

# Optimising a complex next-generation weather and climate code

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## ABSTRACT

Despite impressive advances with AI, traditional weather and climate models still form the backbone of numerical forecasting with high skill. The UK Met Office, in collaboration with NIWA and other institutions in the Unified Model Partnership, is working on the next-generation code LFRic. The new model will improve support for current and future supercomputing architectures and enable global weather prediction at very high spatial resolution. Code optimisation is a key part of the development process to ensure a minimal resource footprint and reduce time-to-solution.

In this talk, I will present my work on improving computational performance of the LFRic code at the source code level using loop tiling. I will discuss this in the wider context of computational performance on modern high-performance computing (HPC) architectures and energy/resource efficiency considerations, which pose significant challenges for creating maintainable software.

## ABOUT THE AUTHOR(S)

Wolfgang Hayek is a HPC Research Software Engineer at NIWA, and group manager of NIWA's scientific programming group, with many years of experience in scientific computing and HPC.