Introduction

The Weather Research and Forecasting (WRF) modelling system is composed of several components which need to be executed sequentially. The manual execution of this workflow is a time-consuming and error-prone task. Thus, it is customary to automate the process to some degree. However, the automation depends on the experiment to be carried out since the workflow depends on the experiment. This leads to the development of specific WRF workflow automation scripts for each experiment. But this is a time consuming task. When the experiment requires running more than a single model run, the complexity increases and the workflow of the different runs needs to be taken into account. At this point the problems multiply: the large number of simulations now require a monitoring system to check their successful completion; failed runs need to be re-run. If failures are common, the re-running process also needs to be automated.

WRF4G is a flexible framework to manage the WRF workflow covering a wide range of simulation experiments composed of multiple runs with different degrees of dependence. The framework is layered to separate the experiment design from the execution environment. WRF4G includes a monitoring system and easily restarts broken simulations until the experiment is completed.