

Enabling Performance Portability of the Albany Land Ice solver using Trilinos and Kokkos

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High resolution simulations of polar ice sheets play a crucial role in the ongoing effort to develop more accurate and reliable Earth-system models for probabilistic sea-level projections. These simulations often require a massive amount of memory and computation from large, heterogeneous supercomputing clusters to provide sufficient accuracy and resolution. In order to avoid architecture specific programming, programming models such as Kokkos are becoming increasingly important to obtain efficient implementations. By heavily utilizing various performance portable packages within Trilinos, including the Kokkos programming model, a significant amount of progress has been made towards developing a performance portable implementation of Albany Land Ice (formerly known as Albany/FELIX). This presentation focuses on the key performance developments and future performance goals towards obtaining a robust and scalable land ice solver on a variety of different architectures including traditional CPUs, NVIDIA GPUs and Intel Xeon Phi.