Title: Co-designing a System for Regional Weather and Climate Prediction

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Adapting weather and climate models to current and emerging hardware architectures is a formidable challenge. Due to the disparity between floating point operation throughput and main memory bandwidth these codes typically achieve only a low fraction of peak performance. We present the design decisions, implementation, performance results and learnings from an effort to re-design an existing, widely used community code (COSMO) to hybrid architectures. Using the concrete example of MeteoSwiss' next-generation operational forecasting system, we illustrate the gains in scientific possibilities, time-to-solution and energy-to-solution.