



UNIVERSITI TEKNOLOGI MARA

**AREA ANALYSIS USING MOLLWEIDE
EQUAL-AREA MAP PROJECTION**

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requirements for the degree of
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AUTHOR'S DECLARATION

I declare that the work in this thesis/dissertation was carried out following the regulations of Universiti Teknologi MARA. It is original and results from my 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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ABSTRACT

The Geodata science field has extensively manipulated space and distance in the analysis. Often this information was not given enough attention and left to be calculated by default setting in the processing software. These practice has introduced unnecessary blunder that jeopardy the result. The research subject's 3D location needs to be projected to a 2D plane using an appropriate scale, translation, and rotation parameter to accurately quantify space and distance on the globe. Failing to do this will result in space and distance results being distorted. This study aimed to compare South East Asia (SEA) mangrove area in the raster and vector datasets to determine the mangrove area deforestation. Raster area calculation used COTS (commercial off-the-shelf) software that uses pixel resolution and raster size. Vector area calculation was carried out in the open-source programming language Python. The vector polygon in the geodesic (3D) location will be transformed to an equal-area (2D) plane, and area calculation was calculated using vector vertex coordinates. Both datasets used in this research are publicly accessible from multiple credible global data repositories. The output for this research shall provide a reference for the specific and coherently designed space and distance sensitivity analysis in the Geodata science field.

Keywords: Mollweide map projection, Geodesy, Mangrove deforestation, Southeast Asia

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