



Operational numerical weather prediction on a GPU-accelerated cluster supercomputer

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The local area weather prediction model COSMO is used at MeteoSwiss to provide high resolution numerical weather predictions over the Alpine region. In order to benefit from the latest developments in computer technology the model was optimized and adapted to run on Graphical Processing Units (GPUs). Thanks to these model adaptations and the acquisition of a dedicated hybrid supercomputer a new set of operational applications have been introduced, COSMO-1 (1 km deterministic), COSMO-E (2 km ensemble) and KENDA (data assimilation) at MeteoSwiss. These new applications correspond to an increase of a factor 40x in terms of computational load as compared to the previous operational setup. We present an overview of the porting approach of the COSMO model to GPUs together with a detailed description of and performance results on the new hybrid Cray CS-Storm computer, Piz Kesch.