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# A Climate Application in the GRID: on behalf of EELA Project

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## Describe the scientific/technical community and the scientific/technical activity using (planning to use) the EGEE infrastructure. A high-level description is needed (neither a detailed specialist report nor a list of references).

El Niño phenomenon is a key factor for Latin-American climate
prediction. El Niño has
a special interested due to its direct effects in the Pacific
coast of South America
and in particular in Peru and Chile. Moreover, research
institutes from Peru and
Chile (EELA LA partners) run global and regional climate models
and need to compare
their results with other simulations performed by international
centres in the El
Niño area.

## Report on the experience (or the proposed activity). It would be very important to mention key services which are essential for the success of your activity on the EGEE infrastructure.

Due to the special characteristics of the workflow of the
application, experiments
lasting beyond proxy certificates lifetime, control of jobs not
supplied by the
middleware, etc., the cascade of applications makes an efficient
use of the
middleware. This control is based on LFC and AMGA (R-GMA is
planned) to store all
input and output datasets, and to control the status of the
different experiments
submitted to the GRID.

## With a forward look to future evolution, discuss the issues you have encountered (or that you expect) in using the EGEE infrastructure. Wherever possible, point out the experience limitations (both in terms of existing services or missing functionality)

Some limitations has been found from the middleware, specially
with long lasting jobs, for example a typical experiment for a
100 years in a CAM run it requires 7 months of CPU. This issue
has been solved and implemented in the application. No middleware
component allows to
access, process and querymetadata thata are contained in the
files selfdescribing
itself, but a first approach has been implemented in the

application to solved this
problem.

## Describe the added value of the Grid for the scientific/technical activity you (plan to) do on the Grid. This should include the scale of the activity and of the potential user community and the relevance for other scientific or business applications

The climate applications has been deployed on the pilot EELA
infrastructure for both
production and dissemination purposes. The applications deployed
for the EELA Climate
task have been selected from the different available tools in the
climatic community
(global and regional climate models, data analysis tools, etc.)
which are necessary
to predict, analyze and understand the El Niño phenomenon. This
tools perform a
cascade of applications starting with a global climate model
(CAM), which feeds input
data to a regional model (WRF) to focus in world regions of
interest. A third step is
performed to make a data-mining analysis from both models.
Climate applications (CAM,
WRF, SOM) deal with a large number of datasets stored locally, so
grid technology can
offer a solution to access them in a transparent way.

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