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ONLINE ISSN : 1881-1760

PRINT ISSN : 1880-3717

## Journal of the Japan Society of Naval Architects and Ocean Engineers

Vol. 2 (2005) pp.75-83

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### Development of a Weather Adaptive Navigation System - Influence of Weather Forecast -

[Masaru Tsujimoto](#) and [Katsuji Tanizawa](#)

(Accepted October 14, 2005)

**Summary:** We propose a new navigation system to decrease fuel oil consumption and CO<sub>2</sub> emission from ship. To decrease them it is important to avoid rough seas and to reduce the speed of ship. Therefore the system provides not only an optimum route but also an optimum speed of the ship. On the other hand schedule of voyage is generally constrained, so that weather forecast and ship responses must be considered in the system. In this paper, simulations on a container liner in trans-Pacific route are demonstrated using the system. Concerning the schedule keeping, accuracy of weather forecast must be examined. The influence on the system is evaluated using two types of weather data; one is the forecast at departure and the other is the weather data set extracted from the sequential forecasts of every 24 hours. From the simulations it is found that the fluctuation of fuel oil consumption caused by updating the weather forecast is much smaller than the reduction of the fuel using the system. However, from the viewpoint of ship safety, it is necessary to execute the system again whenever the weather forecast updated.

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To cite this article:

Masaru Tsujimoto and Katsuji Tanizawa: Development of a Weather Adaptive Navigation System : - Influence of Weather Forecast - , Journal of the Japan Society of Naval Architects and Ocean Engineers, (2005), Vol. 2, pp.75-83 .



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