The next step on the road to more **accurate weather forecasts**

Severe winter weather experienced in the UK over the last couple of years reduced the UK's GDP by 0.5 per cent, and resultant travel disruption cost the UK economy £280 million per day. The weather has a huge impact on our lives, affecting transport, agriculture, energy use and leisure.

For this reason, we rely heavily on weather forecasting to inform us about severe weather, to allow us to prepare, plan and manage the weather in a way that not only saves money but can save lives.

Gung-Ho, a project to design and build a next generation weather forecasting model for the UK, is a collaboration between the Met Office, the Natural Environment Research Council (NERC) and STFC. Utilising the combined expertise of all three research bodies, that already makes the UK a world-leader in weather forecasting, its aim is to ensure we can exploit ever more powerful computers so we continue to provide the most accurate forecasts possible.

This research was one of the first major projects to benefit from STFC's new Hartree Centre, one of the world's foremost centres in future software development based at Daresbury Laboratory in Cheshire. The Centre is home to the UK's most powerful supercomputer, Blue Joule, which is made up of 98,304 processors and is capable of running over a thousand trillion calculations per second (see page 4 for more details).

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The overall aim for the Gung-Ho project is to develop a 'new dynamical core' for a new weather and climate model. This dynamical core is an essential part of the model that deals with how air moves; i.e., the dynamics. The use of ultra-fast computers allows for a much more detailed simulation of the changing weather conditions, providing even more detail further into the future.

Research for the Gung-Ho project, which is part of the Next Generation Weather & Climate Prediction joint programme, began with a two year initial research phase to explore the most effective options for the dynamical core. It has recently entered Phase 2- a three year 'development' stage that will build on the previous research to begin to develop a fully functioning dynamical core for the new, advanced weather and climate model.