

OOKAMI PROJECT APPLICATION

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Project Title: TOTAL

Usage:

- Testbed

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Usage Description:

Minimod is a finite-difference proxy application developed by Total Exploration and Production Research and Technologies. It solves the acoustic wave equation, an important problem in geophysical applications. Minimod extracts the core stencil computation used in production codes, and is designed to evaluate the performance of new and emerging programming models and hardware.

In this project, we will evaluate Minimod on the A64FX processor with the different compilers available on Ookami. We will compare performance to that

obtained on the same code on other architectures, and on other deployments of the A64FX processor (e.g., Fugaku).

Reference:

- Minimod overview: <https://arxiv.org/abs/2007.06048>

Computational Resources:

- Total node hours per year: 1000 per user
- Size (nodes) and duration (hours) for a typical batch job: 4 nodes, 1 hour
- Disk space (home, project, scratch): 40GB, 4TB, 4TB

Personnel Resources:

None anticipated.

Required software:

None extra.

If your research is supported by US federal agencies:

- Agency: N/A
- Grant number(s): N/A

Production projects:

Production projects should provide an additional 1-2 pages of documentation about how

1. the code has been tuned to perform well on A64FX (ideally including benchmark data comparing performance with other architectures such as x86 or GPUs)
2. it can make effective use of the key A64FX architectural features (notably SVE, the high-bandwidth memory, and NUMA characteristics)
3. it can accomplish the scientific objectives within the available 32 Gbyte memory per node