

## Estimate the geomorphological parameters of the Arang watershed in Chhattisgarh region

■ GEETA AND ANISA

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See end of the Paper for authors' affiliation

Correspondence to :

ANISA

Department of Farm Machinery and Power Engineering, Vaugh School of Agricultural Engineering and Technology, Sam Higginbottom Institute of Agriculture, ALLAHABAD (U.P.) INDIA  
Email : [anisa0987@gmail.com](mailto:anisa0987@gmail.com)

■ **ABSTRACT** : This study was conducted for the Arang watershed of the Chhattisgarh, India. Several geomorphological parameters of the watershed were determined using standard procedure. The Arang is 3<sup>rd</sup> order watershed and comprises of 10 villages. Predominant soil of the watershed is clay loam. The watershed receives an average annual rainfall of 1400 mm, out of which the monsoon season (June to October) contributes more than 85 per cent rainfall. The number of 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> Order were found to be 20, 4, 1, respectively. The different geomorphometric parameters of watershed were determined and result showed that total length of stream segments were 26.14, 9.37, 8.56 km, respectively. Area of sub-basin for 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> order streams and of different order streams were to be 32.35, 43.94, and 54.50 km<sup>2</sup>, respectively, for 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> order streams. The mean bifurcation ratio for the watershed was found to be 4.64. The length ratio, circularity ratio and elongation ratio for the Arang watershed were determined and found to be 2.724, 0.9148 and 0.973, respectively. The hypsometric integral of the watershed was calculated to be 0.998 km. The drainage density, length of over land flow and constant of channel maintenance of the watershed were found to be 0.808 km/km<sup>2</sup>, 0.618 km and 1.237 km, respectively. The main channel slope of the watershed was 0.005 whereas compactness co-efficient of the watershed was 1.093. The stream frequency, basin shape factor, form factor, and ruggedness number of the watershed were 0.458 km<sup>2</sup>, 2.578, 0.387, 0701 and 0.016, respectively. The values of relative relief and relative ratio of the watershed was found to be  $1.452 \times 10^{-3}$  and  $1.687 \times 10^{-3}$ , respectively. The weighted average slope of the entire watershed was found to be 1.5 per cent. This parameter which indicates that topography of watershed is flat.

■ **KEY WORDS** : Morphological parameters, Geomorphological watershed parameters, Runoff measurement parameters, Geomorphological parameters, Watershed parameters, Geomorphological features

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