

**AESC 2006 - PRE-CONFERENCE FIELD TRIP  
NEOTECTONICS, SALINITY, PALAEOCLIMATES AND  
VOLCANISM  
ADELAIDE TO MELBOURNE  
28 JUNE TO 2 JULY 2006**

The Neotectonics, Salinity, Palaeoclimates and Volcanism field trip explores the critical factors that have shaped the south eastern Australian landscape that we see today, and identifies a range of geohazards that will take centre stage in the near future with resource planners and custodians of critical infrastructure.

The trip begins in the Mt Lofty Ranges behind Adelaide with an examination of some of Australia's most dynamic topography (led by Mike Sandiford). John Wilford and Dave Gibson will also lead stops around the Mt Lofty Ranges explaining neotectonics, salinity issues and groundwater resource issues. The route then moves east to the Coorong, where Patrick de Deckker will explain history of the salt lakes, their chemistry and their record of environmental change. Half the third day will be spent around Naracoorte caves, where Steve Bourne and Liz Reed will talk on megafauna, the record of environmental change in the caves, and karst hazard. The route will then head south to Mt Gambier (Blue Lake) and Mt Schank where the focus changes to recent volcanism and volcanic hazard (led by Bernie Joyce and Patrick de Deckker). The following two days will move east through the Newer Volcanic Province, where issues of the interaction between volcanism & neotectonics, and climate change will be discussed (Bernie Joyce, Dave Gibson and Patrick de Deckker leading).

The five day trip explores a range of environments and brings together experts in their fields who will share their latest research findings, ensuring an enjoyable and informative trip. The trip will cost \$480 per person, and includes transport, accommodation, entry to field trip venues, snacks and some meals (breakfasts).

To register please contact:

Tenai Luttrell  
Geoscience Australia  
02 6249 9506  
0419 433 344  
Email: [tenai.luttrell@ga.gov.au](mailto:tenai.luttrell@ga.gov.au)

For information about scientific content please contact:

Dan Clark  
Geoscience Australia  
02 6249 9606  
Email: [dan.clark@ga.gov.au](mailto:dan.clark@ga.gov.au)

Cost: \$480 per person, includes transport, accommodation, entry to field trip venues, snacks and some meals (breakfasts).

**Route** (see attachment for detailed route information).

**Day 1 Adelaide to Murray Bridge** (*Approx. 290kms*)

**Day 2 Murray Bridge to Naracoorte** (*Approx. 421kms*)

**Day 3 Naracoorte to Mt Gambier** (*Approx. 101 kms*)

**Day 4 Mt Gambier to Camperdown** (*Approx. 300kms*)

**Day 5 Camperdown to Melbourne** (*Approx. 230kms*)

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**Day 1 Adelaide to Murray Bridge** (*Approx. 290kms*)

*Route: Adelaide, McLaren Vale, Sellicks Beach, Kangarilla, Meadows, Hahndorf, Woodside, Mt Torrens, Birdwood, Mt Pleasant, Walter Flat, Marne River, Mannum, Murray Bridge*

**Day 2 Murray Bridge to Naracoorte** (*Approx. 421kms*)

*Route: Murray Bridge, Strathalbyn, Wellington, Meningie, Salt Creek, Coorong, Policeman's Point, Kingston, Naracoorte*

**Day 3 Naracoorte to Mt Gambier** (*Approx. 101 kms*)

*Route: Naracoorte, Penola, Mt Gambier*

**Day 4 Mt Gambier to Camperdown** (*Approx. 300kms*)

*Route: Mt Gambier, Casterton, Hamilton, Dunkeld, Wickliffe, Hopkins River, Lake Bolac, Mortlake, Terang, Gnotuk, Camperdown*

**Day 5 Camperdown to Melbourne** (*Approx. 230kms*)

*Route: Camperdown, Colac, Winchelsea, Geelong, Melbourne*

**CONTACT INFORMATION:**

<p><b>Charter Bus hire</b> Explorer Coachlines 60 Everard Avenue Telephone: 08 8293 2699 Contact: Harvey/Sue</p>	<p><b>Murray Bridge Accommodation</b> Best Western Murray Bridge Motor 212 Adelaide Road, Murray Bridge Telephone: 08 8532 1144 Contact: Con or Zoe</p>
<p><b>Science Enquiries</b> Dan Clark Geoscience Australia 02 6249 9606</p>	<p><b>Naracoorte Accommodation</b> Country Roads Motor Inn 20 Smith Street, Naracoorte Telephone: 08 8762 3900</p>
<p><b>All other enquiries</b> Tenai Luttrell Geoscience Australia 02 6249 9506 0419 433 344</p>	<p><b>Mt Gambier Accommodation</b> Comfort Inn Silver Birch Jubilee Hwy East, Mt Gambier Telephone: 08 8725 5122 Contact: Sue McCallum</p>
	<p><b>Camperdown Accommodation</b> Leura Hotel 175 Manifold Street, Camperdown Telephone: 03 5593 1062</p>

## **Day 1: Neotectonics and Landscape Evolution of the Adelaide Hills/Mt Lofty Ranges (Mike Sandiford/Dan Clark)**

**Wednesday 28th June 2006**

This series of stops explores the role of intraplate faulting in landscape evolution and processes in the Adelaide Hills/Mt Lofty Ranges, Australia's most dynamic and actively deforming region. The connection between the geologic record and contemporary seismicity, critical to seismic hazard assessment, will also be explored. Stops will include:

- 1) The western range-bounding Willunga Fault, which forms a prominent north-east trending escarpment bounding the McLaren Vale south of Adelaide. The fault intersects the coast line at Sellicks Beach where conglomerates are dissected by the wave cut platform (Mike Sandiford).
- 2) Bremer Hills localities that show the relationship between landscape evolution, neotectonics and salinity hazard (John Wilford)
- 3) The eastern range-bounding Milendala Fault, where Cambrian metamorphic rocks overthrust Quaternary gravels in a cut bank of the Marne River (Mike Sandiford).
- 4) The Monarto Block, bounded by the Bremer Fault to the west (near Callington) and the Palmer Fault to the east. The Bremer fault is one of the youngest structures in the Mount Lofty Ranges (Mike Sandiford).

Overnight in Murray Bridge

Accommodation: Best Western Murray Bridge Motor Lodge 3.5\* (Twin share)

212 Adelaide Road, Murray Bridge

Telephone: 08 8532 1144

Contact: Con or Zoe

## **Day 2: Angus Bremer Plains/Coorong lakes (Dave Gibson/Patrick de Dekker)**

**Thursday 29th June 2006**

This series of stops firstly explores the relationships between landscape evolution, neotectonics, water resources and salinity hazard in the Bremer hills and Angus Bremer Plains. Then aspects of the geomorphology, chemistry and biology of hypersaline lakes associated with the Coorong will be discussed. A stop will also be made (time permitting) where a Quaternary fault scarp cuts the regressive dune sequence east of Moorlands.

Stops will include:

- 1) Angus-Bremer Plains- examines the links between landscape evolution, faulting, salinity and groundwater resources, also visits the Sandergrove Fault scarp (Dave Gibson).
- 2) Moorlands - three fault scarps cut the regressive dune sequence - one relates to the Morgan fault, which has had a major effect on the Murray River course. Discussion of the former Lake Bungunnia (Dan Clark/Mike Sandiford)
- 3) Lakes near Salt creek – history of the salt lakes, their chemistry and environmental change (2 hrs, Patrick de Deckker)
- 4) Coorong - sapropels, salinity changes and evidence for Holocene climate change(1/2 hr along the Coorong itself, Patrick de Deckker)
- 5) Older regressive barrier dune sequence (Mike Sandiford?).

Overnight in Naracoorte

Accommodation: Country Roads Motor Inn 4\* (twin share)

20 Smith Street, Naracoorte

Telephone: 08 8762 3900

### **Day 3: Naracoorte caves and Mt Gambier (Steve Bourne/Patrick de Deckker/Bernie Joyce).**

#### **Friday 30th June 2006**

This series of stops explores firstly Quaternary climate, megafauna & human impact as revealed in the Naracoorte Cave system. Karst hazard issues will also be touched upon. The theme will then switch to recent volcanism with a visit to Mt Gambier.

Stops will include:

- 1) Naracoorte Caves - megafauna and climate (Steve Bourne/Liz Reed).
  - talk by Liz Reed on megafauna/climate/Naracoorte Caves research
  - talk by Steve Bourne on karst hazards, will tie in with later visit to Mt Gambier and can be interpreted on the drive down there.
  - (both talks powerpoint presentations in Blanche Cave)
  - visit to Victoria Fossil Cave with Liz to inspect the Fossil Chamber-the largest deposit at Naracoorte and central to WH listing
  - visit to the Wonambi Fossil Centre, visual representation of prehistoric Naracoorte based on research here. Excellent high level interpretation of dune sequences and climate change in Flinders University Gallery in centre.
- 2) Mt Gambier - Blue Lake – groundwater history of the lake and modern limnology, climatic history, potential seismicity (Patrick de Deckker)
- 3) Other volcanic features in Mt Gambier area - (Patrick de Deckker/Bernie Joyce)

Overnight in Mt Gambier.

Accommodation: Comfort Inn Silver Birch

Jubilee Hwy East, Mt Gambier

Telephone: 08 8725 5122

Contact: Sue McCallum

**Day 4: Tectonics, volcanic risk and hazard in the Newer Volcanic Province of Victoria  
(Bernie Joyce/ Patrick de Deckker)**

**Saturday 1st July 2006**

This series of stops explores the Newer Volcanic Province and the volcanic hazard posed by these geologically recent volcanic features.

Stops will include:

- 1) Dundas Tablelands - ferricrete on Tertiary strandlines with uplift of more than 100 m
- 2) Hamilton area volcanics
- 3) Mt Stavely - related sequence and features to Dundas Tableland.
- 4) Hopkins River and effects of uplift.
- 5) Central part of the Western District Volcanic Plains - examples of Rouse, Dunkeld and Hamilton Regolith Terrain Units, development of a soil, regolith and landform chronosequence, and deductions about volcanic risk.
- 6) Staughtons Hill - tectonically-uplifted Tertiary limestone block with volcanoes
- 7) Gnotuk & Bullenmerri - tectonically-uplifted Tertiary limestone block with volcanoes

Overnight Camperdown

Accommodation: Leura Hotel, 175 Manifold Street, Camperdown

Telephone: 03 5593 1062

After a final group dinner, discussion of the NVP using recent aerial oblique air photo, and also of volcanic risk and the types of hazards to be expected.

**Day 5: Further features en route, arriving Melbourne by lunchtime (Bernie Joyce/Mike Sandiford)**

**Sunday 2nd July 2006**

This series of stops continues our exploration of recent volcanic features, and their interaction with the geomorphology. If time permits, some recent tectonic features will also be visited on Melbourne's outskirts.

Stops will include:

- 1) Drive through Mt Porndon Stony Rises.
- 2) Lake Corangamite – flooding potential and mitigation, salinity, mega lake deposits (Patrick de Deckker)
- 3) Lake Beeac – history of salinisation, dolomite ((Patrick de Deckker)
- 4) Mt Gellibrand & Mt Hesse, near Winchelsea - interaction of volcanism and Tertiary strandline deposits (Bernie Joyce/Steve Hill?/Malcolm Sheard).
- 5) Lovely banks monocline – neotectonics on the western margin of Port Phillip Bay (Mike Sandiford)

Overnight at your accommodation in Melbourne.