



CO₂ Storage by Injection into a Saline Aquifer at Ketzin

CO₂SINK



Objective

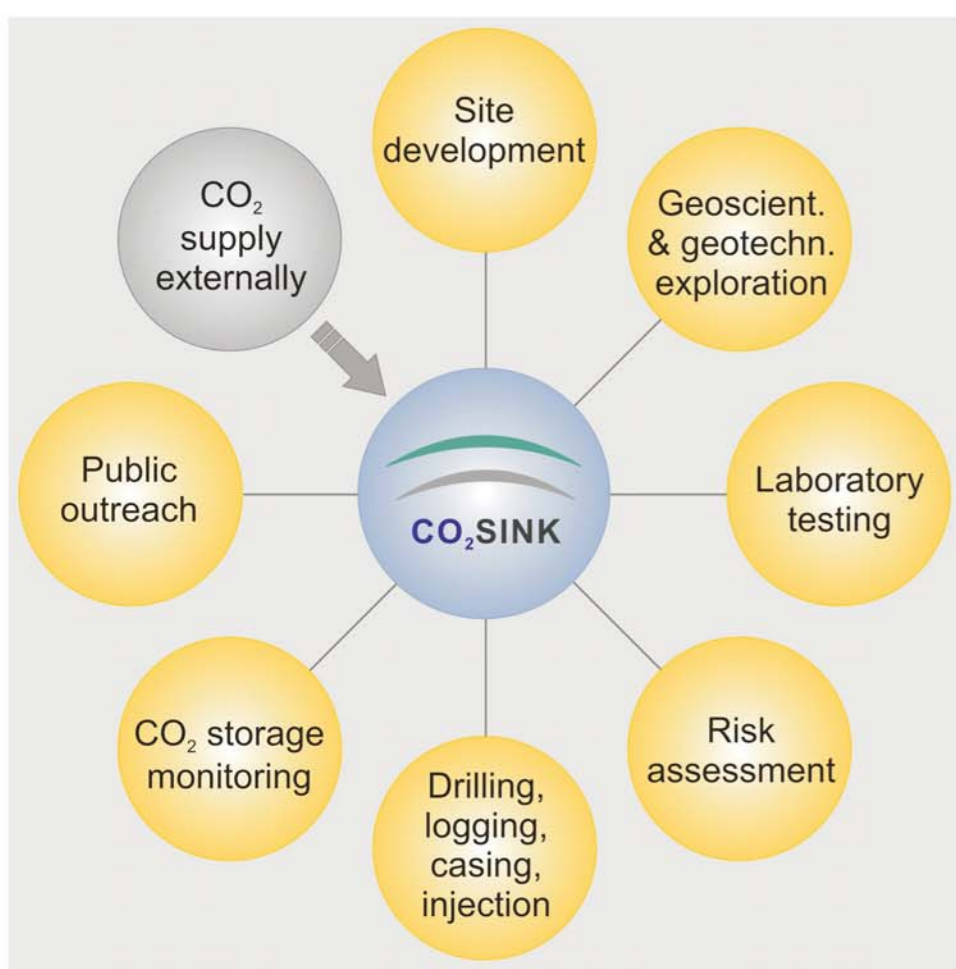
Deployment of a basis for geological storage of CO₂ by injection to

- advance the understanding of science and practical processes in underground storage of CO₂
- provide real case experience for use in development of regulatory frameworks for CO₂ geological storage.

Three boreholes, one injection well (IW) and two observation wells (OW), will be drilled with spacings of 50 to 100 m. Drilling commenced in March 2007 piercing an anticlinal structure in the Northeast German sedimentary basin. A total of up to 100 t/day of CO₂, in gaseous state at the well head, will be injected at about 700 m depth into a saline sandstone aquifer. Injection is intended for two years, during which the distribution and fate of the injected gas will be monitored.

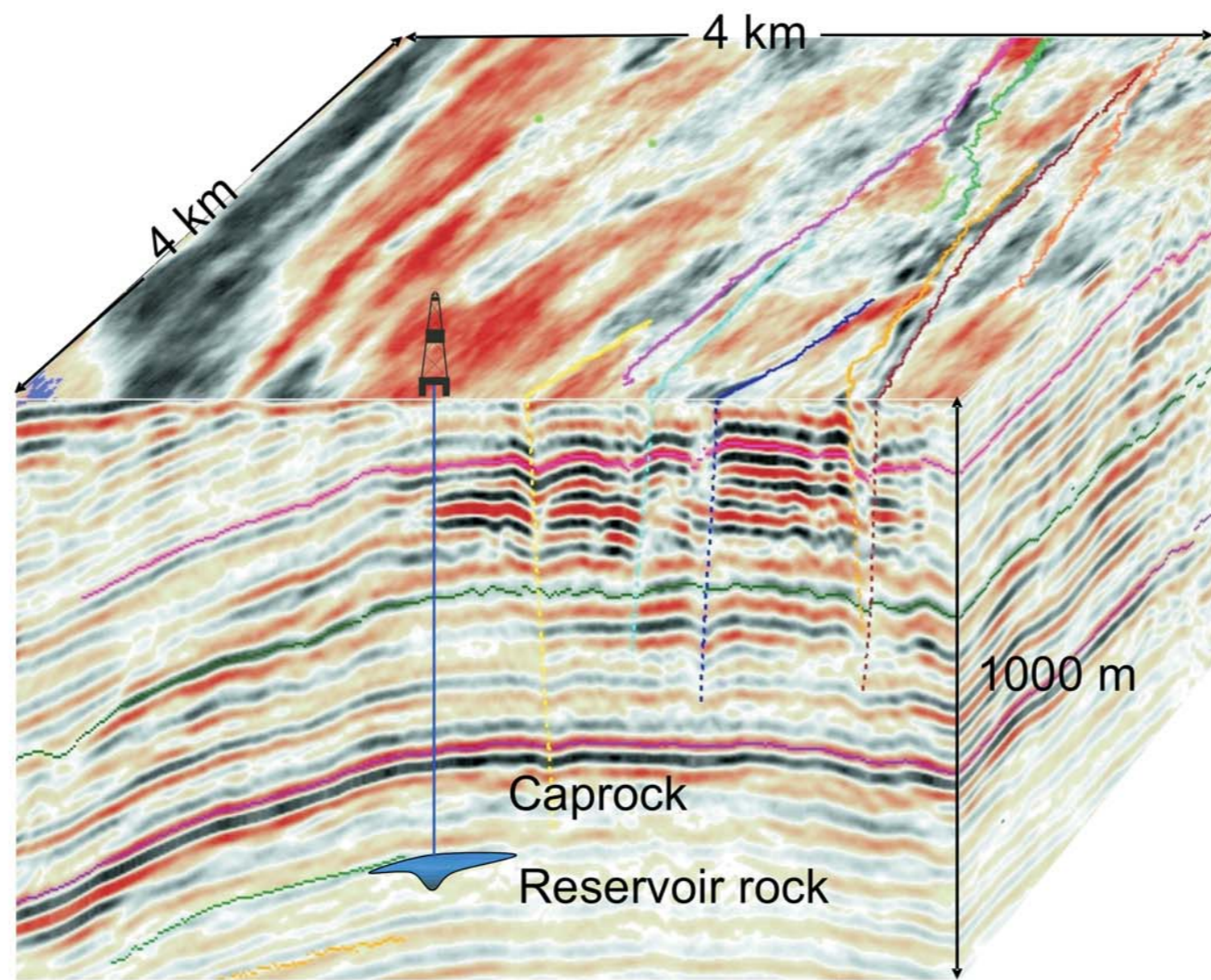
Budget: 23.000.000 € (EC 8.700.000 €) **Runtime:** 04/2004 – 03/2009

Project Structure



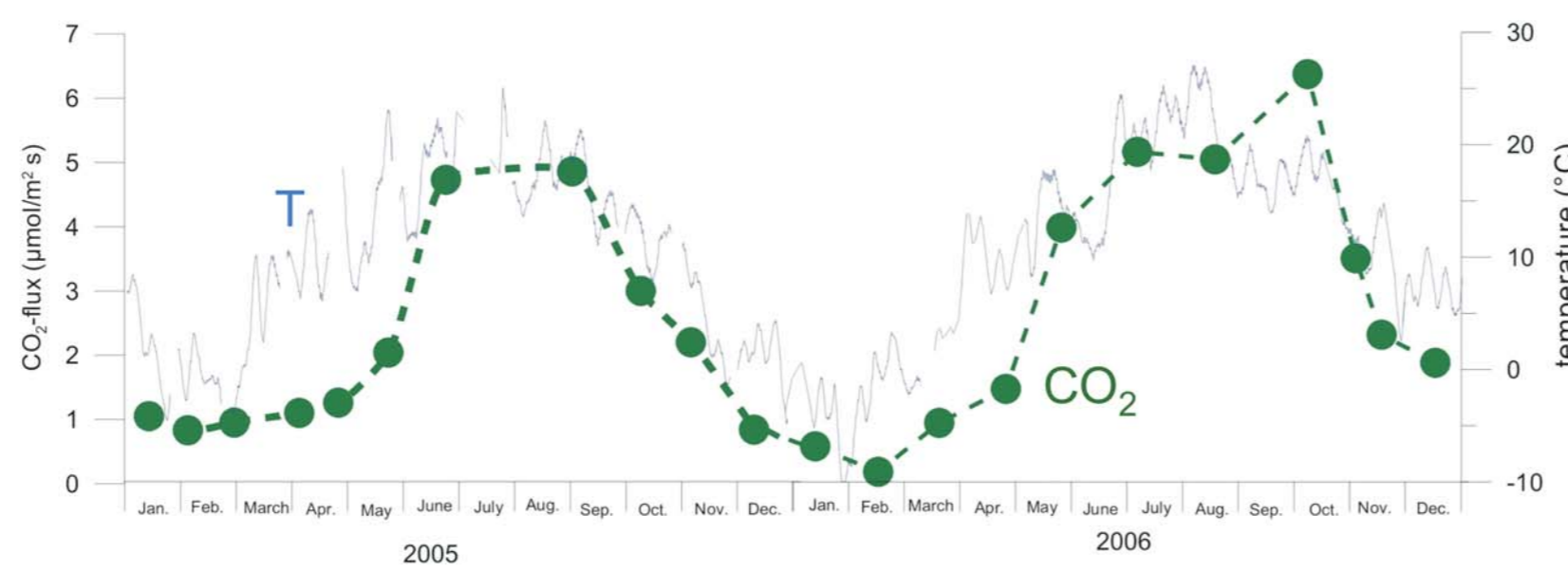
Surface and Downhole Monitoring of CO₂

3D Seismic Survey



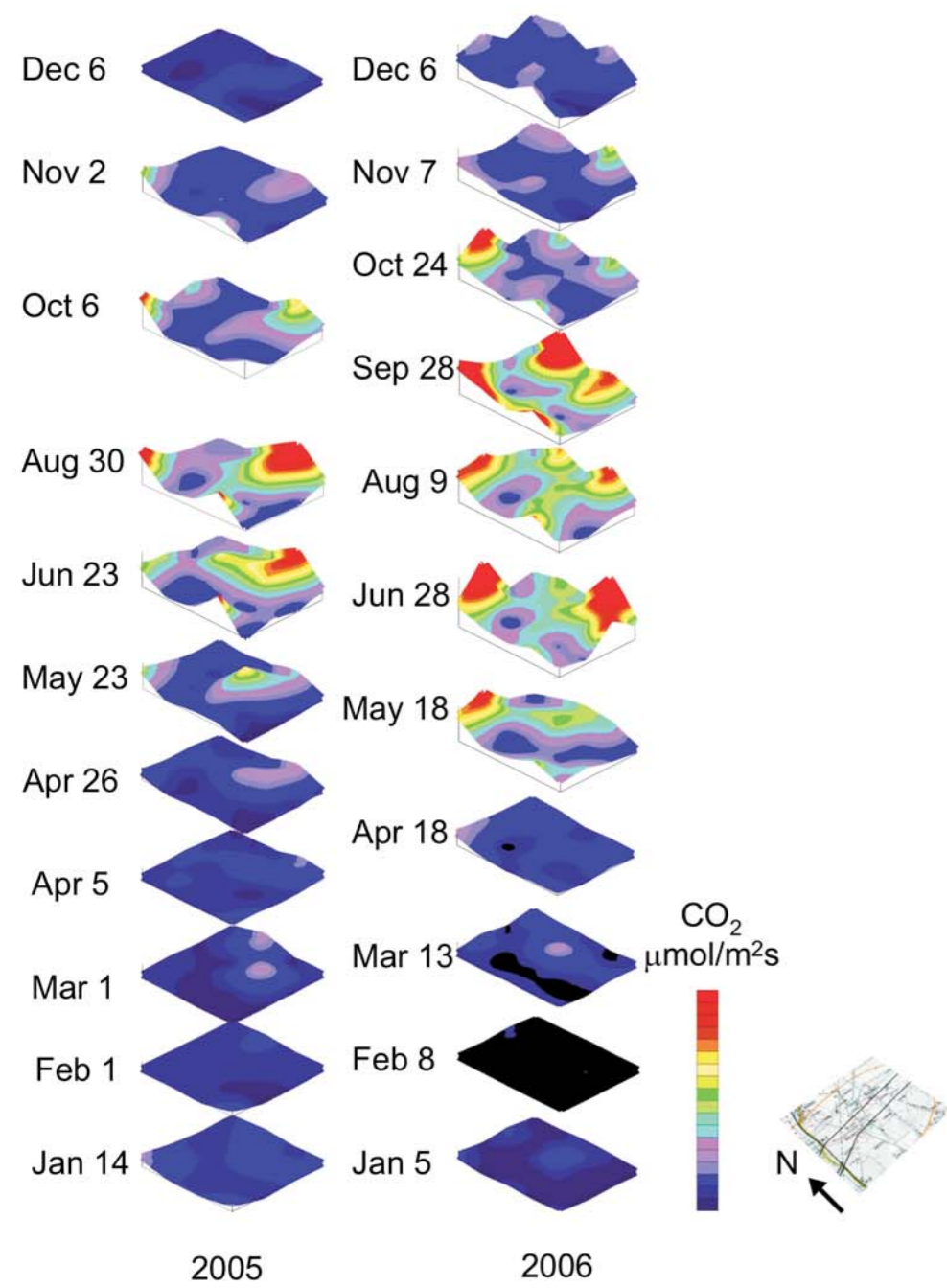
Cross cut through the 3D seismic data cube. Injection well is indicated by blue line.

seasonal variation of natural CO₂ soil gas



● natural CO₂ flux at the Ketzin test site in 60 cm depth
 / 4-days average temperature

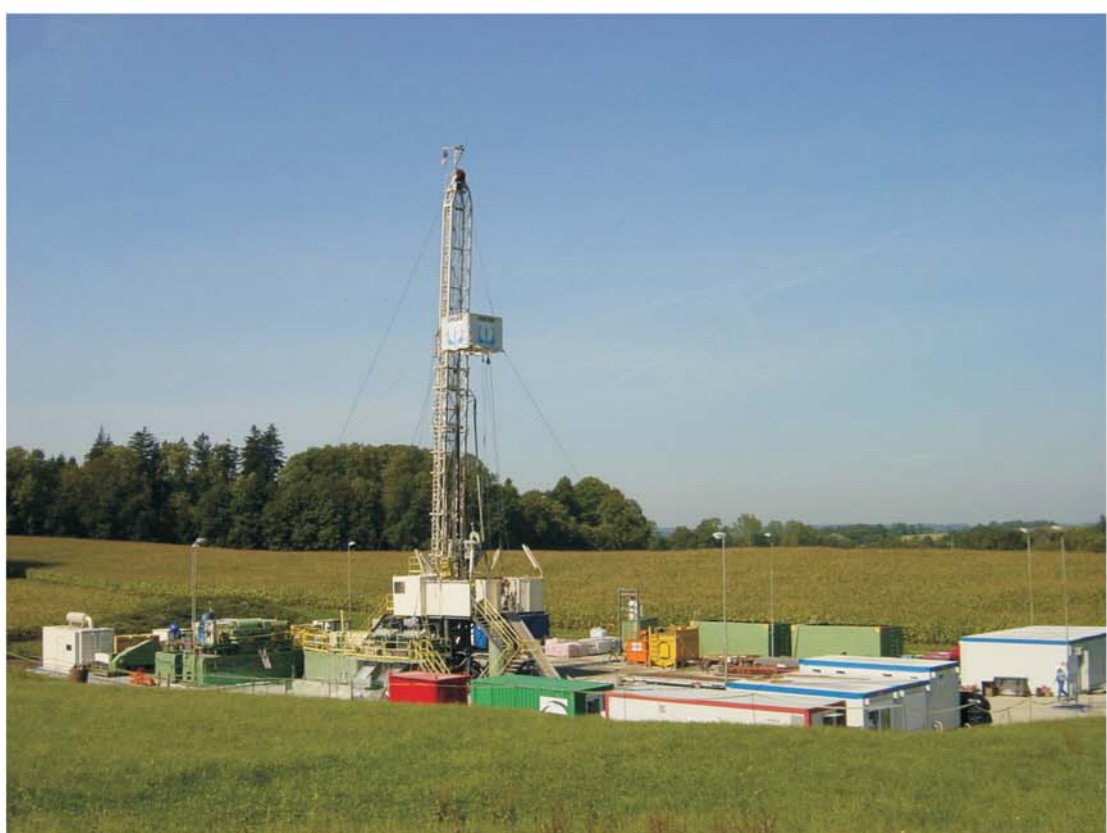
Geochemical Survey



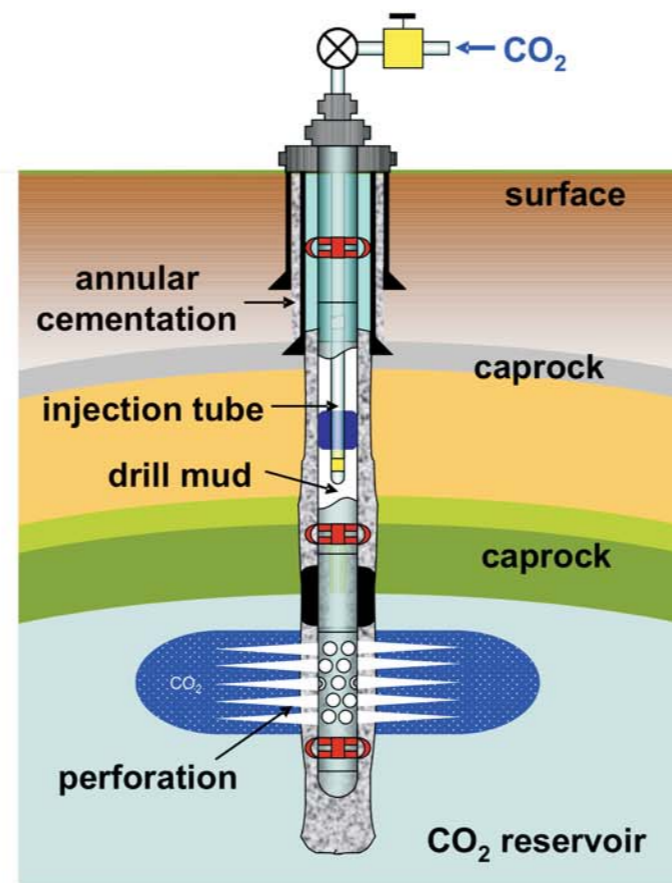
The measured CO₂ fluxes are in the range of degassing rates of cultivated and forest soil. The CO₂ flux increases during spring and summer with growing temperature and bio-activity in the soil.

Geoengineering

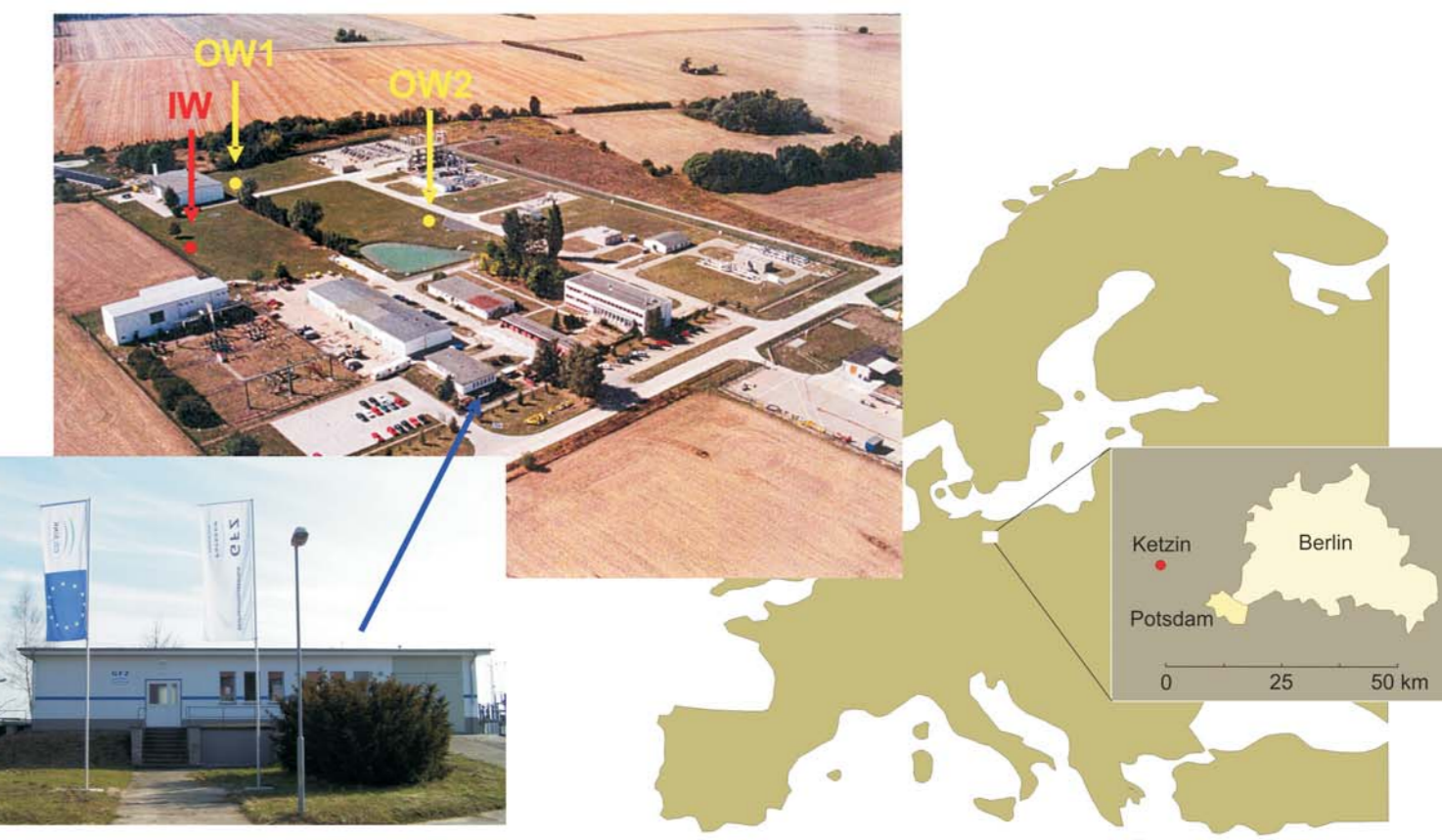
Drill Rig



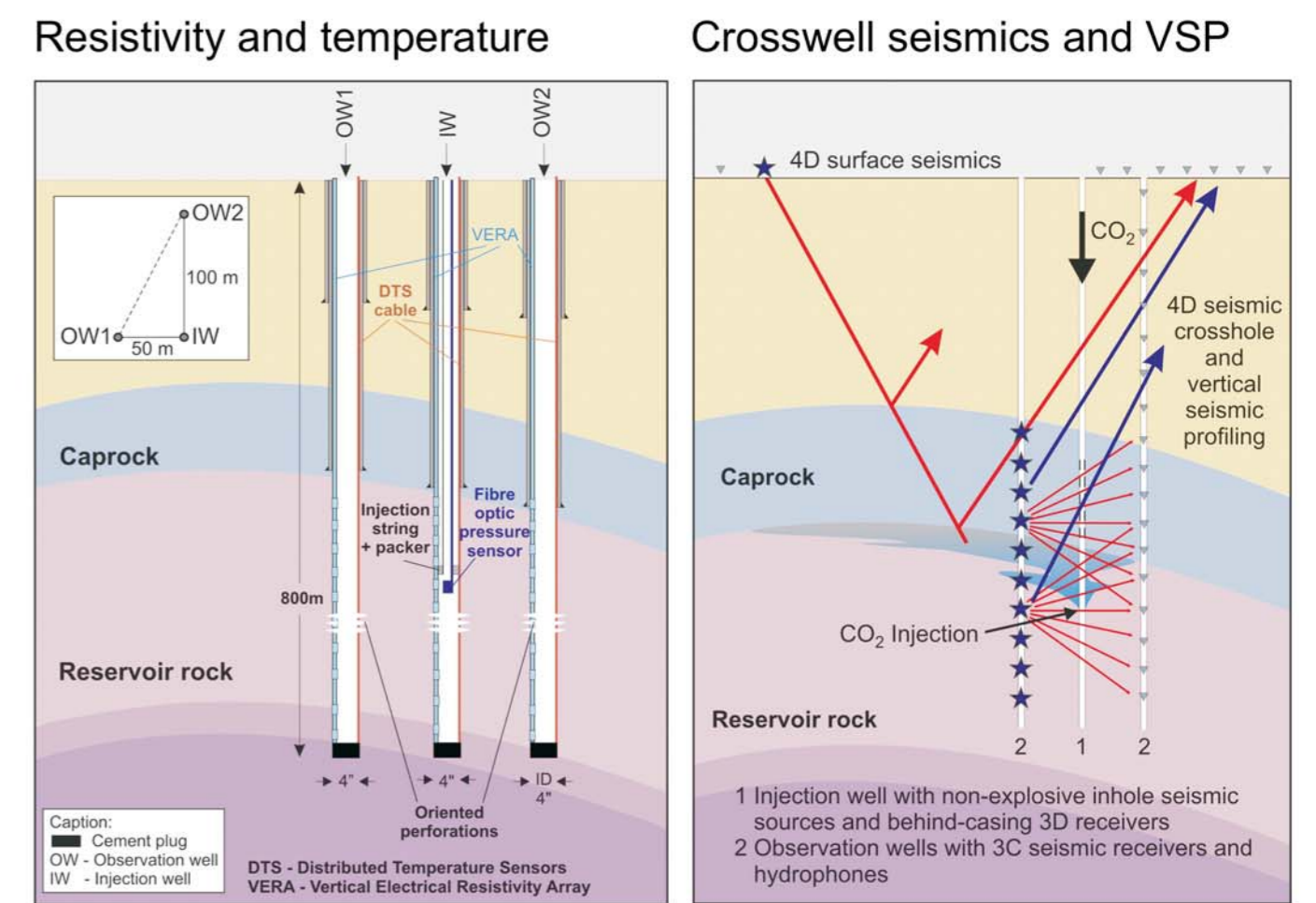
type WW185
 hook load 600 kN
 nominal gross capacity 700 kN
 0- 30m 26" dd
 30-160m 23" dd
 160-600m 12.25" dd
 600-820m 8.5" dd
 casing:
 0-150m 18.63" id
 0-580m 9.63" id
 0-800m 5.5" id
 id – inner core barrel diameter
 dd – drilling diameter



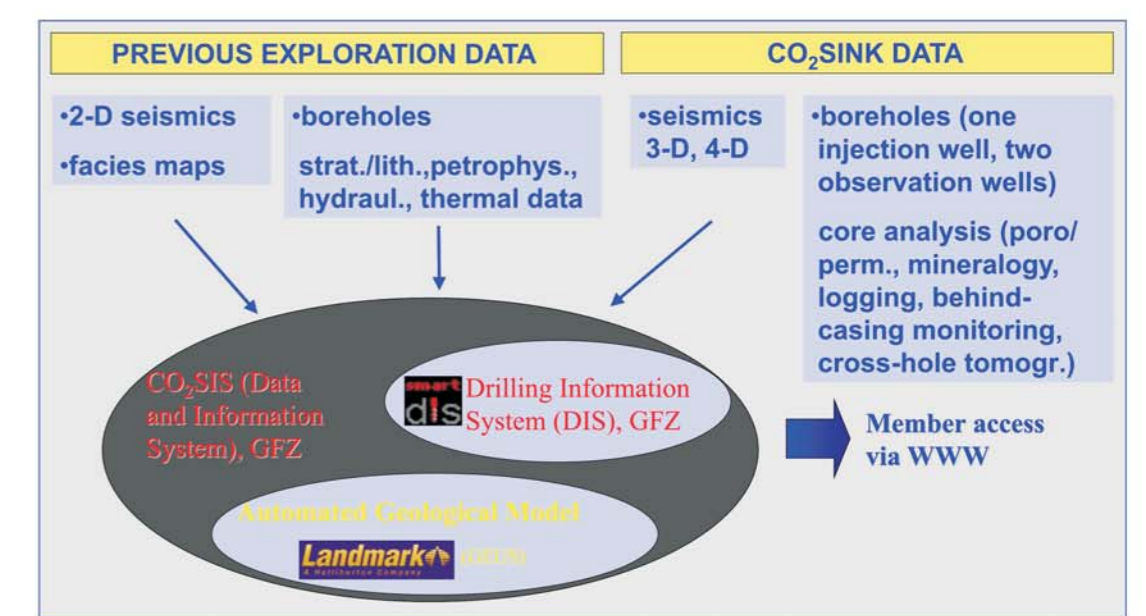
Scheme of injection well



Drilling and Monitoring Concept

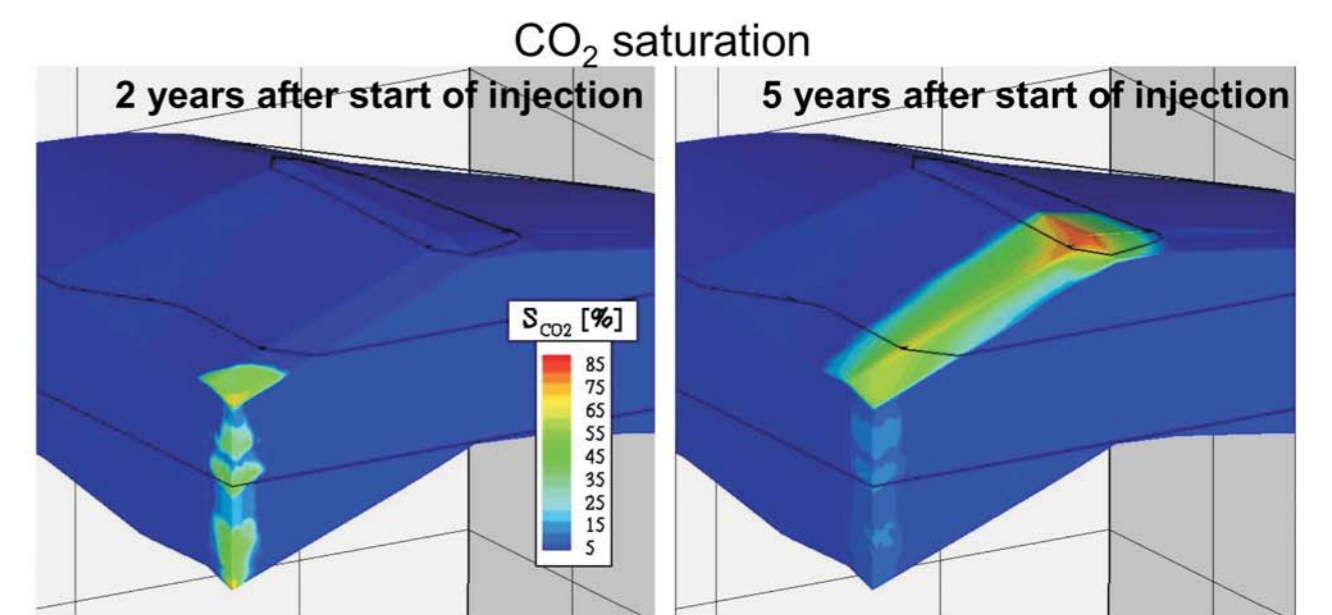


Data Integration and Dissemination System



Numerical Predictive Models

CO₂ plume growth in the anticlinal saline aquifer



Partners

- GeoForschungsZentrum Potsdam (D)
- G.E.O.S. Freiberg Ingenieurgesellschaft (D)
- Geological Survey of Denmark and Greenland (DK)
- Mineral and Energy Economy Research Institute (PL)
- Det Norske Veritas (N)
- Statoil (N)
- Shell International Exploration and Production (NL)
- University of Stuttgart (D)
- Vibrometric Finland (SF)
- University of Kent (GB)
- Uppsala University (S)
- RWE Power AG (D)
- International Energy Agency – Greenhouse Gas Programme (GB)
- Vattenfall Europe Generation (D)
- Verbundnetz Gas AG (D)
- Siemens AG Power Generation (D)
- E.ON Energie AG (D)
- Schlumberger Carbon Services (Fr)
- GFZ
- POTSDAM
- LAND BRANDENBURG
- STATOIL
- G.E.O.S. Freiberg Ingenieurgesellschaft mbH
- DNV
- SHS
- VIBROMETRIC
- UPPSALA UNIVERSITET
- RWE
- KENT UNIVERSITY OF KENT
- VATTENFALL
- Verbundnetz Gas AG
- SIEMENS
- e-on Energie
- Schlumberger

<http://www.co2sink.org>