

The Potential of Using Satellite Altimetry for Sea Level Study in Brunei

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SUMMARY

The rise of the global sea level due to the global warming has caused concerns to the Earth's population, especially in the coastal zone. According to experts, the global mean sea level is expected to continuously rise at a certain rate which makes it important to understand the amount of sea level rise globally and regionally for future planning such as erosion and flood mitigation for coastal management. Brunei is one of the countries that will be affected by the sea level rise due to its geographical location. Currently, the sea level determination of Brunei only depends on the installed tide gauges. With such limitation in terms of knowledge and study of the satellite altimetry in Brunei makes this project an important research and development for the country. This project aims to investigate the potential of using the satellite altimetry data for the study of the sea level change in Brunei. Jason-1 and Jason-2 satellite altimetry mission data near the Brunei coastline were used in this project investigation and the sea level trend with time series sea level anomaly were then plotted by using Python programming software for further analysis. The altimetry data was processed by using the DTU15MSS model which is the latest release model for global high resolution mean sea surface and the sea level trend of each point from the satellite track was computed by using the Robust Regression method. From the results of the satellite mission between 2002-2016 shows that the sea level trend in the Brunei coastline was rising approximately at the rate of 5.5 mm/year and it is expected to continue to rise in the future. There were previous studies that were done in the same study area which do agree with the with the rate of the sea level rise. The results from this project, however, had some limitations based on the satellite tracks where the tracks were not exactly located at the Brunei coastline which urged the author to perform a further study by using other available satellite mission that covers the Brunei coastline is essential in the future. Other further studies such as data validation by making a comparison with the tide gauge data will be useful to understand if the sea level rise is affected by the vertical land motion. The results from this project will be useful for Brunei coastal management to properly plan for erosion and flood risk in the near future.

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