Announcements

IBM Makes Higher Quality Weather Forecasts Available Worldwide

New Modeling System IBM GRAF Offers More Timely and Precise Local Forecasts, Democratizing Weather Around the Globe

Bangalore, Karnataka, India - 15 Nov 2019: IBM (NYSE: *IBM*) and its subsidiary The Weather Company today announced the global rollout of a new supercomputer-driven weather forecasting system that will provide fresher, higher quality forecasts in parts of the world that have never before had access to state-of-the-art weather data.

Known as IBM GRAF, the Global High-Resolution Atmospheric Forecasting System, runs on an IBM Power Systems supercomputer and can predict conditions up to 12 hours in advance with detail and frequency previously unavailable at this global scale.

IBM GRAF will provide much finer-grained predictions of the atmosphere and update its forecasts six to 12 times more frequently than conventional global modeling systems. Current global weather models cover 10-15 square kilometers (6.2-9.3 miles) and are updated every 6-12 hours. By contrast, IBM GRAF forecasts down to 3 kilometers (1.9 miles) and is updated hourly.

This level of forecasting precision has been available in the U.S., Japan and a handful of Western European countries. But the launch of IBM GRAF marks the first time such enhanced forecasts cover more of the globe, including Asia, Africa and South America, areas among the most vulnerable to the increasingly intense extreme weather resulting from climate change. IBM GRAF is the world’s first operational high-resolution, hourly-updating model that covers the entire globe.

Commenting on the announcement, Himanshu Goyal, India Business Leader, The Weather Company, an IBM Business said, "We see IBM GRAF heralding a new era in the science of weather forecasting. By limiting the unpredictability of weather to a greater extent, enhancing accuracy and availability of weather data, the improved forecasts can truly transform India’s businesses as well as people’s lives. With the high resolution weather data, farmers can now be warned of thunderstorms much in advance and with greater precision; airlines can get indications of weather changes considerably earlier to avoid delays or diversions; governments & nodal agencies can get more precise information of phenomena such as cyclones for effective planning & execution of disaster management; power companies can vastly improve energy management with better forecast to avoid power outages; logistics companies can plan better with on-road weather forecast for just in time needs of industry - impact of IBM GRAF is boundless.”

Welcoming the launch of IBM GRAF, M.B. Ganapathy, Head of Plantations, Tata Coffee said, “Tata Coffee is one of the largest integrated coffee cultivation and processing companies in the world. We are leveraging the IBM Watson Decision Platform for Agriculture to receive accurate weather forecast, soil moisture and soil temperature information at our coffee estates to amplify the agricultural process of coffee crop cultivation in

India. Having access to a scientifically proven and reliable weather forecasting system will allow us to take proactive measures, not only to safeguard crops and manage precision irrigation but also ensure the safety of our workforce.”

Prateep Basu, Founder and CEO of SatSure, said, "At SatSure, we combine satellite imagery, proprietary algorithms, weather data, drone imagery, social and economic datasets, and cadastral maps with other relevant problem-centric datasets to generate near real-time location-specific decision intelligence. With IBM GRAF, the granularity of insights offered will be an important factor whether it’s helping maximize crop production on agricultural lands or using satellite imagery to guide rescue efforts during a natural disaster

Collaboration helps create improved global modeling of the atmosphere

To build the new modeling system, The Weather Company collaborated with the National Center for Atmospheric Research (NCAR) to create IBM GRAF based on NCAR's next-generation open-source global model, the Model for Prediction Across Scales, which uses state-of-the-art science to forecast the atmosphere down to thunderstorm level on a global scale.

As the world contends with climate change and more intense severe weather events globally, timely and accurate weather information is increasingly important. To help meet future challenges, strong public-private partnerships across governments, businesses and research institutions and open-source collaboration can continue to help advance science and technology at a more effective pace.

Advanced IBM supercomputing allows for higher workloads

Forecasting weather is a complicated mathematical problem, requiring high-performance computing to solve complex equations. Traditionally, most weather models use high-performance computers built only with CPUs (central processing units). To handle its increased resolution and update frequency, the new IBM GRAF system runs on an IBM POWER9-based supercomputer optimized for both CPUs and GPUs (graphics processing units), powerful compute engines widely deployed for demanding high-performance computing and AI applications.

IBM is applying the same technology behind some of the world’s most powerful supercomputers to weather forecasting. The Weather Company and IBM, together with NCAR, the University of Wyoming’s Department of Electrical and Computer Engineering, and others applied OpenACC directives to MPAS to take advantage of NVIDIA V100 Tensor Core GPUs on an IBM Power Systems AC922 server.

This is the world’s first global weather model to run operationally on a GPU-based high-performance computing architecture.

A better picture of weather globally

Other models may be high-resolution or update often, but the resulting forecasts only cover one country or region of the world. This is the first time a full global model exists to provide forecasts for the day ahead at this scale, resolution and frequency.

A clearer sense of exactly when and where impactful weather will surface can help when planning and preparing for weather. Whether it's an airline, a utility company, a daily commuter, a retailer, a government decision-maker, or a farmer, IBM GRAF predictions can help people, governments and businesses around the world make more informed weather-related decisions.

Leveraging IBM GRAF to help in decision-making also requires technologies such as AI, cloud and analytics. Combining these additional technologies enables predictions from IBM GRAF to help power IBM weather offerings for businesses and to drive weather content within IBM apps and websites by The Weather Channel (weather.com) and Weather Underground (wunderground.com).

For more information about The Weather Company, an IBM Business, visit https://newsroom.ibm.com/the-weather-company.

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