EARTH SCIENCE APPLICATIONS

APPLICATIONS

The Enabling Grids for E-sciencE (EGEE) earth science community investigates the workings of our planet by running applications in the domains of atmospheric chemistry, meteorology, solid earth physics, hydrology, geosciences and climate.

Atmospheric chemists and meteorologists use these applications to model ozone or pollution dynamics, or predict regional and seasonal weather patterns. Solid earth physicists within this community use applications based on re-analysis of the GEOSCOPE data set (an international network of seismometers) to study earthquakes. A number of hydrology applications focus on predicting floods and managing water resources in the Mediterranean area. Several climate applications deal with access and distribution of climate model outputs in the framework of the Intergovernmental Panel on Climate Change.

Within this application area the private French company, CGGVeritas operates Expanding GEOsciences on Demand. This organisation supports academic laboratories for research in geosciences focused on Geocluster, an industrial seismic platform. Geocluster is the first industrial application successfully running on the EGEE grid Production Service. It allows researchers to process seismic data and to explore the composition of the Earth's layers.

Earth Science has deployed many applications through different VOs:

- **Atmospheric chemistry** applications deal with ozone and pollution. The first application on grid was the processing and the validation of satellite ozone profiles with LIDAR (Light Detection and Ranging) observations. The Danish Eulerian Model is deployed for the long range transport air pollution over Europe.
- **Meteorology applications** concern regional weather prediction with various models and the regional el Niño behaviour in Latin America.
- **Solid earth physics** has deployed a large number of applications based on re-analysis of the GEOSCOPE data set (an international network of seismometers), the determination of the earthquake characteristics few hours after the data arrival, numerical simulations of earthquakes in complex 3D geological models and geomorphology.
- **Hydrology** applications on EGEE concern societal-environmental problems, flood and water management in Mediterranean area. The first application is based on a cascade of meteorological, hydrological and hydraulic models initialized by experimental data. The second application, using Monte Carlo simulations, provides probabilistic maps of seawater intrusion in coastal aquifer of the Mediterranean Basin.
- **Climate** applications deal with access and distribution of climate model outputs in the framework of the Intergovernmental Panel on Climate Change.

Application webpages

EGEE is keen to consider other applications. For further information on how to participate see **www.eu-egee.org**.

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