



The members of the EGEE "earth science" group belong to the earth science and computer science community from academia, industry and European organisations. Applications cover a large range of domains: Atmospheric Chemistry, Solid Earth Physics, Geosciences, Hydrology, Climate, Space Weather and even the Martian Atmosphere. These closely related communities operate two Virtual Organisations: the Earth Science Research VO is devoted to academic institutes and related partners, while EGEODE was initiated by the private French company, Compagnie Générale de Géophysique, to support EGEE's first industrial application.

Earth Science Research (ESR) supports many applications deployed on EGEE:

- **Atmospheric Chemistry** applications deal with ozone and pollution. The retrieval of ozone profiles from observations by the GOME experiment aboard the ERS-2 satellite, and an application to validate them were the first in the field ported to the Grid. A new application concerns the evolution of ozone levels in the polar regions, and a pollution model has also been adapted to the EGEE infrastructure.
- The **Solid Earth Physics** applications deal with earthquake mechanisms, the numerical simulation of earthquakes in complex 3D geological models and geomorphology. Using the power of the Grid, 21 out of the 26 earthquakes that occurred in 2006 were analysed.
- The **Hydrology** applications deal with the intrusion of seawater into coastal aquifers and with flood forecasting. The former provides, using Monte Carlo simulations, probabilistic maps of seawater intrusion in coastal aquifers of the Mediterranean basin according to different scenarios for sustainable water resource management. The flood forecasting application consists of a cascade of meteorology, hydrology and hydraulic models, initialised with experimental data from Slovakia. This complex application will be adapted to French and Ukrainian rivers.
- **Climate** applications on EGEE deal with the analysis of climate model output. For this purpose, a metadata and data management structure has been developed and deployed to make existing data searchable, accessible and to allow it to be processed by EGEE.

**Geocluster**, an industrial seismic processing solution, was the first industrial application successfully running on the EGEE Grid Production Service. It is accessible on the EGEE infrastructure through the Expanding GEOsciences on DEMand Virtual Organisation. EGEODE is dedicated to research in Geosciences for both public and private industrial research and development as well as collaborating with academic laboratories. It enables researchers to process seismic data and to explore the composition of the Earth's layers.

EGEE is keen to consider other applications. For further information on how to participate, as well as more information about the applications running on EGEE, visit the User and Application Portal at <http://egeena4.lal.in2p3.fr/>.

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