



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

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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 eI4frica project ([www.ei4frica.eu](http://www.ei4frica.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.