Identification of Water Bodies from Satellite Images

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Abstract- Satellite images can either be a visible light, water vapour or infrared images. With these images we can't find the objects over the water bodies from satellite images. This proposed system helps to identify water bodies from the satellite image with the help of image processing techniques such as edge detection to finding (ROI) region of interest (or) extraction and identification of water bodies from the given images. Here, the proposed work has to be identifying the water bodies from the satellite images. It can help to find out the disaster management over these images.

Key-words- Feature extraction, edge detection, flow of water.

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I. INTRODUCTION

Satellite can be classified their function since they are launch into space to specific job. In this, edges of water bodies are detected from the satellite image. Satellite data provides the level that can serve numerous purposes and not just a few applications. If another reason to use satellite imagery is for multi-spectral analysis. Is can capture light frequencies range from visible light. Edge detection is an important method used in image segmentation. Some images are forecasts the behavior of atmosphere as they give a clear, concise and accurate events are unfolding. There is a need of effective and efficient mechanisms to extract and interpret valuable information over the satellite image. Satellite images are aid to showing that cannot be measured or viewed as truth over the change of error. It contains more information it covers larger area than aerial photos provide to update the target area. It represents the image, and what is happening at the every point of images. Images have been allowed to discriminate between the edges of the particular area. Comparing with the satellite image the edges has been identified.

II. EXISTING SYSTEM

Biswajeet Pradhan et al, discussed about the semi automated detection for solved the flood extraction. To solving this, they used rule based classification and taguchi techniques to recover the semi automated detection mapping flood have been extracted [1]. Carolina Donald et al has been rectified the empirical relationships for monitoring the variables using Landsat TM data band was monitoring in small/medium water bodies for TM imagery to identified [2]. Bernd Uebbing described about the water accuracy from the radar waveforms to observed post processing. For this, the LLHs has been evaluated the retrackers was found over the conventional threshold value for waveform [3].

Steven Leigh described about the automated ice-water classification for using dual polarization to the SAR satellite imagery. To solving this, the dual polarization RADARSAT-2 scenes to overcome the CIS for the operational use [4]. Ya'nan Zhou described the water body extraction in urban environment. So, they found and used NDWI-based threshold and SVM classification for solving the entire images to overcome this multiscale water body for the extractions [5]. Daniel Capella Zanotta discussed about the novel approaches has to detect the missing end members in the spectral mixture problem based on the LSMM (linear spectral missing model). For this problem they used Thematic Mapper Landsat and coupled charge device in earth resource satellite image data to detecting the image regions that includes the missing end members and estimates the corresponding spectral responses [6].

III. METHODOLOGY STRUCTURE

The following shows the implementation of the proposed methodology structure.

Input Image	→	Region of Interest (ROI)	→	Edge detection	→	Identification of water bodies
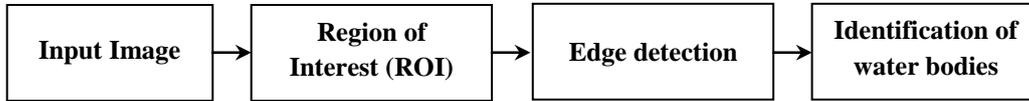
IV. METHODOLOGY

The general methodology implemented in this figure.

❖ **Input satellite image**

The original image has read

❖ **Edge detection**

Boundaries between regions based on discontinuities in intensity levels. Thresholds value is based on pixels properties over the water level analyzing. In this work, to detect the water bodies through the satellite image. Morphological dilate operation was considered to extract ROI of a satellite image. A line or border at which the input image has to determine the inside and outside the edges. From, ROI Edges the regions of edges have been identified from the satellite images.

Techniques used to detect edges: There are various edge detection techniques are available such as sobel, canny, prewitt, Robert.
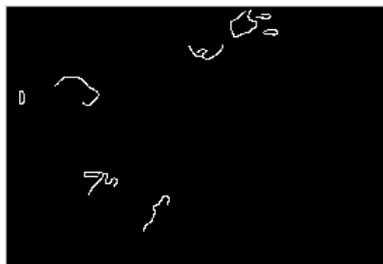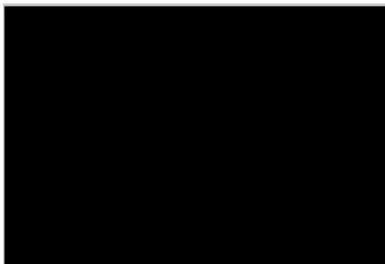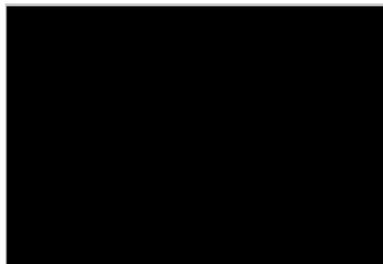

(a) Original Image	(b) Sobel Edge Detection	(c) Canny Edge Detection

Robert Edge Detection	Prewitt Edge Detection

While comparing these techniques Sobel edge detection is gives the best results for proposed work. Sobel creates an image in emphasizing edges. For Sobel edge detection the gradient magnitude is defined by the following equation:

$|G| = \sqrt{Gx^2} + \sqrt{Gy^2}$

It combined together to find an approximate magnitude is compute the points are:

$|G| = |Gx| + |Gy|$

Where,
Gx- is the point to describe the horizontal direction.
Gy- is the point to describe the vertical direction. Therefore, the sobel edge detection gives the perfect edges.

RESULTS

| **Fig 1(a) Original Image** | **Fig 1(b) ROI Extraction** | **Fig1(c) Water Bodies** |

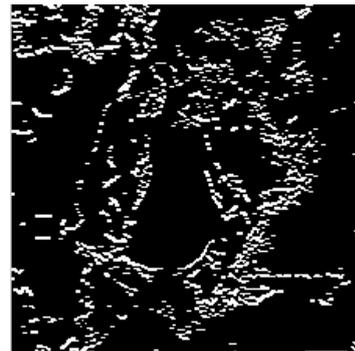| **Fig 2(a) Original Image** | **Fig 2(b) ROI Extraction** | **Fig 2(c) Water Bodies** |

V. CONCLUSION

The proposed methodology have been explains about water body identification from the satellite images with the help of morphological operation, ROI extraction and edge detection. In this, the main aspects to find the water bodies with ROI (region of interest) to extracting the different shapes of edges have to be detected. Sobel edge detection techniques provide the better edge than comparing to the other edge detection techniques. Finally, this will help you to find the disaster from satellite images.

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