

**UNIVERSITI TEKNOLOGI MARA**

**MANGROVE DEFORESTATION DYNAMICS  
AND MEAN SEA LEVEL RISE TRENDS IN  
MALAYSIA**

**MOHD SHAHRUL ZIKRI BIN AMRAN**

Thesis submitted in fulfilment  
of requirements for the degree of  
Bachelor of Surveying Science and Geomatics  
(Hons)

**Faculty of Architecture, Planning and Survey**

**AUGUST 2020**

## AUTHOR'S DECLARATION

I declare that the work in this thesis/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

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Name of Student : Mohd Shahrul Zikri Bin Amran  
Student I.D. No. : 2016490478  
Programme : Bachelor of Surveying Science and  
Geomatics (Honors) – AP220  
Faculty : Architecture, Planning & Surveying  
Thesis : Mangrove Deforestation Dynamics and Mean Sea  
Level Rise Trends in Malaysia

Signature of Student : *shahrul*

Date : August 2020

## ABSTRACT

Deforestation of mangrove are happening from year to year throughout Malaysia mangrove forest. Lack of spatial data regarding mangrove dynamics are among the factor contributing to inconsistency management by the authorities on mangrove forest sustainability. Therefore, this study aimed to estimate Malaysia mangrove area changes due to deforestation from the year 2000 to 2019 and map its spatial distribution with additional parameter which is the mean sea level rise trends. In achieving the aim, there are three objectives constructed, which are (i) to quantify Malaysia mangrove forest deforestation from the year 2000 to 2019, (ii) to map the deforestation of the mangrove spatial distribution in Malaysia from the year 2000 to 2019 and (iii) to parameterise mangroves deforestation dynamics and mean sea level rise rates for the potential of mangroves as coastal bio shield. The methodology created to accomplish the objectives are divided into phases which are preprocessing, first phase processing and second phase processing. Preprocessing includes the extraction of mangrove boundary polygon. First phase processing proceeds on data cleaning on mangrove boundary polygon. Then, followed by masking of Global Forest Change raster with mangrove boundary polygon. The last procedure in first phase is the calculation of deforested mangrove dynamics. The second phase processing started with plotting deforested mangrove for spatial distribution. The last part in processing is synthesizing deforested mangrove with mean sea level rise trends. It involved with integration of sea region and tide gauge location and calculation of deforested area according to sea regions. Result of this study estimates that in the year 2019 Malaysia has loss almost 10% of its total intact mangrove from year 2000. Given the total area accumulated for deforested mangrove 558.081km<sup>2</sup> which was almost equivalent to the ground surface area of Port Dickson district. Moreover, apart from deforestation, mean sea level rise trends shows an increasing pattern by millimetres per year throughout all eligible tide gauge reading surrounding Malaysia. Therefore, mangrove forest is receiving immense threats from deforestation and mean sea level rise event. These threats abolish the potential of mangroves in becoming the bio shield of the coastal regions and protecting the coastal communities.

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