

## **Task parallel sensitivity and parameter estimation of groundwater simulations through the SALSSA framework**

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The Support Architecture for Large-Scale Subsurface Analysis (SALSSA) provides an extensible framework, sophisticated graphical user interface, and underlying data management system that simplifies the process of running subsurface models, tracking provenance information, and analyzing the model results. Initially, SALSSA supported two styles of job control: user directed execution and monitoring of individual jobs, and load balancing of jobs across multiple machines taking advantage of many available workstations. Recent efforts in subsurface modelling have been directed at advancing simulators to take advantage of leadership class supercomputers. We describe two approaches to enabling efficient application of the STOMP code via the SALSSA framework: automating sensitivity analysis problems through task parallelism, and task parallel parameter estimation using the PEST framework.