

REPORT

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Topic	Rainfall Runoff Analysis in the Upper Mahi River Basin
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INTRODUCTION

MAHI BASIN- The Mahi basin extends over states of Madhya Pradesh, Rajasthan and Gujarat having total area of 34,842 Sq.km with a maximum length and width of about 330 km and 250 km. It lies between (72°21' - 75°19') East longitudes and (21°46' - 24°30') North latitudes. UPPER basin containing the 66% area of the entire basin.

The total catchment area of the basin is 16,985 sqkm according to the Survey of India.

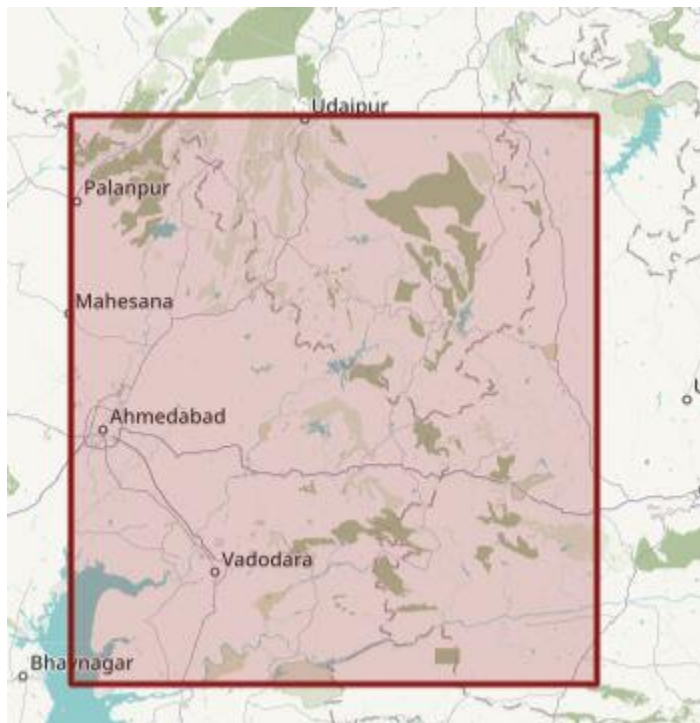
1. Madhya Pradesh > 6695 km² (19%)
2. Rajasthan > 16453 km² (47%)
3. Gujrat > 11694 km² (34%)

ORIGIN of Mahi River Basin > Mahi river originates from Minda village, Sardarpur Tehsil, Dhār District in M.P. It rises in the western vindhya range, just south of sardarpur and flows Northwards through M.P.

DRAINAGE> Mahi river originate from Dhār district of M.P. and enters in Rajasthan banswara district.

TRIBUTARIES> Main tributaries of Mahi river basin are Anas, Chap, Eru. Only Anas is Perennial River. In Dungarpur District Som river is also main tributary at the last lap of Mahi River in Rajasthan.

IN the downstream jakham and Gomati are the tributaries. In addition, it falls into the gulf of khambhat (Arabian Sea).



(AERA MAHI BASIN)

Rainfall - Rain is liquid water in the form of droplets that have condensed from atmospheric water vapor to become heavy enough to fall under gravity.

Runoff- Runoff is the portion of rainfall which flows through the rivers, streams etc.

TYPES OF RUN OFF~

1. Surface runoff
2. Subsurface runoff
3. Base flow

Rainfall runoff relation-

SCS CN method- it suggested that the ratio of two actual to the two potentials are equal.

$$\therefore \frac{F_a}{P_e} = \frac{S}{P - I_a}$$

$$\text{or } \frac{F_a}{S} = \frac{P_e}{P - I_a}$$

$$P = P_e + I_a + F_a$$

Solving this equation we get'

$$P_e = \frac{(P - I_a)^2}{P - I_a + S}$$

Here

$$I_a = 0.2S$$

So that

$$\therefore P_e = \frac{(P - 0.2S)^2}{P + 0.8S}$$

Here

F_a	Depth of water retained in the watershed
P_e	runoff
P	rainfall
I_a	Initial abstraction
S	Potential max. Retention in the watershed

Now the other formula for determining the S

$$S = \frac{1000}{CN} - 10$$

Here S is in inches.

CN = Curve No.

Curve no depends on two components.

1. Land Use
2. Hydrology soil group

rainfall runoff (2008-2017)

