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Title: *Elastic Ensemble Run Data Processing with Melissa*

Abstract

Ensemble runs consists in running a given numerical simulation several times with different input parameters to sample the simulation behavior in the parametric space. Ensemble runs are performed for uncertainty quantification or data assimilation for instance, and its importance is growing with the availability of super large-scale computers and the need to couple numerical simulations with data provided with other scientific instruments. But the amount of data produced when running many large-scale simulations is prohibitive to store. In this talk we will present Melissa, a file avoiding, adaptive, fault tolerant and elastic framework designed to handle very large ensemble runs coupled with on-line data processing. We will present how, in the context of the AI and HPC convergence, Melissa can be leveraged for global sensitivity analysis, data assimilation and training of large-scale surrogate models.

