HYDRO 2023 INTERNATIONAL
28th International Conference on Hydraulics,Water Resources, River and Coastal Engineering
21-23 December 2023
NIT WARANGAL, INDIA (राष्ट्रीय प्रौद्योगिकी संस्थान वारंगल, भारत)

Flood inundation mapping using machine learning algorithms on GEE.

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***Abstract**: Flood is very common natural disaster in India. According to the Central Water Commission of India, about 40% of the total area is flood prone in India. Floods cause damage to agriculture and infrastructure which is frequent phenomenon in India. In this paper, presented the mapping of flood inundation area from satellite images using machine learning and Otsu's Thresholding method on Google Earth Engine environment. For this study, the area selected is part of Godavari river basin of Bhadrachalam region. Mapping is carried out for the flood occurred during 14th July 2022 to 20th July 2022.Sentinel-1 SAR data from 6th July 2022 to 20th July 2022 is used. Support Vector Machine algorithm is used to classify the flooded and non-flooded pixels. Out of total study area of 15,56,544 ha, SVM classified 59,823 ha as flooded and Otsu's Thresholding classified 3,59,253 ha as flooded. For the validation of result, 70 flooded point and 30 non-flooded point randomly selected from the flood map available on Bhuvan. Out of 70 flooded point SVM correctly classified 56 points and out of 30 non-flooded points SVM correctly classified 25 points. As per the analysis, it was found that out of 8,27,849 ha of vegetation, 5,990 ha got inundated and out of 62,577 ha of built-up, 6,275 ha got inundated. The methodology developed in this research work is useful for flood damage assessment.*

Keywords: Support Vector Machine (SVM), Otsu's Thresholding, Flood, River.