Reconstruction of sea-surface temperatures in the Australian region for the last 500 years. An ARC-funded project in collaboration with the University of Bordeaux I [France] and NIOZ [The Netherlands] + additional project on deep-sea microbiota with Indiana State University and sampling microbes in aerosols
The 2 cruises had several aims

1. Obtain short sediment cores at the sediment/water interface in the oceans at around 1,000m water depth

2. Analyse the sediments at high resolution intervals (5 to 10 mm = ~10 years or less) & date these layers using radionuclides

3. Carry out sediment analyses [total carbon, grain size etc]

4. Use 3 different organic chemical compound proxies to reconstruct past sea-surface temperatures [SST] for different seasons [Uk’$^{37}$, TEX$^{86}$ and DIX]

5. Collect aerosols for determining their microbial composition [another ARC-funded project]
We used the National Facility RV Southern Surveyor on 2 transit cruises in May and November 2011
Multicore sites sampled with the **RV Southern Surveyor** in 2001

SS2011-T04  Nov 2011

SS2011-T01  May 2011
This is where I want the next core to be taken
Ready to deploy the multicorer overboard. This equipment samples the sea floor at the sediment-water interface.
The tubes contain sediment and bottom water, here being returned on the rear deck.
Another set of cores about to be lowered down to the sea floor.
The sediment/water interface has been sampled.
A failed coring attempt:
no sediments, just water
Dismounting the tubes with sediments for sub-sampling in the lab
Too little sediment, this time
Setting up the multicorer at night
Preparing to launch the multicorer at night
Almost ready to go
The multicorer being returned with a good load of sediments
A safe place to watch the return of the multicorer from inside the lab at the rear of the ship.
Some maintenance is required
A long wait for the corer to come back

Deployment of the CTD
The CTD lab where water samples for $^{14}$C analysis are being prepared and treated
Monitors informing us on the nature of the sea floor
A long wait before the core is returned on deck
Great pull-out = a good core!!
Time to relax before sub-sampling the cores
Sub-sampling the short cores
Preparing samples for microbiota

Inserting cubes for magnetic mineral studies
A tiny sea-urchin, an intruder!
Working out a sampling protocol
Sampling for a variety of techniques
Samples meticulously taken for organic compounds for reconstructing SSTs
Sampling at 5 mm intervals for radionuclide analysis
Sampling the benthic microbiota
A fun pass time: shrinking polystyrene cups by taking them down to 1km
Decorated cups that shrunk significantly
Another use for rubber gloves
Aerosol samplers being prepared above the bridge
Chris, the microbiologist, next to his sampling gear aimed at continuously filtering microbes in ambient air.
An impromptu celebration at the end of the 1st cruise: a deep-sea mud cake
The November group and the Marine National Facility Staff
Time to relax in Fremantle before the cruise
A great team effort and superb training for research students and an international project