The achievement of KOOS in national agencies and industries

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The Korea Institute of Ocean Science and Technology (KIOST) has been conducting the KOOS (Korea Operational Oceanographic System) project since 2009. KOOS has been operating several forecasting systems depending on the domain of the target sea. Among them, coastal-KOOS, which forecasts around the Korean Peninsula, has been in operation since 2016 with a 300 m spatial resolution. Currently, coastal-KOOS is undergoing an upgrade to improve its forecasting accuracy. As coastal KOOS provides high-resolution data covering the territorial sea of the Korean Peninsula, it has become an invaluable decision-making tool. It assists in proactive responses to various marine disasters such as search and rescue, oil spills, storm surges, low-saline water fronts, and cold water upwellings. The success and utility of coastal-KOOS have garnered interest and demand from national agencies and industries. This has led to technology transfers to meet their specific needs. Furthermore, to enhance forecasting accuracy, especially around small islands with complex coastlines and narrow channels, a triangular unstructured grid ocean forecasting system has been developed. There is also ongoing work on a hybrid model that leverages artificial intelligence techniques for enhanced forecasting precision. To efficiently deliver all KOOS products while catering to end-user needs, the KOOS-GIS visualization system was established. Although it's currently operated in-house, KOOS-GIS is multifunctional. It displays real-time forecast and observation data and enables users to compare and validate forecasting accuracy. Additionally, it aids fieldwork with tools like a particle tracking module for search and rescue and storm surge predictions during typhoons. In summary, KOOS has made significant strides, notably establishing a high-resolution forecasting system for the Korean Peninsula and serving as a diverse decision-support tool.