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**Nama Dosen : Dr. Agustinus Ribal, S.Si, M.Sc**

**NIP : 19750816 199903 1 001**

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**A high-resolution wave energy resource assessment of Indonesia**

**Agustinus Ribal<sup>1,2,\*</sup>, Alexander V, Babanin<sup>1</sup>, Stefan Zieger<sup>3</sup>, and Qingxiang Liu<sup>1</sup>**

<sup>1</sup>Department of Infrastructure Engineering, University of Melbourne, Melbourne, Victoria, Australia.

<sup>2</sup>Department of Mathematics, Faculty of Mathematics and Natural Sciences, Hasanuddin University, Makassar, Indonesia.

<sup>3</sup>Research Program, Bureau of Meteorology, Melbourne, Victoria, Australia

\*Corresponding author: agus.ribal@gmail.com

***Abstract***

Indonesia is an archipelago country with great potential for marine renewable energy, particularly for wave energy. This study will provide a wave energy assessment of Indonesia over a 6.5-year period (2011 – 2017) with resolution about 5.5 km. This assessment is based on data generated with a two-way nested high-resolution wave model WAVEWATCH III with observation-based physics (ST6). Three grids have been generated, namely a ‘high resolution’ of 3 arc-minute (0.05°) grid is nested inside a 12 arc-minute (0.2°) grid which is nested within a 0.5° global grid. Validations against altimeters and buoys show good agreement with the model. Mean wave energy has been classified based on meteorological seasons and it is found that the most energetic months are June, July, August for all areas of south, southwest and west of Indonesia where it can exceed 30 kW/m. In some locations wave energy is available throughout the entire year, that is in the south of Jawa island, Bali island and West Nusa Tenggara while in the region of west Sumatera, promising wave energy is available during the time from March to November. In addition, within the Indonesian Archipelago the monthly variations are about 5 kW/m and relatively small in terms of absolute values but this region is large relative to the mean wave power energy.