

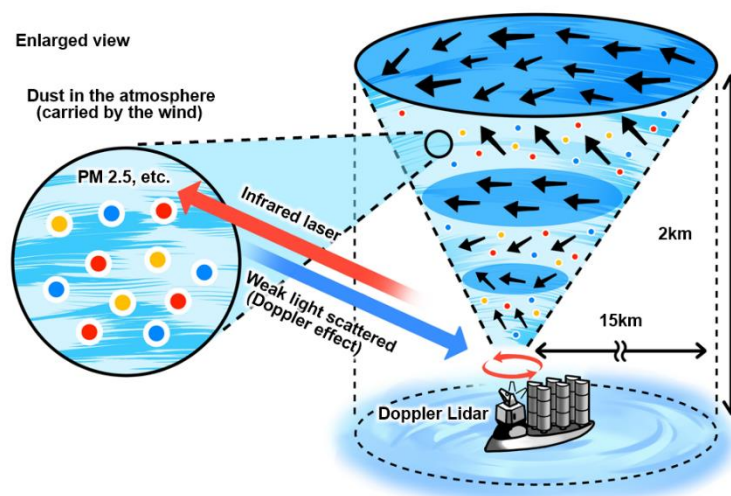
MOL and Metro Weather Launch Development of World's First
“Onboard Wind Condition Measurement Device”
~ Successful Onboard Demonstration Experiment Using Doppler Lidar ~

Mitsui O.S.K. Lines, Ltd. (MOL; President & CEO: Takeshi Hashimoto; Headquarters: Minato-ku, Tokyo) and Metro Weather Co., Ltd. (President: Junichi Furumoto; Headquarters: Uji-shi, Kyoto) today announced the success of a world-first demonstration experiment with an MOL-owned experimental vessel equipped with Metro Weather's Doppler Lidar ^(Note 1) to navigate while grasping faraway wind conditions in real time.

A small yacht, named as WINZ MARU, applied for the demonstration experiment of the zero emission vessel powered by wind and hydrogen in “Wind Hunter Project” ^(Note 2), was utilized in this experiment and it successfully measured real-time and three-dimensional wind conditions within a 15km radius from her while underway. Doppler Lidar onboard can measure winds around vessels directly and make them visualized. This feature gives more accurate advantages than weather forecast from satellite information. Moreover, Metro Weather's Doppler Lidar is compact in terms of its size and has capability of measuring miles away length, which would be worth for safe navigations.



(Doppler Lidar installed on WINZ MARU)



(Mechanism to measure wind condition data)

Metro Weather's Doppler Lidar can measure wind direction and wind speed in a 15km radius around it in three dimensions with an irradiating infrared laser—harmless to humans—that detects reflections from floating particles in the atmosphere. Metro Weather's Doppler Lidar was originally designed for measurements on land use basis. In this experiment, with Inertial Navigation Unit ^(Note 3), the wind conditions at real-time correction of vessel motion and movement ^(Note 4) can be measured even in sea environment of sway and movement . MOL and Metro Weather will promote the development of "Onboard Wind Condition Measurement Device", integrations of Inertial Navigation into Doppler Lidar, which is expected to improve the quality of safe operation by accurately predicting wind conditions and play a role in supporting optimal navigation of ships using wind energy such as "Wind Challenger Project" ^(Note 5), "Wind Hunter Project" and "Wind Power Energy Business" ^(Note 6).

MOL decided to invest in Metro Weather through its wholly-owned corporate venture capital (CVC) firm, "MOL PLUS" (Representative: Takuya Sakamoto; Headquarters: Minato-ku, Tokyo) in April ^(Note 7), which promotes business tie-ups in a broad range of promising fields. This demonstration experiment is the first cooperative tie-up between MOL and Metro Weather.

MOL and Metro Weather will continue working to leverage their respective core technologies and resources and add new values to the shipping industries and societies through both companies synergy.

(Note 1) The Lidar can measure wind conditions by measuring changes in frequencies by the Doppler effect.

(Note 2) Please refer to the press release related to Wind Hunter.

- December 9, 2021:

["Wind Hunter Project" Zero Emission Ship Sailing by Wind and Hydrogen succeeded in the demonstration experiment by the Yacht "WINZ MARU"](#)

(Note 3) The equipment calculates its own position and speed using only its incorporated sensor without relying on external support such as radio waves.

(Note 4) Correction calculation detects the motion of the vessel and accounts for it in measuring wind conditions.

(Note 5) Please refer to the press release related to Wind Challenger.

- February 1, 2022:

[Hard Sail Completed for 'Wind Challenger Project' and Installation Underway on Large-scale Vessel](#)

(Note 6) Please refer to the following link related to MOL Wind Power Energy Business.

- [Wind Power Energy Business](#)

(Note 7) Please refer to the following website and press release related to MOL PLUS.

Website : <https://en.molplus.net/>

- January 21, 2021: [MOL has decided to establish 'MOL PLUS' as Corporate Venture Capital Fund](#)

<About Mitsui O.S.K. Lines, Ltd.>

MOL develops various social infrastructure businesses centering on the ocean shipping business such as specialized carriers and tankers that carry various types of raw materials and fuels, product carriers such as car carriers, and other offshore business and wind energy-related businesses. It contributes to the growth of the world economy and environmental protection with a challenging spirit, aiming to create new value based on experience and technologies accumulated in its 130-plus years of history.

<https://www.mol.co.jp/en/index.html>

<About Metro Weather Co., Ltd.>

Metro Weather develops and markets Doppler Lidar and its data —determining and visualizing wind conditions in three dimensions and in real time, by receiving reflected light from fluttering dust and fine particles in the atmosphere as scatterers, using infrared light, and analyzing them based on the Doppler effect. It has conducted joint research and demonstration experiments with several companies and research institutes in Japan, and since 2021, has participated in a NASA research and development project.

<https://www.metroweather.jp/en/>

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