Spring School announcement

The purpose of this *CGS Europe Spring School on CO2 Geological Storage* is to offer an arena for knowledge-sharing and learning about near zero-emission power generation from a group of professionals, researchers and scientists involved in international CCS programmes.

CGS Europe Spring School on CO2 Geological Storage

Date & place: March 12–18, 2012 at Leszcze near Bełchatów, Poland

Advanced course on geological storage of carbon

CGS Europe: The "Pan-European coordination action on CO_2 Geological Storage", is a project funded within the 7th Framework Programme of the European Community for research, technological development and demonstration activities. CGS Europe pools the expertise of the key research institutes in the area of CO_2 geological storage in European Member States and Associated Countries. It sets up coordination and integration mechanisms between the CO2GeoNet Association - the European Network of Excellence on the Geological Storage of CO_2 - and 23 other participants, thus covering most of Europe with 24 EU Member States and 4 Associated Countries. CGS Europe provides an independent platform and reference source where national, European and international experts, institutes and regulators are able to access the most up-to-date results of CO2 storage-related studies, share experiences and good practices, discuss the implementation of regulations, identify research needs to face upcoming challenges, and create new projects.

Programme of Study: The *CGS Europe Spring School on CO2 Geological Storage* will provide the theoretical and practical knowledge on CCS based on recent international research and development work. Critical elements are:

- *Climate change*
- *CO2 geological storage aspects*
  - *identifying, mapping and completing geological sites for the CO_2 storage*
  - *aquifers, enhanced oil and gas recovery*
  - *multiple underground usage, storage without compromising other operations*
- *Assessment of storage capacity*
- *Safety precautions and consideration, information strategy*
- *Injection*
- *Numerical and Analytical Modelling approach*
- *Monitoring and reporting guidelines*
- *Public awareness and involvement to research and deployment*

The thematic approach will be lectures, exercises, colloquia, study groups and a storage site visit. Most lectures will be covered by compendia, articles or other material that will be made available to the students during the course.

The *CGS Europe Spring School on CO2 Geological Storage* will be open during one concentrated week – Monday to Sunday – March 12th to 18th 2012 with arrival on Sunday March 11th. Key lecturers will be available throughout the entire week, and – as appropriate – take active part in discussions, and otherwise be available upon students' request.

Language: The official language of the *CGS Europe Spring School on CO2 Geological Storage* will be English. This implies that all lectures will be delivered in the English language.

Target group: The target group is young scientists, e.g. PhD students and post docs with background in geology, engineering, geotechnologies. Master students will be considered if space is available.

Selection and grants: Students eligible to attend the *CGS Europe Spring School on CO2 Geological Storage* will be selected upon qualifications that must be duly documented in the application.

Attendance will be free of charge, but direct expenses for travel and board will be born by the students themselves. Some minor funding will be available. It is required, however, that economy class/lowest fares are chosen.

In order to receive the *COACH Studies Diploma,* students must attend the classroom sessions and take an active part in all exercises.

Due date and application

The due date for submitting the application is January 3rd 2012.

Applicants are required to prepare:

1. An application letter describing their interest in the course,
2. CV,
3. Recommendations from head of department, supervisor or mentor,
4. Applicant's email address.

The forms should be sent electronically to:

Niels E. Poulsen, GEUS email: nep@geus.dk

The forms must be received no later than 16.00 Central European time on January 3rd 2012.

Please mark the subject field: Spring School 2012

Why you must attend

The goal is to provide students with diverse backgrounds a broad understanding of the issues surrounding CO_2 geological storage as an effective tool in a wide range of climate change mitigation options and encourage their active participation in this area.

The climate change issue is coined one of the most severe concerns of our time, and has brought leading nations into ambitious ventures in order to reduce their greenhouse gas emissions. The challenge is to provide enough power under a sustainable framework.

Up to now, no green energy source has been identified as being capable of providing very large quantities of "power on demand" at acceptable cost. Fossil fuels are likely to remain the prevalent primary energy source in the foreseeable future in Europe as well as the rest of the world. In response to the climate change issue, however, the problem of increasing CO_2 emissions from fossil fuels must be resolved urgently.

In this endeavour it is expected that emerging carbon capture and storage (CCS) techniques will become part of the solution. CCS is one of the solutions to reduce carbon emissions and serves as a bridging technology towards a carbonfree European energy market.

The course will give an introduction to: Global warming and climate change, greenhouse gasses (methane, CO2...), sources, capture (focus on CO2), transport, trap types & storage options, coal seams, depleted hydrocarbon structures, enhanced recovery, deep saline aquifers.

Reservoir geology & rock properties, geological structure, rock type, cap rocks and reservoirs, mineralogy, porosity, permeability, capillary pressure and fluid distribution.

Basic reservoir concepts: Reservoir pressure, reservoir temperature, storage capacity estimation, fluid flow through porous media.

Storage concept and mechanism: CO_2 plume, dissolution, diffusion, CO_2 solubility rate, mineralization, geochemical aspects, injection, pressure build up. CO_2 Storage Economics, cost.

Monitoring, numerical modelling, leakage, verification and legislation. Environment, health & safety: Governing regulations, risk.

PGI-NRI

The local host organization, the Polish Geological Institute – National Research institute is the leading applied research institute in Poland and the state geological and hydrogeological survey. It covers R&D activities on security of energy supplies, energy and climate, safe infrastructure, geology and health and basic research. It coordinates research on safe CO2 geological storage for the Ministry of Environment – the competent authority on exploration and CO2 storage permits in Poland. PGI is the key advisor to the CCS demo project Bełchatów in the field of storage and partner of a CO_2 pilot injection project the results of which are also to be incorporated in the demo project.

The venue is intended to be at PGI-NRI facility in Leszcze (near Bełchatów) in central Poland. This is a field base and drill core storage site with laboratories located in a former manor house and grounds (see photo attached). It is located a few kilometres from the pilot injection site and not very far from the most likely demo storage site (not finally selected decisively yet).

The PGE Bełchatów CCS demo project is one of six EU EERP projects intended to test the full chain of CCS technology at a scale almost as large as future commercial projects. This CCS power plant will be in operation by 2015. CO_2 storage will include the injection of CO_2 into deep saline aquifers for permanent storage.

Teachers

- Adam Wójcicki, PGI-NRI – www.pgi.gov.pl
- Alexandra Dudu, GeoEcoMar – www.geoecomar.ro
- Niels Poulsen, GEUS www.geus.dk
- Pascal Audigane, BRGM – www.brgm.fr
- Rob Arts, TNO – www.tno.nl
- Stefan Knopf, BGR www.bgr.bund.de
- Ameena Camps, ieaghg www.ieaghg.org