



26 January 2016

The SOLA Award in 2015

We are pleased to announce that the SOLA Award in 2015 will be presented to Mr. Satoshi Masuda and Dr. Keiichi Ishioka for their outstanding paper as follows:

A Method to Calculate Steady Lee-Wave Solutions with High-Accuracy

by Satoshi Masuda and Keiichi Ishioka

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https://www.jstage.jst.go.jp/article/sola/11/0/11_2015-021/article

This study proposes a new numerical method to compute highly accurate, full-nonlinear, two-dimensional steady lee-wave solutions. The method is based on the charge simulation method and enables to obtain numerical solutions of steady lee wave over arbitrary topography. The accuracy of the proposed method is evaluated for the steady flow and lee wave over a semicircular mountain through the comparison with the exact solution based on a lee-wave theory. It is demonstrated that compared with an existing boundary element method the proposed method is able to provide a highly accurate solution for the semicircular mountain test. The present method is further applied to obtain a well-behaved numerical solution of lee wave over a Gaussian-shaped, steep mountain.

Numerical modeling of the atmosphere over complex topography is a challenging task in order to improve the accuracy of high-resolution atmospheric models. There are recently some new developments of high-resolution atmospheric models. In order to evaluate such high-resolution models, a basic test case for flows over arbitrary complex topography should be useful. The method proposed by the present study is very unique in the sense that it provides a standard solution for flows and lee waves over complex topography and a useful guidance for high-resolution modeling. The proposed method is also helpful for the theoretical understanding of lee waves over topography. Therefore, the Editorial Committee of SOLA highly evaluates the excellence of the authors' study.

Tetsuya Takemi

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Chief Editor of SOLA

on behalf of the Editorial Committee of SOLA

Meteorological Society of Japan

