocks of medium water permeability (schist, marls, sandstone))

fo = 0.366 (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 = 1.00 (Part of the surface area of the drainage basin which is under the grass, meadows, pastures and orchards)

fg = 0.00 (Part of the surface area of the drainage basin which is bare or under the soils without grass vegetation)

Meteorological data

hb = 35.61 mm (Level of torrent rain)

Up (years) = 100

to = 10.20 °C (Average annual air temperature)

Hgod = 328.4 mm (Average annual quantity of precipitation)

Erosion coefficients

Y = 1.11203 (Types of soil structures and allied types)

0 % (Sand, gravel and incoherent soils)

0 % (Saline soils)

78.14 % (Decomposed limestone and marls)

2.39 % (Serpentines, red sand stones, flishe deposits)

7.81 % (Podzols and parapodzols, decomposed schist)

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

0 % (Brown forest soils and Mountain soils)

11.66 % (Epieugleysol and Marshlands)

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

0 % (Bare, compact igneous)

Xa = 0.6 (Planning of the drainage basin, rate of drainage basin regulation)

0 % (Bare lands)

0 % (Plough-lands)

0 % (Orchards and vineyards)

100 % (Mountain pastures)

0 % (Meadows)

0 % (Degraded forests)

0 % (Well-constituted forests)

ϕ = 0.80121 (Numerical coefficient of visible and clearly pointed processes of soil erosion)

1.79 % (Depth erosion)

79.43 % (80% of the river basin under rill and gully erosion)

2.42 % (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)

16.36 % (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 = 0.50296742209632 (Coefficient of the river basin form)

m = 0.51491313716007 (Coefficient of the watershed development)

B = 1.7476635514019 km (Average river basin width)

a = 0.48026755852843 ((A)symmetry of the river basin)

G = 1.8937165775401 (Density of the river network of the basin)

K = 1.0505952380952 (Coefficient of the river basin tortuousness)

H_{sr} = 1617.8176102941 m (Average river basin altitude)

D = 256.8176102941 m (Average elevation difference of the river basin)

I_{sr} = 25.147058823529 % (Average river basin decline)

H_{leb} = 602 m (The height of the local erosion base of the river basin)

E_r = 97.434715227798 (Coefficient of the erosion energy of the river basins relief)

S_1 = 0.7747 (Coefficient of the regions permeability)

S_2 = 0.8 (Coefficient of the vegetation cover)

W = 0.47786697717591 m (Analytical presentation of the water retention in inflow)

$2gDF^{1/2}$ = 274.55395143577 m km s^{-1} (Energetic potential of water flow during torrent rains)

Q_{max} = 40.897627725282 m^3 s^{-1} (Maximal outflow from the river basin)

T = 1.0583005244258 (Temperature coefficient of the region)

Z = 0.86917049800409 (Coefficient of the river basin erosion)

W_{god} = 13235.827277893 m^3 god^{-1} (Production of erosion material in the river basin

R_u = 0.25352357013502 (Coefficient of the deposit retention)

G_{god} = 3355.5941851818 m^3 god^{-1} (Real soil losses)

G_{god} km^{-2} = 224.30442414317 m^3 km^{-2} god^{-1} (Real soil losses per km^2)