

## A Rapid Post-Hurricane Building Damage Assessment Methodology using Satellite Imagery

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**Abstract:** *In the immediate aftermath of a hurricane, rapid and reliable assessment of building damage is critical. The timely delivery of such information is essential for emergency responders to identify those areas that are severely impacted so that they can act accordingly. This step is crucial for saving lives and reducing economic losses. This paper demonstrates the potential of Remote Sensing for rapid building damage detection using an automated approach in small island states in the Caribbean. Object-Based and Pixel based methods were compared with visually identified reference information from high resolution imagery for the 2004 Hurricane Ivan impact on Grenada. The efficacy of the Object-Based approach is demonstrated using image segmentation and classification in eCognition Developer Software. This approach utilises not only the spectral content but also the context, morphological and textural properties of image objects. In relation to the reference data, the object-based method achieved over 85% classification accuracy among a three damages grade classification scheme in two separate scenarios with different study area extents.*

**Keywords:** *Hurricane Ivan, Rapid Assessment, Building Damage, Object-Based Classification*