



## Running WRF on various distributed computing infrastructures through a standard-based Science Gateway

Roberto Barbera (1,2), Riccardo Bruno (1), Giuseppe La Rocca (1), Torleif Markussen Lunde (3), and Bjorn Pehrson (4)

(1) INFN Division of Catania, Italy, (2) Department of Physics and Astronomy of the University of Catania, Italy, (3) Department of Global Public Health and Primary Care of the University of Bergen, Norway, (4) KTH, Stockholm, Sweden

The Weather Research and Forecasting (WRF) modelling system is a widely used meso-scale numerical weather prediction system designed to serve both atmospheric research and operational forecasting needs. WRF has a large worldwide community counting more than 20,000 users in 130 countries and it has been specifically designed to be the state-of-the-art atmospheric simulation system being portable and running efficiently on available parallel computing platforms.

Although WRF can be executed in many different environments ranging from the single core inside a stand-alone machine up to the most sophisticated HPC platforms, there are no solutions yet to match the e-Science paradigm where software, data and users are “linked” together by the network as components of distributed computing infrastructures. The topmost component of the typical e-Science model consists of Science Gateways, defined as community-developed sets of tools, applications, and data collections that normally are integrated via a portal to get access to a distributed infrastructure. One of the many available Science Gateway solutions is the Catania Science Gateway Framework (CSGF – [www.catania-science-gateways.it](http://www.catania-science-gateways.it)) whose most descriptive keywords are: standard adoption, interoperability and standard adoption. The support of standards such as SAGA and SAML allows any CSGF user to seamlessly access and use both Grid and Cloud-based resources.

In this work we present the CSGF and how it has been used in the context of the el4frica project ([www.el4africa.eu](http://www.el4africa.eu)) to implement the Africa Grid Science Gateway (<http://sgw.africa-grid.org>), which allows to execute WRF simulations on various kinds of distributed computing infrastructures at the same time, including the EGI Federated Cloud.