



### Voyage SS02-2006

AUSCAN 2006 and PALAEO-MURRAY: Geological and biological investigations of the Murray Canyons Group.

Professor Patrick De Deckker, ANU (Chief Scientist)

### Contribution to Australia's national benefit:

This voyage completed the mapping of deep-sea canyons south of Kangaroo Is. that commenced during the AUSTREA and AUSCAN voyages on the *L'Atalante* and *Marion Dufresne*. In addition the voyage located ancient courses of the Murray River across the Lapepede Shelf during the last glacial-interglacial period and discovered the presence of a large fossil lake. We also found evidence of an ancient drainage system on the shelf opposite the Glenelg River that deserves further investigation.

The investigations conducted on this voyage provide important baseline data that will support model based research on the relation between climate, rainfall, runoff and channel development. Of particular interest is the relationship between present-day channel morphology and flood conditions on the palaeo-Murray. The high-resolution map of the Sprigg Canyon obtained, in conjunction with other results, supports the hypothesis that canyon channels transport upper slope material downwards. The data and samples obtained will play an important role in laboratory based research to determine if Murray River palaeo-channels are conduits for continental water to the outer shelf/canyon heads.

Samples of the biota inhabiting the floor and walls of the canyons were obtained. Laboratory based taxonomy is expected to reveal unique species due to their location in an unusual

oceanographic and biological canyon environment that rapidly transfers organic matter to the abyss.

### As a result of this voyage:

1. We have a better understanding of the nature of the deep-sea canyons offshore Kangaroo Island. These sites are likely to be visited by cetaceans and our findings will be of use to future biological surveys in the region.
2. We have found ancient lacustrine deposits that have the potential, if cored, to provide information on past climatic regimes that affected Australia during a very wet period coinciding with the filling of the

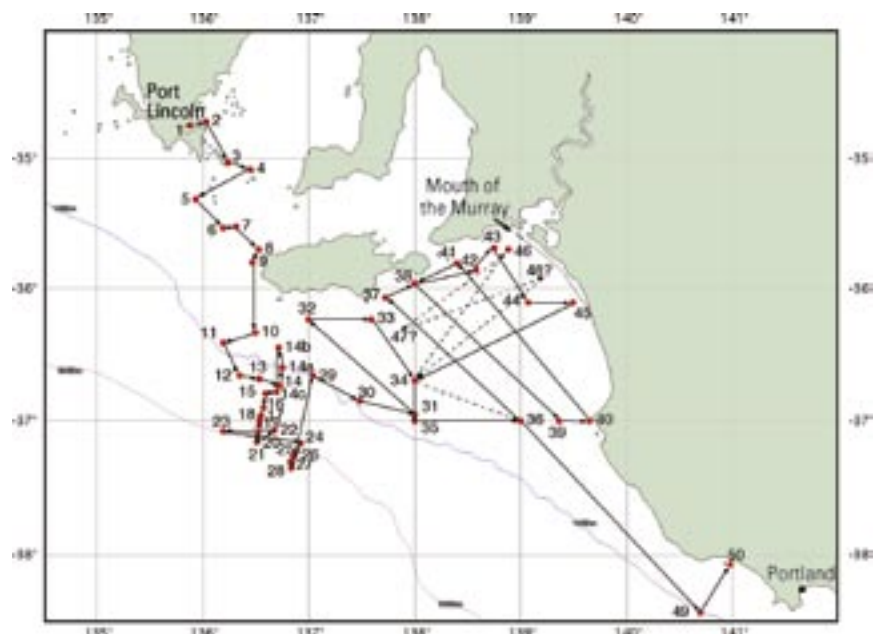
Willandra Lakes [e.g. Mungo] and the extensive river flows registered in the Murray Darling Basin.

3. We have mapped possible ancient courses of the ancestral River Murray offshore Portland and discovered significant undersea slides that potentially could cause tsunamis.
4. We have commenced a program of filtering air at sea to determine the nature of marine aerosols and identify their microbiological contents.

### Itinerary

Depart Port Lincoln 1600 hrs, Wednesday 1st March 2006.

Arrive Hobart 0800 hrs, Wednesday 15th March 2006.



> SS02-2006 voyage track