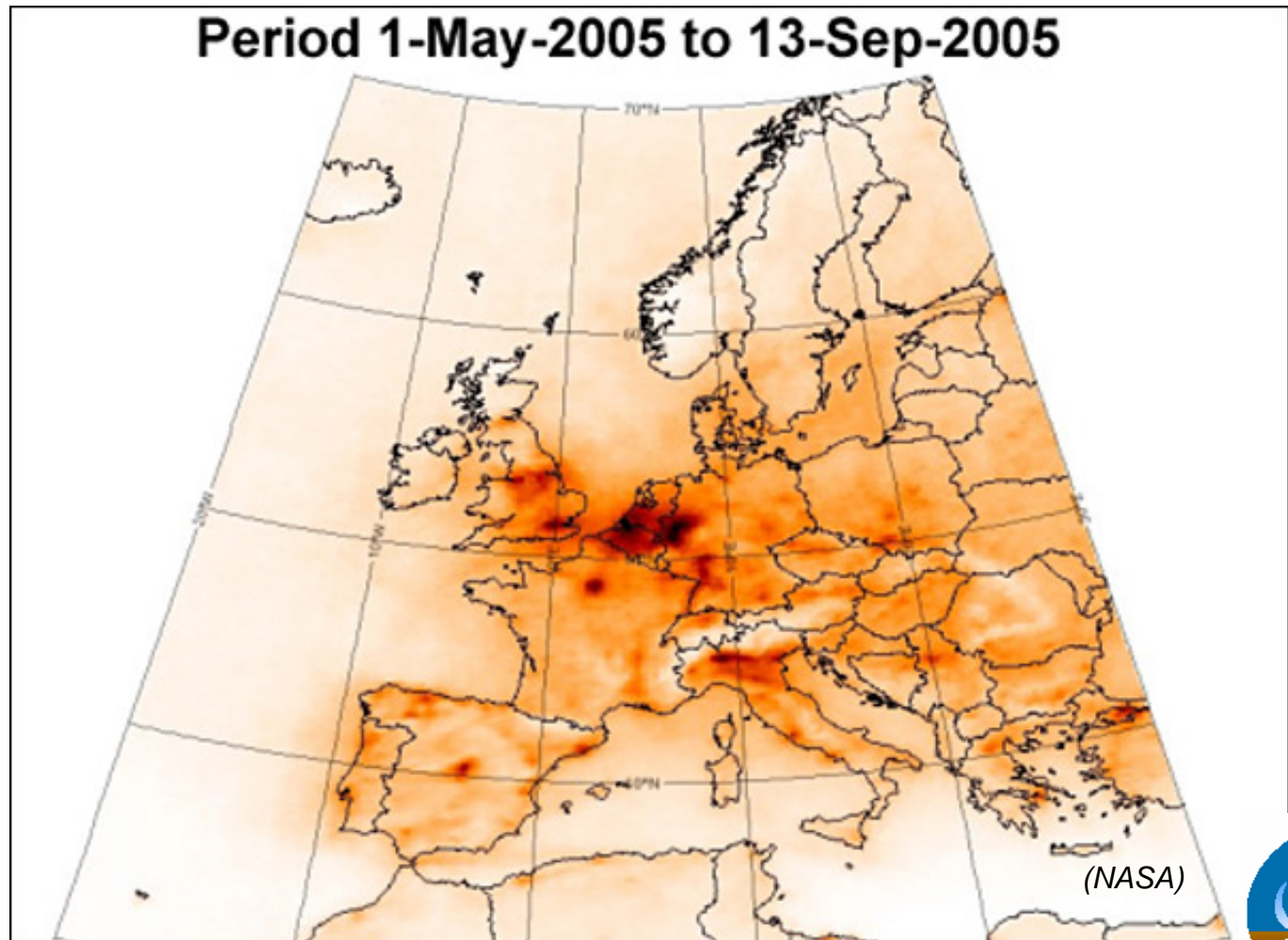


EC Meeting on large CCS projects: Brussels, Sept 5th 2006

European Research Network of Excellence “CO2GoeNet”





EUROPEAN
COMMISSION

Community Research



13 Research Partners

Denmark

Geological Survey of Denmark and Greenland –GEUS

France

Bureau de Recherches Geologiques et Minieres- BRGM
Institute Francais du Petrole –IFP

Germany

Federal Institute for Geosciences and Natural Resources –BGR

Italy

Istituto Nazionale di Oceanografia e di Geofisica Sperimentale-OGS
Università di Roma "La Sapienza" -URS

Netherlands

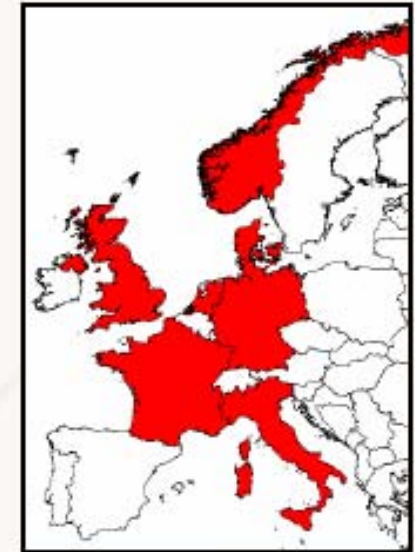
Netherlands Organisation for Applied Scientific Research –TNO

Norway

Norwegian Institute for Water Research –NIVA
International Research Institute Stavanger-IRIS
SINTEF Petroleumsforskning AS –SPR

UK

Natural Environment Research Council-British Geological Survey-BGS (Co-ordinator)
Heriot-Watt University –HWU
Imperial College of Science, Technology and Medicine-IMPERIAL

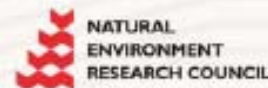


European
Research Network
Of Excellence on
Geological CO₂ storage

Funding EC-€6m
Partners €3m
2004-9.

Co-ordinator
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British Geological Survey
Kingsley Dunham Centre
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The European Commission has pioneered in supporting
CO₂ storage research since the early 1990's



Objectives

- Strengthen the European Research Area
- Form a durable integration and alignment of CO₂ storage research between the network members
- Grow the network- build capacity
- Train the next generation of scientists/engineers
- Develop Europe's CO₂ storage lab R&D infrastructure
- Collaborate & lead internationally- bring uniqueness
- Disseminate
- Provide excellent & impartial “evidence-based” scientific and technical advice and information to stakeholders
- Be the repository for project knowledge arising from STREPs and IPs
- First of its kind
- Underpin and compliment other EC and national research projects/initiatives
- Provide research that will help enable large scale geological storage of CO₂ in Europe as quickly as possible

Progress so far

In year 2 we have seen the network accelerate its development dramatically

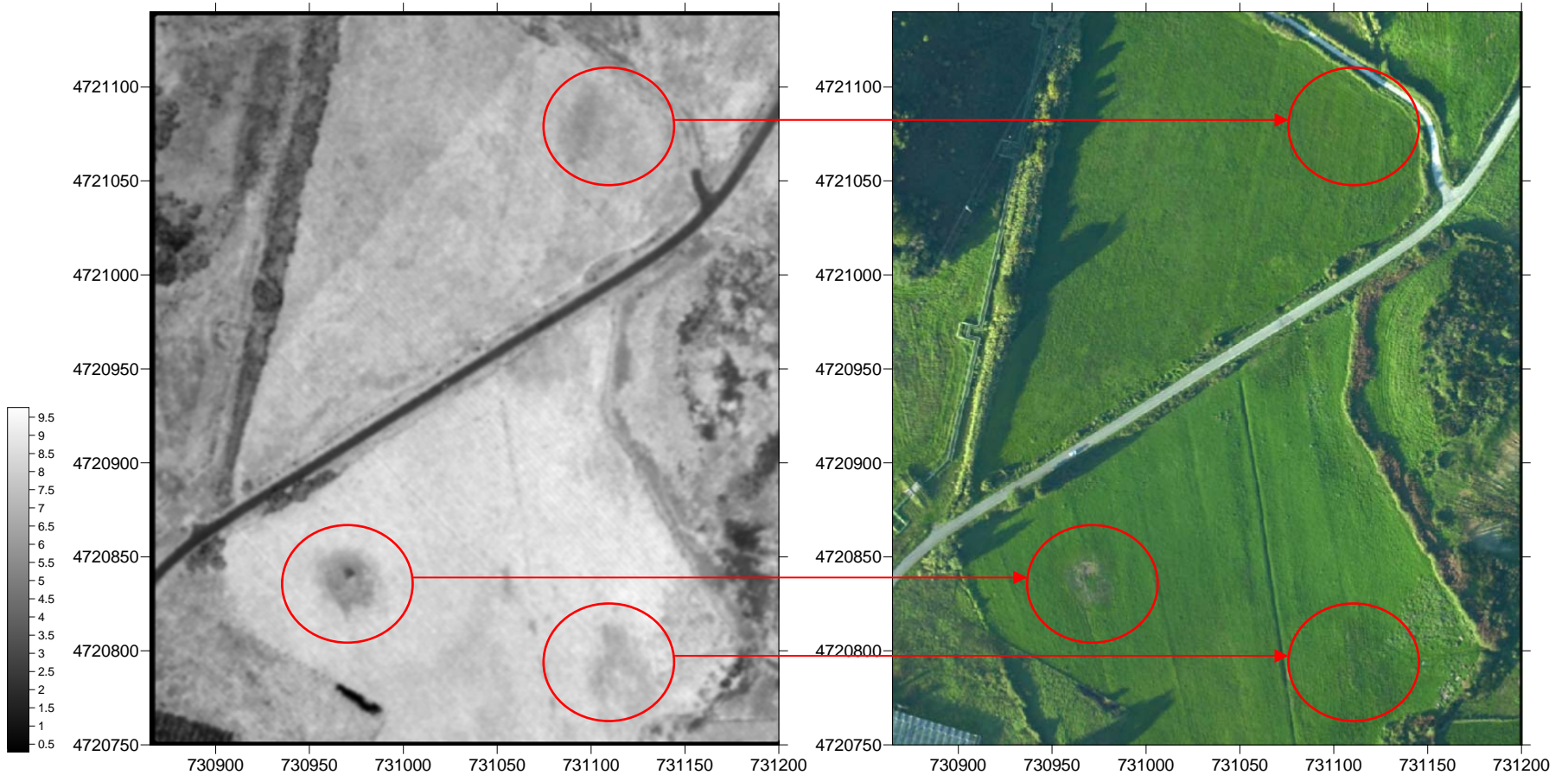
- Sharing of large scale research infrastructure including ships and aircraft
- Alignment of partners research budgets and activities with partner budget contributions well above original plan
- Emergence of teams
- Post-Grad training and involvement in NoE research
- Undergrad teaching
- Joint development of equipment
- Emergence of European field laboratories and test facilities
- Collaboration with “candidate associate members” from academia and service sector
- International collaboration with Canada, Japan, Russia
- Global uniqueness in research emphasis and outputs
- High level engagement with governments and industry
- Begin process of forming a legal entity

Current & new R&D activity in CO2 GeoNet

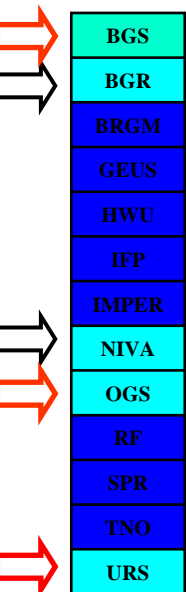


WORK PACKAGES months 13-30	JRAP-1	Cap rock seal capacity for CO2 storage
	JRAP-2	Creation of a conceptual model of gas migration in a leaking CO2 analogue
	JRAP-3	Development of advanced seismic modelling capabilities
	JRAP-4	Ecosystem responses to CO2 leakage - model approach
	JRAP-5	Geochemical monitoring for onshore gas releases at the surface
	JRAP-6	Integrating risk assessment tools for CO2 storage performance assessment
	JRAP-7	Interaction of CO2 with host rocks: experiments and models
	JRAP-8	Monitoring of submarine CO2 fluxes and ecological impact
	JRAP-9	Seal properties database
	JRAP-10	Testing remote sensing monitoring technologies for potential CO2 leaks
	JRAP-11	Unlithified seal deformation
	JRAP-12	Application of tracers for monitoring CO2 storage
	JRAP-13	CO2 storage in virgin seams and in coal seams stimulated by UGC
New WPs months 25-42	JRAP-14	Reactions between CO2 and borehole infrastructure
	JRAP-15	Enhanced Oil Recovery From Depleted Oil Reservoirs Through CO2 Storage
	JRAP-16	Geological Models, Heterogeneity Catalogue and Scale-relations
	JRAP-17	Feasibility of geophysical methods as a tool to detect migration pathways of CO2 in the shallow subsurface
	JRAP-18	Monitoring near surface leakage and its impacts
	JRAP-19	Development of a low cost alert system for the CO2 Storage, based on active and passive seismics

Latera survey on natural CO₂ seeps – comparison between laser uncalibrated amplitude and orthoimages



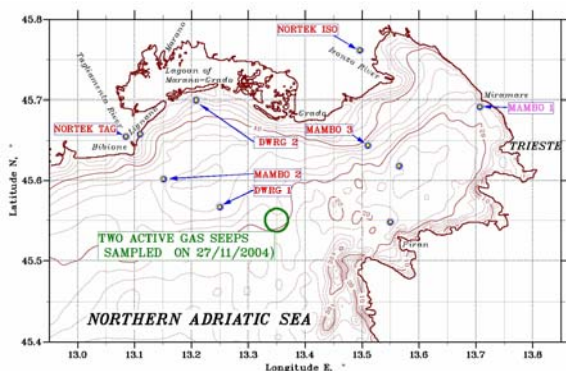
Monitoring of submarine CO₂ fluxes & ecological impact



■ **Objectives:** Feasibility study for automatic sampling & detection of offshore gas release, coupled to analysis of water chemistry, and CO₂ exposure tests on marine organisms

■ **Relevance:**

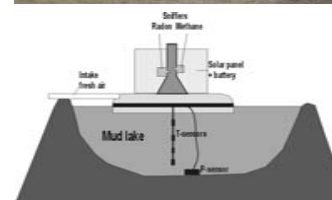
- ✓ improve experience in offshore monitoring
- ✓ first operational testing of basic monitoring installations, coupled to ecological investigations
- ✓ to assess knowledge and define technical gaps in order to facilitate further developments of continuous geochemical monitoring devices to be used in open sea environments and lakes



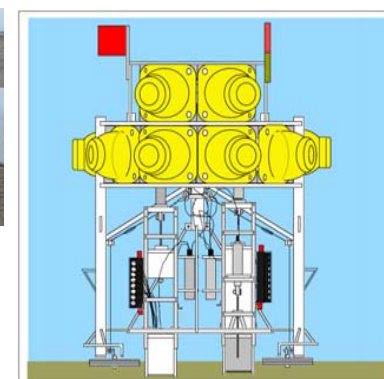
Monitoring network in the Gulf of Trieste by three OGS buoys



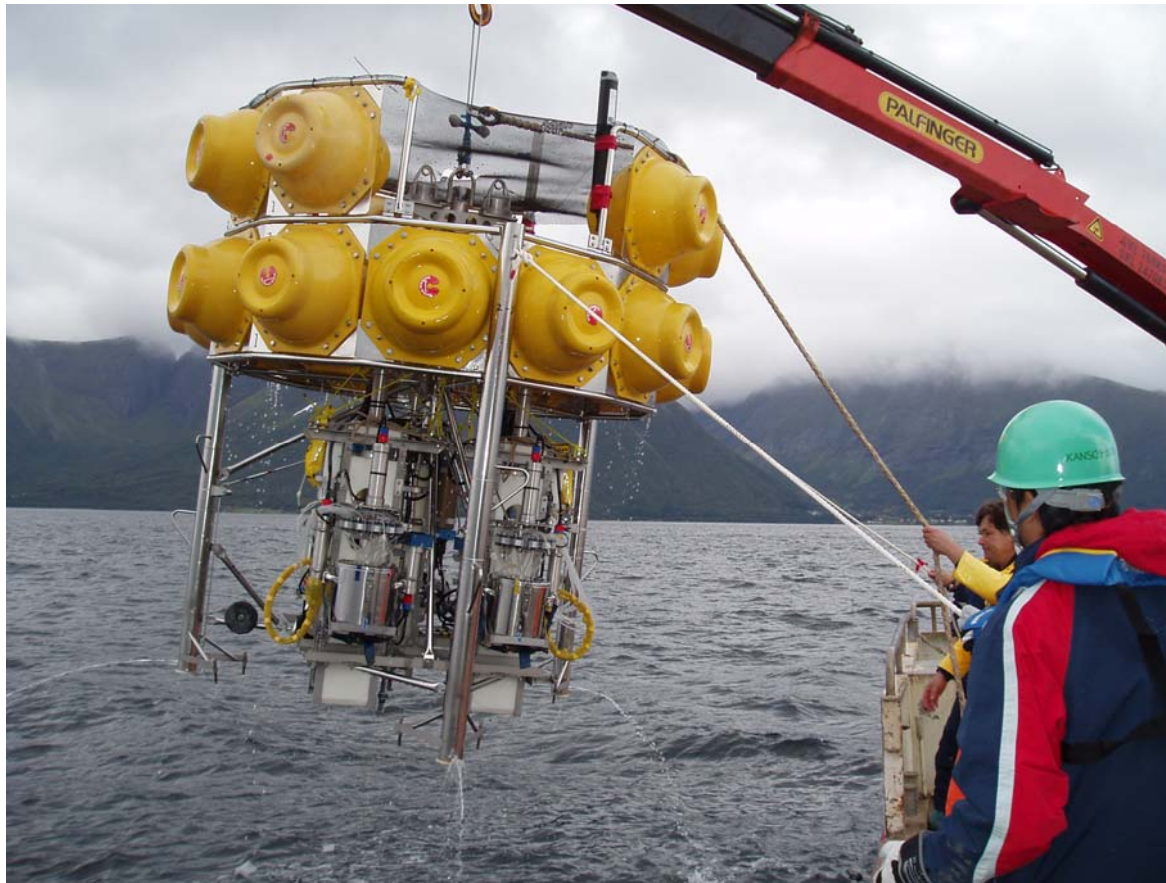
Meteo-oceanographic buoy OGS-MAMBO



Monitoring station on a lake above Dashgyl mud volcano, Azerbaijan



Benthic Chamber system

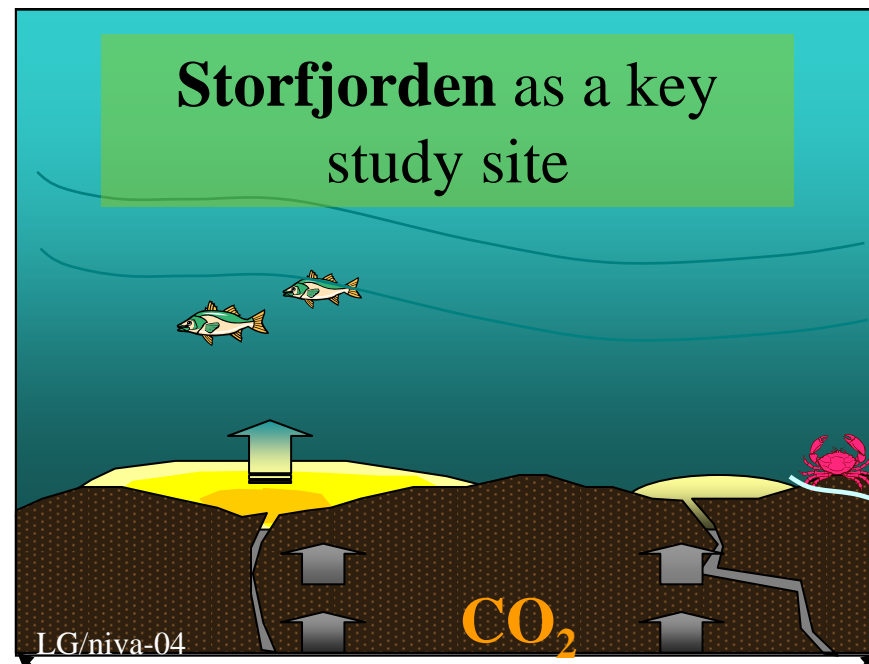


Benthic lander” used by RITE/NIVA in a Norwegian fjord in order to study effects of CO₂ on a benthic sediment community at 400m depth (September 2005).



Relevant study topics

- Gas migration in sediments
- Gas diffusion acr. seadiment-water interface
- Benthic layer physical processes
- Benthic biology incl microbiology
- Sediment/water chemistry
- Monitoring techniques
- Equipment testing
- Long term deployments



A proposed marine test facility lab for FP7

Sub-seabed storage

The network is unique globally regarding experience with CO₂ behaviour in the shallow subsurface and issues around leakage.

Leakage and permanence are the issues of most concern regarding regulation and public acceptance of CCS

This is where the NoE has immediate relevance to any large scale CCS project, public engagement and the formulation of storage regulation.

This expertise is also relevant to the underground storage of natural gas, hydrogen & compressed air as the NoE has experience with all the suite of gases in flux between the crust and atmosphere