



China Australia Geological Storage of CO₂
中澳二氧化碳地质封存



Geological Storage of CO₂ Workshop

Geoscience Australia, Canberra
19th – 21st January 2010



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About CAGS

The China Australia Geological Storage of CO₂ Project is a bilateral project that focuses on increasing China and Australia's capacity and capability in the area of geological storage of CO₂. The project combines research with capacity building and training programmes. CAGS has been developed under and is supported by the APP through the Cleaner Fossil Energy Task Force and is funded by the Australian Government. CAGS aims to complement and collaborate with other geological storage programmes in China.

Project outcomes include:

- Enhancing the technical knowledge base in China and Australia in the area of geological storage of CO₂;
- Aiding CO₂ storage research in China through establishing regional and site level geological storage assessment projects and project teams for future assessment activities;
- Increasing awareness about CCS in China among researchers, industry, and policymakers;
- Supporting Chinese presence and involvement in relevant international CCS conferences and meetings;
- Strengthening China-Australia ties for future collaboration in CCS, as well as ties with other international partners, and between individual organisations;
- Improving government, academic and industry networking and collaboration.

Aims of this workshop

This first technical workshop under the CAGS program aims to:

- Facilitate the building of networks of researchers, government and industry within China and between China, Australia and international agencies to advance development and understanding of geological storage of CO₂ ;
- Promote exploration and discussion of technical issues with respect to geological storage including site selection, prospectivity and capacity assessment, and promote activities which will aid in making China and Australia "storage ready".

We are aiming to make this workshop quite informal to promote discussion and networking. Workshop participants are invited to consider the program and discussion topics prior to arrival and are encouraged to contribute to robust discussion during the workshop. We would like to address, among others, the following topics during the discussion sessions of the workshop:

- What are the next steps for Australia and China to understand the potential and capacity for geological storage and accelerate demonstration and deployment of geological storage?
- What is China's status in terms of understanding its geology for CO₂ storage? are the right people involved? Is more research funding required, and who should provide this?
- How can we influence policymakers to support pre-competitive storage assessment work?
- What is our role in communicating with policymakers and the public about geological storage?
- What role do CAGS and similar programmes have and are they effective? What capacity building activities work well and what else should be done?
- What research projects should CAGS support, now and potentially in future? What other, perhaps larger scale research should be supported (e.g. through future collaborative activities, the Australia-China Joint Coordination Group on Clean Coal technologies, and others)?

Presentations and posters will be made available after the workshop.

Program

Monday 18th January 2010

5:30pm –
8:00pm

Ice-breaker dinner at Piallago Estate Winery.

Transport has been organised for this event. A bus will depart the Rydges Lakeside hotel at 5:15pm and return all guests to hotel.

Dinner venue: Piallago Estate Wines
18 Kallaroo Road Piallago ACT 2609
Ph: 02 6262 6692

Friday 22nd January 2010

8am – 8pm

Field Trip

GONDWANA DREAMING will take us on a field trip to nearby New South Wales.

The highlight of this trip will be a visit to Canowindra in the Central West of NSW to inspect a still little known but globally significant fossil deposit. At that site, thousands of bizarre looking ancient fish, some measuring up to 2m, were killed during a severe drought about 360 million years ago (late Devonian). This mass mortality event is preserved as a single fish fossil layer in the fine Mandagery sandstone (a quartzite). So far eight species of Devonian fish (most new to science) have been uncovered, but the site is far from being fully excavated and it is expected to yield many more fish, more new species and, most importantly, evidence of early tetrapods. The Canowindra fish fossil deposit is the only such mass-kill deposit found anywhere in the world.

Other highlights on the day include an opportunity to go fossicking in a nearby fish fossil quarry and wine tasting (the region has an excellent global reputation for its Chardonnays and is well known for many great wines. The journey will take us through some of Australia's prime farming, sheep and cattle areas and give us an insight into some of the problems facing local farmers associated with the vagaries of local climate variation, drought and floods. Causes and remedies for soil salinity issues will also be pointed out.

The coach will depart the hotel at 8am and return by 8pm. Lunch and refreshments are included. Participants should dress to suit weather conditions and forecast. Wear loose fitting clothing, a hat and sun glasses but bring a jacket/rain protection if the day looks like it could be cool or rainy. Sturdy footwear is recommended for the quarry.

Morning tea, lunch, and afternoon wine tasting with cheese and biscuits will be provided. A selection of dried fruit and snacks as well as water bottles will be available on the coach.



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Tuesday 19th January 2010: Assessment of sites for geological storage

Breakfast at hotel

8:15 Bus departs hotel for Geoscience Australia

8:45 Registration

Session 1: Introduction

Chair: Aleks Kalinowski

9:00	Welcome	Clinton Foster GA
9:15	Introduction to the workshop	Aleks Kalinowski GA
9:30	Australia: an overview of geology for CO ₂ storage	Chris Consoli GA
9:45	An overview of geology for CO ₂ storage in China	Zhang Eryong CGS
10:00	Defining "Storage Ready"	John Bradshaw CGSS

10:30 Morning tea

Session 2A: Storage prospectivity and capacity assessment

Chair: Clinton Foster

11:00	Geological storage: challenges and opportunities	John Bradshaw CGSS
11:30	Overview and comparison of published storage assessment methodologies	Rick Causebrook GA
12:00	Evaluating storage capacity in saline aquifers and depleted oil and gas fields: geological and engineering issues	John Kaldi ASP / CO2CRC

12:30 Lunch

Session 2B: Storage prospectivity and capacity assessment

Chair: John Bradshaw

13:30	Cap rock stability research	Liu Da'an CAS
14:00	Source-sink matching	Peter Neal CO2CRC
14:30	Follow-on questions from earlier presentations and discussion "How do we make China and Australia Storage Ready?" <i>John Bradshaw, Rick Causebrook, John Kaldi, Li Mingyuan, Li Xiaochun, Zeng Rongshu</i>	

15:30 Afternoon tea

Session 3: Policy and communication

Chair: Bai Qin

16:00	CCS in Australia - policy initiatives	Katherine Harman RET
16:25	CCS in China	Zhong Ping ACCA21
16:50	Our role in public perception of CCS	Peta Ashworth CSIRO
17:15	Progress of the G8 agenda	Jesse Dang GCCSI

17:50 Bus departs for hotel.

18:45 Bus departs hotel for dinner at the Boat House by the Lake. Pre-dinner drinks at 7pm followed by dinner at 7:30pm. The bus will return participants to the hotel following dinner.



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Wednesday 20th January 2010: Regional and basin scale assessment

Breakfast at hotel

8:30 Bus departs hotel for Geoscience Australia

Session 4A: Country, regional, and basin assessment

Chair: Tip Meckel

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|-------|--|----------------------|
| 9:00 | Regional assessment of Australia - Carbon Storage Task Force | Rick Causebrook GA |
| 9:30 | Regional opportunities for carbon dioxide capture and storage in China: project highlights and results | Robert Dahowski PNNL |
| 10:00 | Regional assessment of CO ₂ storage - approach and progress in China | Li Xufeng CGS |

10:30 Group photo before morning tea

Session 4B: Country, regional, and basin assessment

Chair: Peng Bo

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|-------|--|----------------------|
| 11:00 | Current Regional Partnership (DOE-RCSP) Activities Summary | Tip Meckel UT |
| 11:30 | China basin saline aquifer study | Zeng Rongshu CAS IGG |
| 12:00 | Regional scale assessment – methodology developed for the Queensland Atlas | John Bradshaw CGSS |

12:30 Lunch

Session 4C: Country, regional, and basin assessment

Chair: John Kaldi

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|-------|--|---------------------|
| 13:30 | Queensland Storage Atlas - Results | Barry Bradshaw CGSS |
| 14:00 | Assessment of the Gippsland Basin | Geoff O'Brien GV |
| 14:30 | Follow on questions from earlier presentations and discussion of approaches to regional assessment and methodology.
<i>Geoff O'Brien, Jonathan Pearce, Peng Bo, Scott Ryan, Wen Dongguang, Zhong Ping</i> | |

15:15 Afternoon tea

Session 5: Geological Storage Research in China

Chair: Zhong Ping

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|-------|--|----------------------|
| 15:45 | Final results from the UK NZEC Phase 1 | Jonathan Pearce BGS |
| 16:15 | Overview of the COACH and GeoCapacity projects | Zeng Rongshu CAS IGG |
| 16:45 | Presentation and discussion of CAGS research projects. <ul style="list-style-type: none">• Site Selection Method and Criteria of CO₂ Geological Storage <i>Li Xufeng</i>• Selection Criteria of Oil/gas Reservoirs for CO₂ EOR and Storage <i>Peng Bo</i>• Studies on Environmental Impact and Risk Management of CO₂ Storage <i>Xu Ruina</i> | |

17:30 BBQ dinner at GA

19:30 Bus departs for hotel



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Thursday 21st January 2010: Site scale assessment and storage projects

Breakfast at hotel

8:30 Bus departs hotel for Geoscience Australia

Session 6: Risk assessment, modelling and monitoring

Chair: David Mason

9:00	Risk assessment for CO ₂ storage	Charles Jenkins CSIRO / CO2CRC
9:30	From geological models to reservoir simulation	Lincoln Paterson CSIRO / CO2CRC
10:00	Monitoring strategies for CO ₂ storage projects	Jonathan Pearce BGS

10:30 Morning tea

Session 7A: Learning from experience

Chair: Geoff O'Brien

11:00	The Otway Basin Pilot Project	Charles Jenkins CSIRO / CO2CRC
11:30	CO ₂ EOR and 'Green Oil'	Li Mingyuan CUP
12:00	The Frio and Cranfield injection projects, USA	Tip Meckel UT

12:30 Lunch

Session 7B: Learning from experience

Chair: Jonathan Pearce

13:30	The ZeroGen Project	Thomas Berly ZeroGen
14:00	CO ₂ storage and EOR in Jilin Oilfield	Peng Bo CUP
14:30	Case Study – the Gorgon CO ₂ Injection Project	Scott Ryan Chevron
15:00	Research of CO ₂ EOR and storage technology in Shengli Oilfield	Lv Guangzhong Sinopec

15:30 Afternoon tea

Session 8: Next steps

Chair: Rick Causebrook

16:00	Break-out groups and discussion What are the next steps for getting storage ready?	
17:30	Workshop Wrap-up	Clinton Foster GA

18:00 Bus departs GA for hotel

18:45 Bus departs hotel for conference dinner at the Alto Tower Restaurant. Pre-dinner drinks at 7pm followed by dinner at 7:30. The bus will take participants back to the hotel following dinner.



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List of Participants

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Useful Information

Geoscience Australia

Workshop venue	Geoscience Australia, Sir Harold Raggatt Theatre	
Address	Corner of Jerrabomberra Avenue and Hindmarsh Drive, Symonston, ACT, 2609	
Telephone numbers	Reception	+61 (0)2 6249 9111
	Ms Aleks Kalinowski	6249 9189
	Ms Jessica Gurney	6249 9043

Hotel Details

Name	Rydges Lakeside Canberra
Address	1 London Circuit, Canberra ACT 2601
How to get there	From Canberra Airport - 10 kilometres west travelling towards Canberra City. Taxi costs approximately \$20-\$30 and it is a 15-20 minute drive. From the CBD - 500 meters south, travel south along Northbourne Avenue, turn right onto London Circuit - Rydges Lakeside Canberra is located on your right.
Telephone	+61 (0)2 6247 6244
Email	reservations_canberra@rydges.com
Website	www.rydges.com/canberra
Nearby Restaurants	<i>Chinese & Asian</i> - Sammy's Kitchen, Civic Asian Noodle House <i>Australian</i> - Courgette <i>Italian</i> - Mezzalira Restaurant <i>Indian</i> - Shalimar Indian restaurant <i>Japanese</i> - Wagamama More information can be found on http://www.australianexplorer.com/restaurants/canberra.htm

Meals	All meals will be provided during the workshop. Breakfast will be at the hotel and is included in the hotel rate.
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Major Shopping Centres	Canberra City (Civic - closest) Woden Plaza Belconnen Mall Tuggeranong Hyperdome
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Taxi	Canberra Cabs	13 22 27
	Silver Service Taxi	13 31 00



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Telephone

International dialling code	0011 (country code) (region) (number)
Australia country code	+61
ACT region code	(02)

Sites of interest

Lookouts: Telstra Tower (Black Mountain), Regatta Point, Red Hill Lookout, Mt Ainslie

Major National Attractions: Parliament House, National Museum, National Gallery, National Library, War Memorial

Climate:

Summer days are warm to hot, with plenty of sunshine and little humidity, followed by mild, balmy nights.

Average Minimum: 12 Degrees Celsius

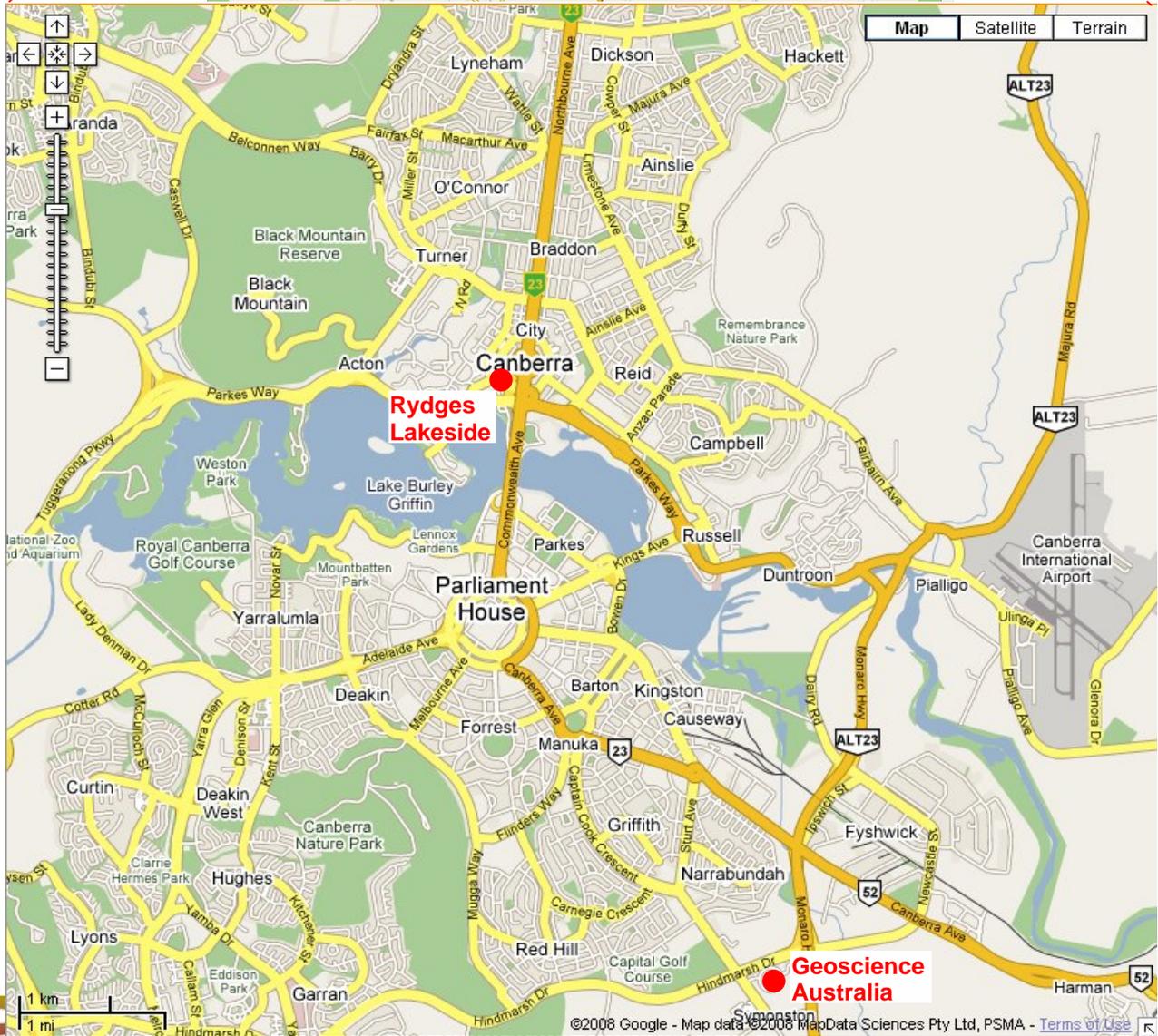
Average Maximum: 27 Degree Celsius



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