

# Satellite-based Flood Detection

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**Abstract:** *Flooding poses a significant threat globally, leading to immense economic losses and human displacement. Accurate and timely detection of flood-affected areas is critical for disaster management and response planning. This paper introduces FloodSee, an automated system for flood detection using satellite imagery. The system leverages data from the Sentinel-1 and Sentinel-2 satellites and employs a fine-tuned ResNet-50 deep learning architecture for classification. By combining radar and optical imagery, FloodSee overcomes challenges such as cloud cover and provides robust detection capabilities. Experimental results demonstrate the model's high accuracy, highlighting its potential for operational deployment in flood monitoring and mitigation systems.*

**Keywords:** Flood detection, ResNet-50, Sentinel-1, Sentinel-2, disaster management, satellite imagery, remote sensing

