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Grid in Geosciences

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The worldwide Earth science community covers a mosaic of disciplines and players such as academia, industry, national surveys, international organizations, and so forth. It provides a scientific basis for addressing societal issues, which require that the Earth science community utilize massive amounts of data, both in real and remote time. This data is usually distributed among many different organizations and data centers.
These facts, the utilization of massive, distributed data amounts, explain the interest of the Earth science community for Grid technology, also noticeable by the variety of applications ported and tools developed. In parallel to the participation in EGEE, other projects involving ES disciplines were or have been carried out as related projects to EGEE (Enabling Grids for E-sciencE) such as CYCLOPS, SEEGrid, EELA2, EUASIA or outside e.g., in the framework of WGISS/CEOS.
Numerous applications in atmospheric chemistry, meteorology, seismology, hydrology, pollution, climate and biodiversity were deployed successfully on Grid. In order to fulfill requirements of risk management, several prototype applications have been deployed using OGC (Open geospatial Consortium) components with Grid middleware. Examples are in hydrology for flood or Black Sea Catchment monitoring, and in fire monitoring. Meteorological, pollution and climate applications are based on meteorological models ported on Grid such as MM5 (Mesoscale Model), WRF (Weather Research and Forecasting), RAMS (Regional Atmospheric Modeling System) or CAM (Community Atmosphere Model). Seismological applications on Grid are numerous in locations where their occurrence is important and computer resources too small; then interfaces and gateways have been developed to facilitate the access to data and specific software and avoid work duplication. A portal has been deployed for commercial seismological software, Geocluster, for academic users.
In this presentation examples of such applications will be presented to point out the potentiality of Grid for research and operation. Grid provides large amount of compute resources but is also an interesting e-collaboration platform, important for geosciences projects.