WRF4SG: A Scientific Gateway for WRF community

Weather Research Forecasting (WRF) model is a public domain software with a world wide spread community of users. This community is heterogeneous both in terms of application domains and Distributed Computing Infrastructure (DCI) profiles. WRF researches are physicists, chemists, mathematicians and engineers who demand a huge variety of DCIs in order to tackle climate experiments such as operational weather forecast, chemistry applications, regional projections of climate change scenarios or atmospheric physics/parametrization research by using WRF.

WRF modeling system is composed of several components which are executed sequentially. Myriad of input and output files have to be managed and monitored in order to run a WRF simulation. Therefore, when a experiment requires executing more than one simulation, its complexity rises almost exponentially demanding an enormous effort for a researcher.

This work proposes to develop a scientific gateway which is going to provide the services needed to perform WRF experiments on heterogeneous DCIs. In addition, it will offer a set of saving time tools in order to design, monitor and manage complex climate experiments such as weather forecast, extreme weather case studies, future climate projections or re-forecasts. This scientific gateway, called WRF4SG (WRF for Scientific Gateway), consists in porting WRF4G application to the WS-PGRADE/gUSE framework, which provides a wide access to DCIs and the possibility to design more complex experiments by creating specific portlets.

Finally, the objective of WRF4SG is able to divide into two goals. The first goal is to bring a more comprehensive interface to WRF community in order to manage more ambitious climate experiments. The second goal is to assist researchers in order to run their experiments concurrently on heterogeneous DCIs.

Keywords: WRF, WRF4G, WRF4SG, WS-PGRADE/gUSE, scientific gateway, climate.

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