

Can workflows be applied to massively parallel optimisation problems?

Alexander Pletzer^{1,2}, Sandy Elliott², Thanh Dang², Linh Hoang² and Chris Scott³

1 NeSI, 2 NIWA, 3 University of Auckland

alexander.pletzer@nesi.org.nz

ABSTRACT / INTRODUCTION

Parameter optimisation/calibration problems and sensitivity analyses arise in many areas of science and engineering. These problems often involve exploring a large parameter space, thus requiring many simulations. Such endeavours tend to be computationally expensive and can thus be highly suited to run on a high-performance computing platform. Here, we will discuss to what extent a workflow approach could help reduce the long wall clock time of parameter scans and calibration runs in the case of the Soil Water Assessment Tool (SWAT), a code that is used in hydrology for water quality assessment purposes.

ABOUT THE AUTHOR(S)

- Alex is a high-performance Research Software Engineer working for NeSI at NIWA. Alex helps researchers run better and faster on NeSI platforms
- Sandy is a principal scientist who applies mathematical techniques to address water quality issues, especially predicting the effects of diffuse pollution and its control at catchment scale
- Thanh is a water quality modeller whose work centres around hydrology, water quality and nutrient cycling
- Linh is a catchment modeller interested in applying numerical models to predict water quantity and quality
- Chris is head of the computational science team at NeSI. Through NeSI's consultancy service, Chris helps scientists become more productive on NeSI's platforms