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Running ECMWF workflow on the NextGenIO prototype

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The architecture of the NextGenIO prototype featuring Intel's Optane DCPMMs presents both challenges and opportunities as a platform for ECMWF's time-critical operational workflow.

This workflow generates massive amounts of I/O in short bursts, accumulating to tens of TiB in hourly windows. From this output, millions of user-defined daily products are generated and disseminated to member states and commercial clients all over the world. These products are processed from the raw output of the IFS model, within the time critical path and under a strict delivery schedule. Upcoming improvements in resolution and growing popularity will increase both the size and number of these products. Based on expected model upgrades, by 2025 we estimate the operational model will output over 335 TiB per forecast.

We will present our last 4 years work, refactoring ECMWF's software stack to deliver an operational system that handles these workflows, and demonstrate that these new storage class memories will help significantly in tackling our I/O issues as we approach Exascale.

Keywords

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