Enabling Grids for E-sciencE

Road to an Earth Science Virtual Research Community

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www.eu-egee.org

e-infrastructure

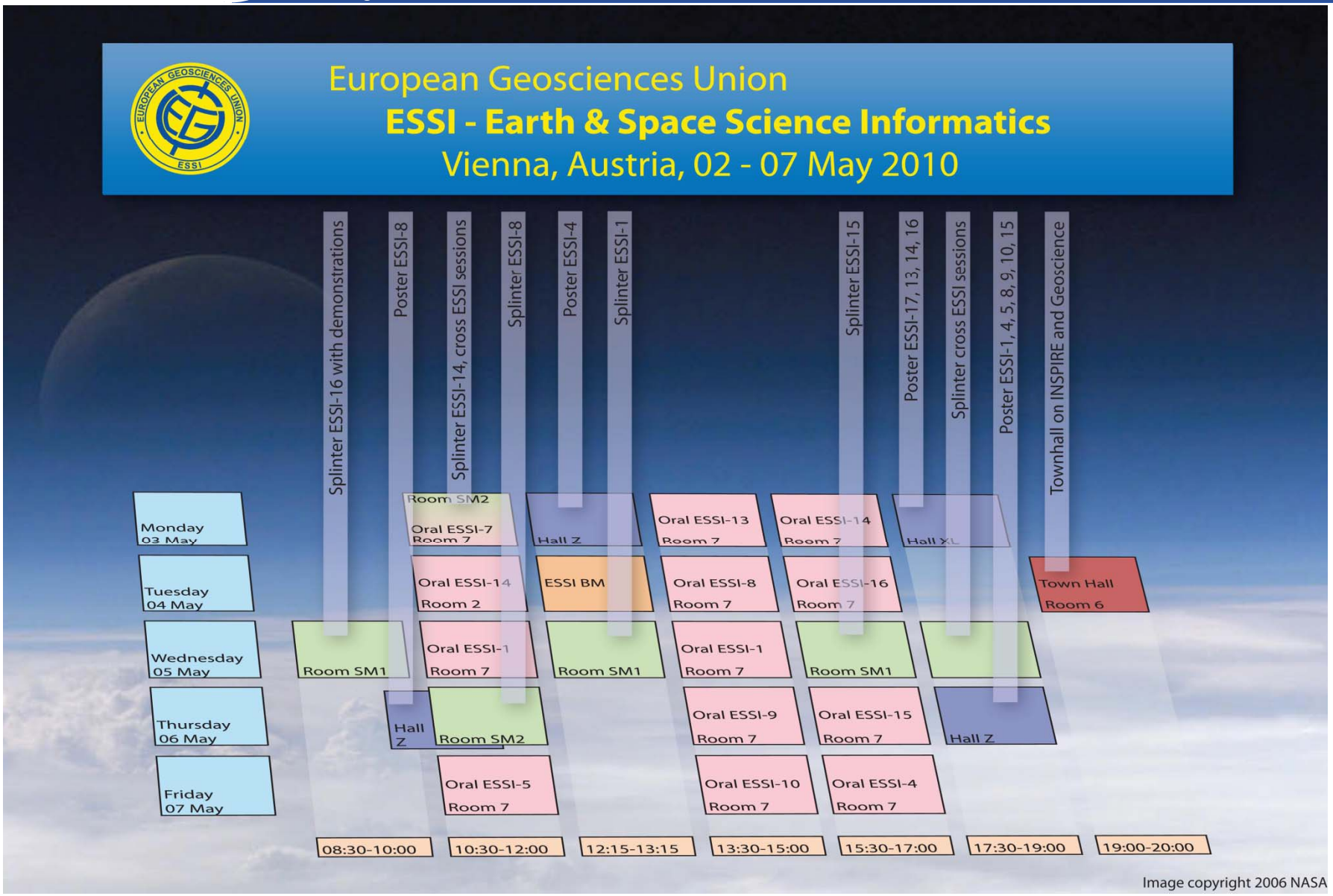
Contents

- **Introduction**
  - Session Overview
  - Posters
  - EGU
- **The ES Cluster in EGEE**
- **Migration to EGI**
  - History
  - Status
  - Future

- **Todays Session**
  - Gridifying the Soil and Water Assessment Tool (SWAT) for the sustainable development of the Black Sea region, Lukasz Kokoszkiewicz
  - Geospatial and Grid infrastructures interoperability in enviroGRIDS, Dorian Gorgan
  - Bridging the gap between applications geospatial data and the Grid, Joel Puga
  - ***Coffee Break (15:30 – 16:00)***
  - Grid implementation and application of the WRF-ARW prognostic model, Davor Davidovic
  - Climate data storage in e-INIS, Geoff Quigley
  - Computational Requirement of Meteorological and Crisis Applications, Juraj Bartok

- Posters related to Earth Science
  - Modelling aerosol pollution over Athens, Greece using grid technology , Dr. ATHANASOPOULOU, Eleni
  - Data Mining and Integration of Environmental Applications, HLUCHY, Ladislav
  - Grid preprocessing application for Environment monitoring in Moldova , Dr. SIDORENCO, Veaceslav
  - Earth Science applications of the ES Virtual Research Community , PETITDIDIER, Monique

ESSI Sessions @ EGU 2010



Background

- Today:

EGEE Strategic Discipline Cluster

- One of seven such Clusters

"to maximize the penetration of grid technology into key scientific disciplines ensuring that the requirements of each area can be met and that the scientists get focused support and help for the development of high-level application services. "

ESSI Sessions @ EGU 2010

Earth & Space Science Informatics

President: Stefano Nativi
Vice-President: Bernd Ritschel

ESSI-1
International Geoscience Informatics Partnerships, Projects, and Collaboration Technologies

Convener: Mohan Ramamurthy
Co-Conveners: Monique Petitdidier, Stefano Nativi

ESSI-4
Informatics in Oceanography

Convener: Giuseppe M.R. Manzella
Co-Conveners: Sissy Iona, Dick M.A. Schaap

ESSI-5
Earth System Modeling: Strategies and Software

Convener: Reinhard Budich
Co-Convener: René Redler

ESSI-6 / NP1.3
Soft Computing Techniques in Geosciences

Convener: Isik Yilmaz
Co-Conveners: Candan Gokceoglu, Biswajeet Pradhan, Ebru Akcapinar Sezer

ESSI-7
Data Preservation and Long Term Access

Convener: Wim Som de Cerff
Co-Conveners: Stefano Nativi, Clifford Jacobs

ESSI-8
Service-Oriented Architecture solutions for Earth and Space Sciences

Convener: Stefano Nativi
Co-Conveners: Pier Giorgio Marchetti, Ben Domenico

ESSI-9
Data, Metadata and Mark-Up languages

Convener: Andrew Woolf
Co-Conveners: Stefano Nativi, Simon Cox

ESSI-10
Semantic Interoperability, Knowledge and Ontologies

Convener: Kristin Stock
Co-Conveners: Peter Fox, Sandro Fiore

ESSI-13
Scientific Gateways and Visualization

Convener: Sandro Fiore
Co-Conveners: Horst Schwichtenberg, Giovanni Aloisio

ESSI-14
Earth Science on Grid

Convener: Horst Schwichtenberg
Co-Conveners: Paolo Mazzetti, Antonio S. Cofino

ESSI-15 / GI11
From Sensors to Interoperable Sensor Networks

Convener: Denis Havlik
Co-Conveners: Walter Schmidt, Zoheir Sabeur

ESSI-16
Real Use of Standards and Technologies

Convener: John van de Vegte
Co-Convener: David Arctur

ESSI-19 / NH7.2 / SSS49
Spatial and temporal patterns of wildfires: models, theory, and reality

Convener: Rosa Lasaponara
Co-Conveners: Luciano Telesca, Donald McKenzie

CR3.1
Remote sensing of cryosphere (co-listed)

Convener: Marco Tedesco
Co-Convener: Thomas Painter

Courtesy John v. Vegt

Background

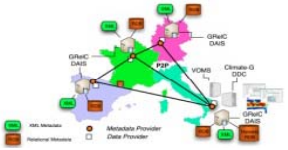
- **More than that**
  - Representation of user interests and requirements
  - Contact point and help
  - Dissemination activities
  - Community building
  - Maintaining Relations and Collaborations
  - VO Management
  - Application porting and deployment support
  - Tool development
  - Documentation of tools, frameworks and common solutions

Applications

Enabling Grids for E-sciencE

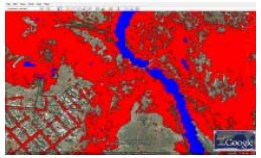
Climate - GReIC

CMCC (Italy), IPSL (France), Univ Cantabria (Spain), SCAI (Germany)



Flood

EMA (France), IISAS (Slovakia), SRI (Ukraine)



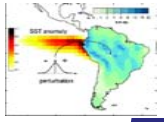
Flood map for Normanton area, Queensland, Australia derived from RADARSAT-2 14-17 Feb 2009 (SRI)

Biodiversity

BRGM (France), Footways(France),JKI (Germany)
Scenarios climatological

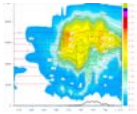
Climate - El Niño

Univ. Cantabria – EELA2

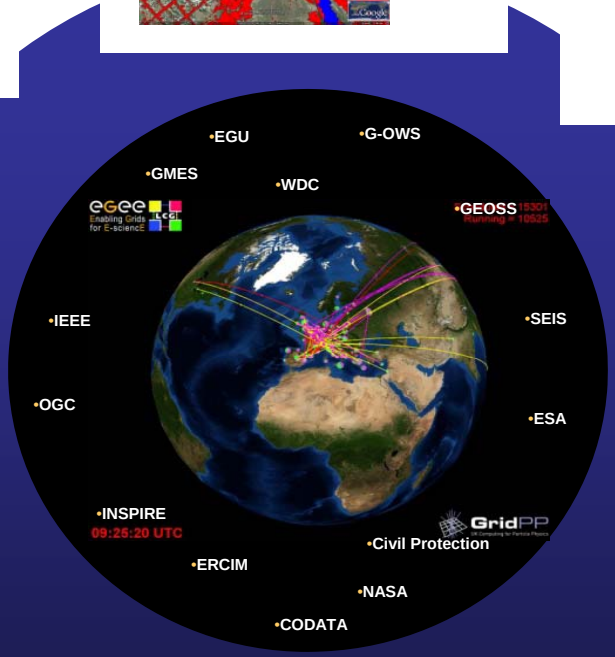


Meteorology

Greece: AUTH, IASA, NOA; SRI (Ukraine), GCRAS (Russia)

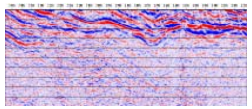


From IASA



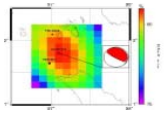
Geosciences- Geocluster

CGGVeritas (France), DSI-IRD, Geoazur, IPGP, IPGS, ISTEP, Sisyphe, UBO



Seismology

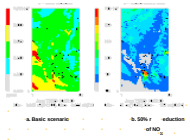
AUTH (Greece), IPGP (France), AUTH (Greece), Tubitak Ulakbim (Turkey), Univ. patras (Greece), INFP (Romania)



From
E. Clévédé - IPGP

Pollution

IPP-BAS (Bulgaria), IASA (Greece), EnvVO-SEEGRID

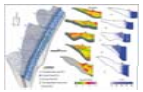


Geospatial platform

IMAA(Italy), INFN(Italy), EMA (France), IMHO(Portugal)

Hydrology

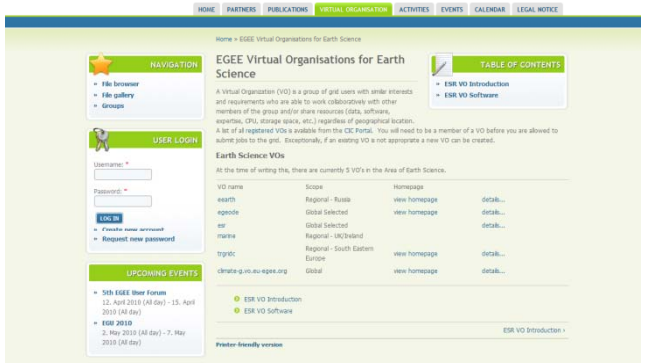
CRS4 (Italy), Univ. Genève, Univ. Neuchâtel,INHGA (Romania), Institute for Water Resources "Jaroslav Cerni", Belgrade and CSASA at University of Kragujevac, Serbia



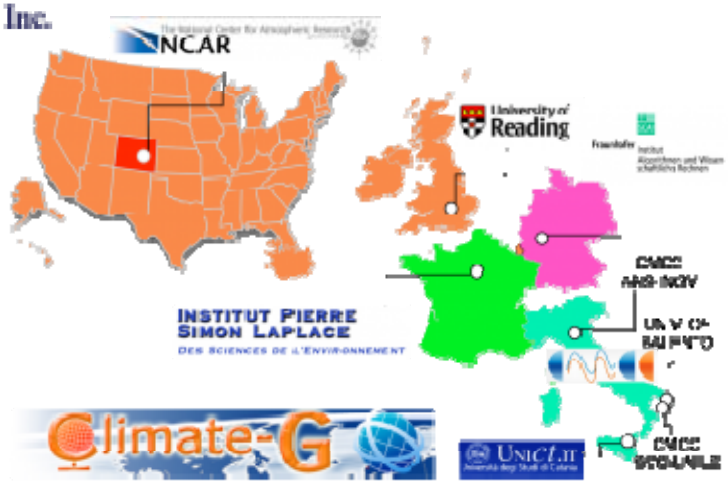
Forecasting seawater intrusion in a coastal aquifer
From J. Kerrou
Univ. Neuchâtel

Activities

European Earth Science Grid



OGC®
Open Geospatial Consortium, Inc.



https://grelc.unile.it:8443/ClimateG-DDC/

Numbers

Community Building

- **9 VOs with ES applications**
  - ESR (Earth Science Research), EGEODE (expanding Geosciences on Demand), SEEGRID (3 VOs), eEarth
  - Cyclops, EELA, IBERGRID….
- **260 registered members**
- **25 European and Associated Countries + Taiwan**
  - Albania, Armenia, Belarus, Bosnia, Bulgaria, France, Georgia, Germany, Greece, Herzegovina, Hungary, Italy, Macedonia, Moldavia, Netherlands, Portugal, Romania, Russia, Serbia, Slovakia, Spain, Switzerland, Turkey, UK, Ukrainia
  - Taiwan (ASGC)
- **Connection with EELA2 and EUAsia**

Migration to EGI

- The cluster also worked on the „Migration to EGI“
- Contacted stakeholders, initiatives, organisations early to harmonise visions
- Collected user requirements and current deficiencies
- Organised a consortium for the preparation
- Worked in close collaboration with EGI consortium to be in line with the blueprint and final project structure
- Participated in Working groups, meetings, workshops of EGEE for transition
- Actively promoted in Earth Science community

Migration to EGI

- **Joined forces with two other disciplines:**
  - Astronomy & Astrophysics
  - Fusion

- **Aim:**
  - Collaborate on unified methodology & structure
  - Benefit from Symbiosis
    - Common requirements
    - Resembling technical challenges
    - Avoid redundancy
    - Benefit from expertise

Migration to EGI

- **Result**
  - Project Proposal „SAFE“ submitted to EU FP7-INFRA call
  - Letters of support from major stakeholders, among them
    - EGEE & EGI Inspire
    - ~20 NGIs
    - International Union of Geodesy and Geophysics
    - European Geosciences Union
    - Open Geospatial Consortium
    - European Space Agency
    - Projects (DORII, EELA2, D4Science, …)
    - and more…
  - Expressed support from ESFRIs and SMEs
  - Addressing requirements of users
  - JRAs for evolution of European Grid


rejected

Status

- **03/2010: Project rejected by EC**
  - Like similar proposals (ROSCOE, CUE, TAPAS)
  - How to move forward?

- **Risk mitigation from EGI Inspire:**

EGI has limited resources to provide direct support to end users. Failure or reduced funding of a VRC will force the affected community to provide its own best effort voluntary support. The user support function in EGI will attempt to make affected communities aware of the resources available elsewhere in EGI that might be able to provide them with support.

Status

- **What does it mean for us?**
  - Community organisation will still go on
  - Organizing collaborations is more difficult
    - e.g. no funds for travel / meetings
  - How to avoid redundant work?
  - Users partially on their own,
    - Resources for VOs, Administration, Software,
    - Direct User Support?
    - Unlikely to get world-wide Earth Science support from NGI
  - Who will work on improving the status quo? (NGI, HPC, funded people)
    - Interopability with GIS
    - Integration of data sources
    - Ease of access
  - Probably loss of experience (Project Contracts)

The way forward

- **Our way forward:**
  - Scale down
    - What is most important?
  - Create an „ES Grid Interest Group“
  - Provide communication infrastructure for discussion and organisation
  - Set up a small Executive Board
    - Examine alternative funding opportunities
    - Organise preparation of future proposals
    - Hold the Contact to NGIs, Sites, other projects
  - See our portal (euearthsciencegrid.org)
  - Will also be on Conferences: EGU, Bulgaria, ….

Open for further discussion!