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Building Global Kilometer-Scale Prediction Models

Monday, 20 September 2021 17:00 (20 minutes)

We will give an overview of efforts to build earth system prediction models that are able to run at kilometer-scales on CPU, GPU and hybrid systems. The entire design and development process must be examined including algorithms, languages, tools and libraries, software approach, and other aspects in order to maximize the combination of computational performance, portability, productivity, and scientific accuracy. We will introduce GeoFLOW, a framework that enables comparisons of algorithms and approaches in terms of computational performance and scientific accuracy. Such comparisons are made at the target kilometer-scale resolution to fully characterize performance, scalability and accuracy. The approach is to build from the ground up, progressing from simpler to more complex models, selecting the algorithms and techniques that provide the best overall capabilities.

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