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Domestic Experts Collaborate to Develop a Korean-Style Artificial Intelligence Air Quality Model

- Expectations for providing reliable forecasts through the transition of the air quality prediction system (numerical → intelligent)

The National Institute of Environmental Research (NIER, President Kum Hanseung) under the Ministry of Environment will hold a workshop from February 20 for two days at the Mayfield Hotel (located in Gangseo-gu, Seoul) to establish a strategy for the development of a Korean-style artificial intelligence (AI) air quality model.

This event will be attended by approximately 70 participants, including experts from various fields*, including those from the NIER, who will share the latest research results and discuss the issues and improvement measures of current air quality prediction models.

* Observations, emissions, meteorological and air quality numerical models, AI

The event, held over two days, will feature presentations and discussions on the first day focused on the theme of developing air quality models through the introduction of AI technology, and on the second day, the theme will be on establishing improvement measures for observation-based numerical models.

On the first day, the NIER will present the results* of building an ensemble prediction system that applies AI technology to improve the accuracy of fine dust.

* Compared to the numerical model, the AI ensemble prediction results show an improvement of NMB by 76% (from 21.9 to 5.4) and NME by 44% (from 39.4 to

21.9).

- ※ Normalized Mean Bias (NMB) and Normalized Mean Error (NME): The closer the values are to '0,' the more similar the model predictions are to the observed values.

In academia and industry, there will be presentations by experts from various fields, including examples of applying AI technology to the latest air quality models for emission improvement and data fusion, as well as the development of ultra-large generative AI models.

In the concluding discussion, Lee Jae-beom, Director of the Integrated Air Quality Forecasting Center at the NIER, will lead the conversation on the direction for establishing a strategy for the development of a Korean-style AI air quality model.

On the second day, meteorological and air quality observation and numerical modeling experts will gather to diagnose the issues of numerical models used as training data to improve the predictive performance of AI models, and will present the results of applying the latest models. The subsequent discussion will explore improvement directions for numerical models and the introduction and application of the latest models suitable for the circumstances in our country.

President Kum Hanseung stated, "This event is a meaningful gathering of experts from various fields to establish a reliable air quality prediction information production system through the development of a Korean-style AI model." He added, "Through this expert meeting, we plan to gather opinions from experts in relevant fields to focus on advancing air quality prediction research utilizing AI technology."