

Investigation of Vertical Displacement due to Ocean Tide Loading Based on GNSS Positioning in Indonesia

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SUMMARY

GNSS Positioning has several error sources. To produce accurate positioning is necessary to eliminate or correct those errors. One of the errors is an error due to Ocean Tide Loading (OTL). OTL affect the positioning accuracy, especially in vertical positioning. This paper aims to investigate the vertical displacement due to OTL based on GNSS positioning in Indonesia. The GNSS data used are BAKO, CCLP and CPKL station located on Java Island, CBKT and SAMP station located on Sumatera Island, CPON and CBAL station located on Kalimantan Island, CMAK and CBIT station located on Sulawesi Island, and CUKE station located in Papua Island. The data length is 1.5 years data, from January 1st 2011 until July 1st 2012. Data processed using Precise Point Positioning (PPP) method. In BAKO station the amplitude of vertical displacement is smaller than 1 centimeter, because the location of the station is in the middle of the island. In CPKL, CPON, CBAL, CMAK and SAMP stations the amplitude of vertical displacement are larger than 1 centimeter, but in a few, because the location of that stations in the near inland sea. The largest vertical displacement is in CCLP, CUKE, CBKT and CBIT stations with amplitude 1 – 3 centimeters, because the location of that stations near in the open ocean. From the result each station has different characteristics depend on the location. For high accurate GNSS positioning, OTL correction necessary to applied.

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