FOR IMMEDIATE RELEASE

AI-led Science Innovation Protects Communities Hit by Climate Change

As the world grapples with impacts of climate change, the United Nations World Food Programme, University of Oxford Physics Department and IGAD Climate Prediction and Applications Centre join to revolutionise early warning and weather forecasting

Oxford, 25 June 2024, The United Nations World Food Programme (WFP), Oxford University Physics Department, IGAD Climate Prediction and Applications Centre (ICPAC), and various national forecasting and meteorology agencies across east Africa are joining forces to pioneer a transformative initiative that's revolutionising extreme weather forecasting and early warning systems in the region.

In east Africa, where deadly floods have succeeded the worst drought in decades, climate change is accelerating the frequency and severity of extreme weather events, the need for precise and timely forecasts has never been more critical. In an era marked by escalating weather variability, accurate weather predictions are essential to safeguard lives and livelihoods.

Traditional weather forecasting models often fall short in accurately predicting extreme weather events, leaving vulnerable communities at risk. However, by harnessing the power of Artificial Intelligence (AI), we are bridging these critical gaps and setting a new standard for weather forecasting.

"I think we have the potential to change the world," said Jesse Mason, Global Head of the Anticipatory Action Programme at WFP. "The World Food Programme has realised that we need to start protecting lives before they need saving. We need to make sure we're acting ahead of extreme events, making sure that governments and communities have the tools to prepare and mitigate the impacts these are having on livelihoods and lives."

"We have an opportunity to leverage the work that's being going on at Oxford around AI and physics-based models to change the way we see hazards forming in countries and start to change the ways that humanitarians respond to predictable emergencies," Mr Mason added.

Climate scientists at Oxford University Physics have developed a groundbreaking AI-based weather model that enhances the accuracy of rainfall forecasts, offering high-resolution predictions without the need for additional costly supercomputers.

"We believe the approach we have pioneered and are using here is a game-changer for parts of the world which have previously suffered from a lack of resource and infrastructure but nonetheless find themselves bearing the brunt of climate change," said Shruti Nath, a climate scientist at Oxford University Physics.

"Through collaboration with ECMWF, the European Centre for Medium-Range Weather Forecasts, on our common understanding of physical atmospheric processes and the latest in AI and machine learning, we can supply state-of-the-art weather models to give more accurate and local predictions enabling particular countries and regions to better anticipate and prepare for extreme weather" Dr Nath added.

Accurate early warnings are a game-changer in disaster risk management. By providing more timely and reliable forecasts, governments and communities can take anticipatory actions that protect lives and livelihoods and mitigate the impacts of extreme weather events before they occur. This proactive

approach is transforming humanitarian response, shifting from reactive to preventative measures, ultimately saving more lives and reducing costs associated with disaster relief.

With its deep understanding of the challenges faced by those most affected by climate extremes, WFP is instrumental in ensuring that technological advancements reach and benefit those in need, so they can plan, prepare, and act proactively.

"This collaboration is a first of its kind for us, bringing scientific advances together with businesses, academia, and governmental and intergovernmental organisations to protect vulnerable population's lives, livelihoods, and food security ahead of extreme weather events," commented Mr Mason.

“We have an opportunity to leverage the work that’s being done at Oxford around AI and physics-based models to bolster early warning systems across east Africa and transform the humanitarian system, enabling proactive action ahead of the impacts of extreme weather events” he added.

This initiative was made possible with the support of Google.org to World Food Program USA, in support of WFP’s efforts to mitigate the impacts of climate change. The funding and in-kind contribution of computational resources from Google Cloud are crucial in overcoming the resource constraints faced by many forecasting organisations in Eastern Africa.

Hannah Wangari, Assistant Director at the Kenyan Meteorological Department (KMD), remarked, "At KMD, we are actively using these machine learning forecasts developed by Oxford University Physics to compare with our current operational methods. The results are promising and demonstrate significant improvements in accuracy." Collaboration with regional and local actors is at the heart of this project. National meteorological agencies, including the Kenya Meteorological Department and the Ethiopia Meteorological Institute (EMI), are integral partners, ensuring that the technology is tailored to the specific needs of their communities.

As the regional climate centre for Eastern Africa, ICPAC spearheads the capacity of its 11 member states in the region and offers the opportunity to scale the cutting-edge technology in producing forecasts. By fostering local ownership and trust, this collaboration is building resilient systems that can effectively anticipate and respond to extreme weather events.

The success of this initiative in east Africa sets a precedent for broader application. The vision extends beyond this region, aiming to replicate this model in other parts of the world facing similar challenges. By continuing to refine AI-based models and expanding our partnerships, the goal is to build a more resilient global community capable of withstanding the worsening impacts of climate change.

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NOTES TO EDITORS

About the United Nations World Food Programme

The United Nations World Food Programme is the world's leading humanitarian organization, saving lives in emergencies and using food assistance to build a pathway to peace, stability and prosperity for people recovering from conflict, disasters and the impact of climate change.

About World Food Program USA

World Food Program USA, a 501(c)(3) organization based in Washington, D.C., proudly supports the mission of the United Nations World Food Programme by mobilizing American policymakers, businesses and individuals to advance the global movement to end hunger. Our leadership and support help to bolster an enduring American legacy of feeding families in need around the world. To learn more, please visit wfpusa.org.

About Oxford University Physics

Oxford University Physics is one of the largest physics departments in the world, top-ranked in the UK and among the lead research universities globally in all key areas of physics (currently number 3 in the QS World Rankings 2024). Its mission is to apply the transformative power of physics to the foremost scientific problems and educate the next generation of physicists as well as to promote innovation and public engagement.

Oxford University Physics leads ground-breaking scientific research across a wide spectrum of challenges: from quantum computing, quantum materials and quantum matter to space missions and observation; from climate science to the development of next-generation technologies for renewable energy; and from designing experiments to understand the nature of existence to revolutionising medicine and healthcare through biophysics.

About Oxford University

Oxford University has been placed number 1 in the Times Higher Education World University Rankings for the eighth year running, and number 3 in the QS World Rankings 2024. At the heart of this success are the twin-pillars of our ground-breaking research and innovation and our distinctive educational offer. Oxford is world-famous for research and teaching excellence and home to some of the most talented people from across the globe. Our work helps the lives of millions, solving real-world problems through a huge network of partnerships and collaborations. The breadth and interdisciplinary nature of our research alongside our personalised approach to teaching sparks imaginative and inventive insights and solutions. Through its research commercialisation arm, Oxford University Innovation, Oxford is the highest university patent filer in the UK and is ranked first in the UK for university spinouts, having created more than 300 new companies since 1988. Over a third of these companies have been created in the past five years. The university is a catalyst for prosperity in Oxfordshire and the United Kingdom, contributing £15.7 billion to the UK economy in 2018/19, and supports more than 28,000 full time jobs.

About IGAD Climate Prediction and Applications Centre (ICPAC)

ICPAC is a designated Regional Climate Centre (RCC) by the World Meteorological Organization, providing essential Climate Services to 11 East African countries. Our services are crucial in building resilience in a region significantly impacted by climate change and extreme weather events. Through the **IGAD Disaster Risk Management programme**, we work to enhance risk understanding, bolster early warning systems, and lead initiatives that transition to anticipatory action in collaboration with member states.