Press release

Atos and ECMWF launch Center of Excellence in Weather & Climate Modelling to support researchers with HPC, AI and quantum capabilities

London and Reading, UK; Paris, France; Bologna, Italy - October 5 2020 – Atos, a global leader in digital transformation, and the European Center for Medium-Range Weather Forecasts (ECMWF), today announce a new **Center of Excellence in HPC, AI and Quantum computing for Weather & Climate.** The Center will be based at ECMWF's headquarters in Reading, UK, where it will provide their team of international researchers with access to emerging AI (Artificial Intelligence) and Quantum Computing technologies and expertise, and benefit from ECMWF's high-performance computing (HPC) resources to be soon located in Bologna, Italy. The aim is to support ECMWF scientists in their work on medium and long-range weather forecasting and prediction and global climate modelling.

Using these latest advances in technology, ECMWF researchers will be able to improve the ability to forecast the occurrence and intensity of extreme weather events and other new weather phenomena triggered by climate change. Equipped with Atos' latest BullSequana supercomputer, the Center of Excellence will also be supported by Atos experts and technology partners who will collaborate directly with ECMWF research scientists in order to develop new techniques to support next-generation weather forecasting, help boost climate and weather discovery and innovation, and help prepare ECMWF for future HPC and data handling architectures.

> *"Bringing together world-class experts in computing, computational science and Earth system science is key to continuing to advance our medium- and long-range weather forecasting. The Center builds on a previous successful collaboration with Atos and will play a significant role in helping us to improve and reliably predict the occurrence and intensity of extreme weather events and other events associated with climate change significantly ahead of time*," **said Dr Florence Rabier, Director General at ECMWF**. "*Technology will play a key role in supporting our experts in*

the field and enabling partners in our 34 Member and Co-operating States across Europe to continue to protect life and property in their countries."

Pierre Barnabé, Senior Executive Vice-President, Head of Big Data & Cybersecurity at Atos said: *"We are thrilled to establish this Center of Excellence together with ECMWF, where researchers will be able to explore the different usages of HPC and AI through proof of concept production, as well as innovation workshops, courses and conferences. High-performance Computing assisted by artificial intelligence holds huge potential for the climate and weather. It also introduces new methods and techniques that are only just becoming available."*

As part of the new Center of Excellence, one of the initial projects will be to develop Machine learning solutions for applications across the numerical weather prediction workflow that are customized towards the needs of Earth system modelling. A second project will look to develop a CPU-GPU-based version of ECMWF's Integrated Forecasting System (IFS) and the wave model WAM, and to prepare the ECMWF product-generation pipeline and data-centric workflows for new technologies.

As part of the Atos Center of Excellence (CoE) in Advanced Computing, the Weather & Climate CoE is Atos' second CoE dedicated to HPC, AI and quantum technologies which is focused on a scientific domain. The first being launched on 8 July, together with the Wellcome Genome Campus and which is focused on Life Sciences.

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Technical Details

The research will be powered by ECMWF's new Atos BullSequana XH2000 supercomputer, one of the most powerful meteorological supercomputers in the world. The system is equipped with BullSequana X2415 blades, utilizing NVIDIA's next-generation graphics processing unit architecture, the NVIDIA® A100 Tensor Core GPU, and is supported by **Atos Codex AI Suite**, the most comprehensive AI software suite on the market. This will provide advanced GPU computing and AI capability to enable ECMWF researchers to speed-up processing times on the most complex data, enabling them to gain insights faster, using the power of deep learning and analytics.

The Center of Excellence will also have access to Atos' Quantum Learning Machine (QLM), the most advanced Quantum Computing Simulator available today, to explore how quantum computing may impact weather and climate prediction in the future. The Center will also be supported by expert staff from AMD, Mellanox, Nvidia and DDN, allowing it to explore accelerated computing techniques as well as issues related to storage and data access.

About Atos

Atos is a global leader in digital transformation with 110,000 employees in 73 countries and annual revenue of € 12 billion. European number one in Cloud, Cybersecurity and High-Performance Computing, the Group provides end-to-end Orchestrated Hybrid Cloud, Big Data, Business Applications and Digital Workplace solutions. In the UK & Ireland Atos delivers business technology solutions for

some of the country's largest public and private sector organisations The Group is the Worldwide Information Technology Partner for the Olympic & Paralympic Games and operates under the brands Atos, Atos|Syntel, and Unify. Atos is a SE (Societas Europaea), listed on the CAC40 Paris stock index.

The purpose of Atos is to help design the future of the information space. Its expertise and services support the development of knowledge, education and research in a multicultural approach and contribute to the development of scientific and technological excellence. Across the world, the Group enables its customers and employees, and members of societies at large to live, work and develop sustainably, in a safe and secure information space.

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About ECMWF

Headquartered in Reading in the UK, and with its data centre in Bologna, Italy, ECMWF is an independent intergovernmental organization supported by 34 Member and Co-operating States across Europe and holds the largest archive of numerical weather prediction data in the world. Its primary mission is to provide its users with numerical weather predictions covering medium to long ranges. Over the past few years, ECMWF has also developed a strong partnership with the EU and is an entrusted entity for the implementation and operation of the Climate Change and Atmosphere Monitoring Services of the ground-breaking EU Copernicus Programme.

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