

A Workshop for Honours/Masters Students in Archaeology and
Palaeoenvironmental Research

Contemporary Challenges in the Archaeology and Environmental History of the Asia-Pacific Region



Centre for Archaeological Research,
The Australian National University, Canberra ACT 0200 AUSTRALIA
10-12 Sept, 2007



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Synopsis

This workshop will introduce you to a range of key issues in the archaeology and Quaternary history of the Asia-Pacific region that are the focus of current research at The Australian National University (ANU). This ranges from discussing the implications of rock art and archaeology of the Western Desert to delving into the microscopic world of plant and insect remains as a window to past environments and the people who lived in them. The workshop is intended for 4th year undergraduate and Masters level students undertaking research projects in these or related fields or students who are at this level and would, potentially, like to pursue graduate research in these fields. The workshop will run for three days and will include seminars by ANU staff and students, practical advice on pursuing a graduate career at ANU, visits to labs, key collections and the opportunity to talk to a range of ANU-based archaeologists, geochronologists, and palaeoenvironmental researchers.

PROGRAM OF ACTIVITIES:

MONDAY 10TH SEPTEMBER

8.15am *meet at Canberra City Walk Hotel and walk to Coombs Blg Sally Brockwell
Simon Haberle

Venue: Seminar Room B, Coombs Blg.

Time	Seminar	Presenter/s
8.45-9.00am	Welcome	Simon Haberle
9.00-10.30am	Recent Advances in Asia-Pacific Bioarchaeology and Textile Research	Marc Oxenham Judith Cameron
<i>10.30-11.00am</i>	<i>Morning tea (provided)</i>	
11.00-12.30am	Current ANU research in Asia-Pacific Archaeology and Palynology	Peter Bellwood Janelle Stevenson
<i>12.30-1.30pm</i>	<i>Lunch (can be brought from several venues on campus)</i>	
1.30-3.00pm	Human Palaeoecology	Dan Penny Simon Haberle
<i>3.00-3.30pm</i>	<i>Afternoon tea (provided)</i>	
3.30-5.00pm	Recent advances in analysis of palaeolithics	Peter Hiscock
5.00-6.30pm	<i>Reception at Coombs Tea Room with Mandy Thomas (Pro Vice-Chancellor), Robin Jeffrey (Director CAP), Nick Peterson (Dean CASS), and Jack Golson (Emeritus Professor, ANH) – and an opportunity to meet members of the Centre for Archaeological Research at ANU</i>	
7.00pm-	<i>Wig and Pen Pub + dinner at local restaurant (own cost)</i>	

* Unless otherwise stated, Breakfast, Lunch and Dinner will be at your own cost. There is a café and self-catering kitchen at the City Walk Hotel. The workshop dinner on Tuesday will be a banquet and is paid for though you will need to provide your own drinks (BYO, local IGA shop nearby).

TUESDAY 11TH SEPTEMBER

Venue: Seminar Room B (morning), Seminar Room A (afternoon), Coombs Blg.

Time	Seminar	Presenter/s
9.00-10.30am	Rock art and archaeology of the Western Desert and Pilbara regions and the National Heritage listing of the Dampier Archipelago.	Peter Veth Jo McDonald Adam Black
10.30-11.00am	<i>Morning tea (provided)</i>	
11.00-12.30am	Geoarchaeology and Archaeobotany	Tony Barham Matiu Prebble Nuno Oliveira
12.30-1.30pm	<i>Lunch (can be brought from several venues on campus)</i>	
1.30-3.00pm	Palaeoenvironmental reconstruction (incl. lab tour)	Nick Porch Geoff Hope
3.00-3.30pm	<i>Afternoon tea (provided)</i>	
3.30-5.00pm	Scanning Electron Microscopy (incl. lab tour)	Sally Stowe Andrew Thornhill (pollen) Nuno Oliveira (charcoal)
7.00pm-	<i>Workshop Banquet Dinner at Mekong Delta Restaurant (provided)</i>	

WEDNESDAY 12TH SEPTEMBER

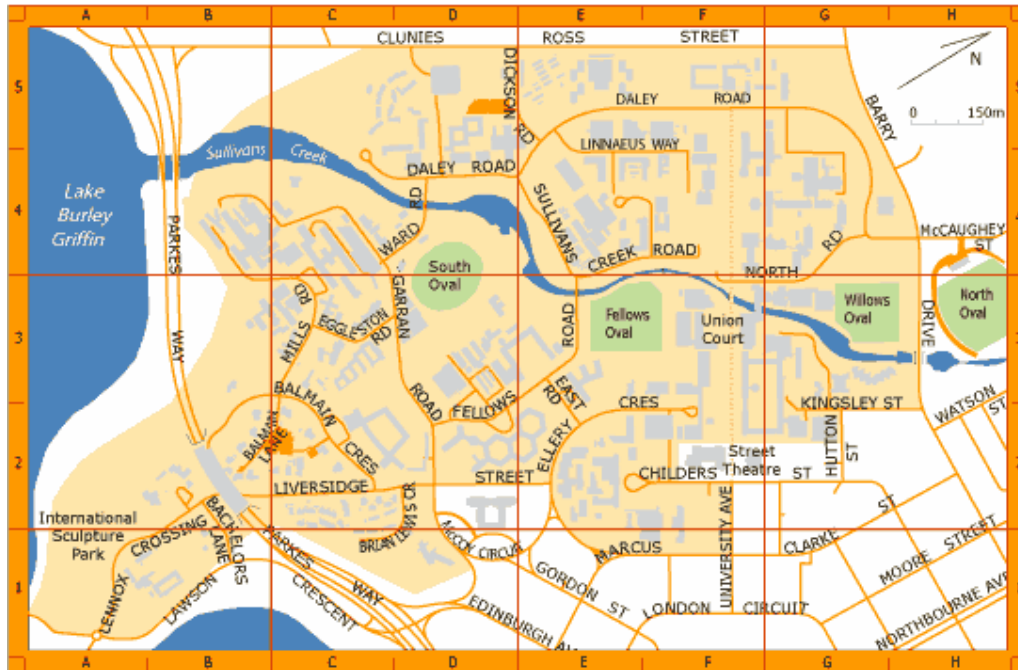
Venue: Seminar Room 2.06, Innovations Blg.

Time	Seminar	Presenter/s
9.00-10.30am	Geochronology (AMS, Cosmogenics, OSL, incl. lab tour)	Kat Fitzsimmons Tim Barrows
10.30-11.00am	<i>Morning tea (provided)</i>	
11.00-12.30am	Lab tours of LA-ICP-MS facilities at RSES	Christian Reepmeyer
12.30-1.30pm	<i>Lunch (can be brought from several venues on campus)</i>	
1.30-3.00pm	Isotope analysis in archaeology Materials sourcing in Pacific prehistory	Ben Marwick Christian Reepmeyer
3.00-3.30pm	<i>Afternoon tea (provided)</i>	
3.30-5.00pm	Application of GIS to archaeological problems	Rachel Nanson Ben Marwick
	Applications of geophysical techniques in archaeology Geophysical investigation of Pacific archaeological sites	Ian Moffat Geoff Clark
5.00-5.30pm	New Directions in Archaeological Science at the ANU and workshop wrapup	Tony Barham Simon Haberle
5.30pm-	<i>Farwell drinks at University House and dinner at local restaurant (own cost)</i>	

Venue Locations

How to get there:

The Canberra Walk Hotel is 400m east of H1 (Northbourne Avenue)



Coombs Building—south wing [No. 9] at grid reference D2
 Innovations Building [No. 124] at grid reference C3



A list of those who were nominated to attend, with their affiliation and current research interest, is provided below.

List of Participants:

Stephen Arthur (University of Western Australia) Thesis topic: *Personal Ornamentation in Prehistoric Societies*.

Tim Barribeau (University of Otago, Dunedin) *Bronze Age Funerary Vessels from Ban Non Wat*.

Tessa Boer-Mah (University of Sydney) Thesis topic: *Ground Stone Adzes from Neolithic and Early Bronze Age Contexts at Ban Non Wat, Northeast Thailand*.

Katarina Boljkovac (ANU)

Tom Brookman (University of Adelaide) Thesis topic: *Stable Isotope Analysis of Seasonal Signals in Macropus Tooth Enamel: A Pilot Study*.

Rachel Fuller (University of Otago, Dunedin) *Biological archaeology*

Deborah Graziano (James Cook University, Cairns) Thesis topic: *Ecological Pressure and Primate Social Behaviour: Building a Reliable Model of the Behavioural Capabilities of the Australopithecines*.

Allison Isepy (James Cook University, Townsville) Thesis topic: *Analysis of an Iron Age Industrial Feature at Ban Non Wat, Thailand*.

Chris Jennings (University of Otago, Dunedin) *The Use of Southland Argillite in Prehistory*.

Mirani Litster (Flinders University, South Australia) Thesis topic: *Potential Contribution of Archaeology to Australian Frontier Conflict Studies*.

Jaime McHugh (James Cook University, Townsville) Thesis topic: *Biological Anthropology in Cambodia*.

Anne McKenzie (University of Auckland) Thesis topic: *Archaeology in the New Georgia Group, Solomon Islands*.

Juliet Meyer (James Cook University, Cairns) Thesis topic: *Tropical Taphonomy and Potential for Forensic Field Research Centre*.

Daniel Monks (University of Western Australia) Thesis topic: *Stranded: A Look at the Survivor Camp of the VOC Ship Zeewijk in an Australian Maritime Context*.

Sam Player (University of Sydney) Thesis topic: *Reconstructing the Angkorian Hydrological Network*.

Kasey Robb (University of Otago, Dunedin) *Biological Anthropology investigating skeletal health throughout the Pacific*.

Phillip Roberts (ANU)

Carmen Sarjeant (University of Otago, Dunedin) *Physico-Chemical Analysis of Bronze to Iron Age Funerary Ceramics at Ban Non Wat*.

Dale Simpson Jr (University of Auckland). MA research on Easter Island in political economy, GIS and viewshed analysis, and monumental architecture on the island's NW coast.

Silvana Tridico *Forensic hair examiner*.

Deborah van Sambeek (University of Western Australia).

Tania Stellini (Planning & Aboriginal Heritage Section, Dept of Environment & Climate Change, NSW)

Erin Williams (University of Otago, Dunedin, New Zealand) Thesis topic: *Fire Risk and Fire Use in Prehistoric New Zealand*.

Abigail Young (University of Canterbury, Christchurch) Thesis topic: *Diatom Based Investigations of Late Quaternary Environmental Change in the South Island, New Zealand*.

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Marc Oxenham

Recent Advances in Asia-Pacific Bioarchaeology

Marc's research has concentrated on elucidating aspects of human palaeohealth, palaeopathology and behaviour by way of analyses of human skeletal and dental material. Geographically, I have focused on Southeast Asia and specifically Vietnam and Northern Japan. Temporally, he is particularly interested in the Hunter-Gatherer/Neolithic interface in Holocene Southeast and eastern Asia. He also has a number of students engaged in work tangential to his research interests, namely: forensic anthropology and mortuary archaeology.

Key Publications:

- i) Oxenham M.F., and Tayles, N., editors. (2006) *Bioarchaeology of Southeast Asia*. Cambridge: Cambridge University Press.
- ii) Oxenham MF. (2006) Biological responses to change in prehistoric Vietnam. *Asian Perspectives* 45(2):212-239.

Judith Cameron

Recent Advances in Asian Textile Research

In recent years, archaeological textile research has moved beyond the analysis and description of basketry, cordage, matting and textiles to address fundamental questions in prehistory. While archaeological textiles will never eclipse pottery or stone as primary cultural markers, by investigating tools, fibres and extant fabric structures researchers can provide important insights into the prehistoric period.

Key Publications:

- i) Cameron, J. (2004) Spindle whorls. In *The Origins of the Civilization of Angkor: the excavation of Ban Lum Khao* edited by C.F.W. Higham and R. Thosarat Published Bangkok: The Fine Arts Department, pp.211-216.
- ii) Cameron, J. (2006). The Origins of Barkcloth production in Southeast Asia. In *Bark Cloth in Southeast Asia*, edited by M. Howard. Bangkok, White Lotus Press, pp. 56-74.

Peter Bellwood

Current ANU research in Asia-Pacific Archaeology

Peter's research covers the prehistory of Southeast Asia and the Pacific from archaeological, linguistic and biological perspectives; origins of agriculture and resulting cultural, linguistic and biological developments (world-wide); interdisciplinary connections between archaeology, linguistics and human biology. Currently he is involved in archaeological fieldwork projects in the Philippines and Vietnam.

Key Publications:

- i) Bellwood, P. (2005) *First Farmers: The Origins of Agricultural Societies*. Oxford: Blackwell.
- ii) Diamond, J. and Bellwood, P. (2003) Farmers and their languages: the first expansions. *Science* 300: 597-603.

Janelle Stevenson

Current ANU research in Asian Palynology

Janelle's research is focused on disentangling climate change from human impact in the palaeoenvironmental record and using palynological techniques in the detection of crop plants in the palaeoenvironmental and archaeological record. Her work is based in the Southeast Asian,

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Melanesian, and Pacific Islands region and she is currently working in the Northern Philippines, Vietnam and Taiwan.

Key Publications:

- i) Stevenson, J., and Hope, G.S. (2005) A comparison of late Quaternary forest changes in New Caledonia and northeastern Australia. *Quaternary Research* 64, 372-383.

Simon Haberle

Testing the hypothesis for the emergence of agriculture 7000 cal years ago in the highlands of Papua New Guinea.

Recent multi-disciplinary investigations at Kuk Swamp, Wahgi Valley, Papua New Guinea have yielded direct evidence of mid-Holocene agricultural practices dating to 7000 cal BP (Denham et al. 2003). This evidence includes archaeological features representing cultivation, pollen records documenting the emergence of an agricultural landscape in the Upper Wahgi Valley, and phytolith and starch remains of edible plants including the exploitation of taro (*Colocasia esculenta*) and planting of bananas. The integration of palaeoecological and archaeological data at Kuk Swamp allows us to examine the veracity of criteria used to distinguish human impact from natural processes in the pollen records. Based on these results a conceptual model for the identification of human impact in pollen records is constructed to distinguish between the impact on landscapes of “pre-agricultural” and agricultural activity.

Key References:

- i) Denham, T.P., S.G. Haberle, C. Lentfer, R. Fullagar, J. Field, M. Therin, N. Porch and B. Winsborough. (2003) Origins of agriculture at Kuk Swamp in the Highlands of New Guinea, *Science* 301: 189-193.
- ii) Haberle, S.G. (2007) Prehistoric human impact on rainforest biodiversity in highland New Guinea. *Philosophical Transactions of the Royal Society B: Biological Sciences* 362, 219-228.

Dan Penny

Reflections on landscape archaeology in the region of 'Greater Angkor', Cambodia.

The region defined as 'greater Angkor', incorporating the famous monuments of the Angkor World Heritage park, is arguably the largest archaeological site on Earth, and presents unique challenges in terms of research design and method. This presentation will review some of the advances made in archaeological research at Angkor over the past 10 years, drawing out some of the challenges faced when conducting research at the landscape scale.

Key References:

- i) Evans, D., Pottier, C., Fletcher, R., Hensley, S., Tapley, I., Milne, A., and Barbetti, M. (2007) A comprehensive archaeological map of the world's largest preindustrial settlement complex at Angkor, Cambodia. *PNAS* 104(36): 14277–14282.
- ii) Penny, D., Pottier, C., Fletcher, R., Barbetti, M., Fink, D., and Hua, Q. (2006) Vegetation and land-use at Angkor, Cambodia: a dated pollen sequence from the Bakong temple moat. *Antiquity* 80: 599–614.

Peter Hiscock

Recent advances in Palaeolithics

One of the key questions in Palaeolithic studies is how to explicate assemblage variability. Over the last twenty years developments in the measurement of reduction have allowed researchers to explore

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models that have been offered for variability. The results have been both surprising and startling. This topic is explored with examples from Australia and Europe.

Key References:

- i) Hiscock, P. (2007) Looking the other way. A materialist/technological approach to classifying tools and implements, cores and retouched flakes. pp. 198-222 in S. McPherron (ed.) *Tools versus Cores? Alternative approaches to Stone Tool Analysis*. Cambridge Scholars Publishing.
- ii) Hiscock, P. (2006) Process or planning?: depicting and understanding the variability in Australian core reduction. pp. 99-108 in S. Ulm (eds) *An archaeological life: papers in honour of Jay Hall*. University of Queensland.
- iii) Hiscock, P. and C. Clarkson (2005) Experimental evaluation of Kuhn's Geometric Index of Reduction and the flat-flake problem. *Journal of Archaeological Science* 32:1015-1022.

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Peter Veth, Jo McDonald and Adam Black

Rock art and archaeology of the Western Desert and Pilbara regions and the National Heritage Listing of the Dampier Archipelago.

Systematic research on the archaeology of NW Australia has burgeoned in the last 20 years. Perhaps the greatest impact has come from modeling human/environmental responses from the arid Pilbara and Western Deserts and the testing of these through systematic regional survey, excavation and rock art analysis programs. We will highlight recent research with case studies of 1) the recently awarded ARC Linkage Grant for the Canning Stock Route and 2) the National Heritage Listing of the Dampier Archipelago. The presentations will profile archaeological issues relating to research, management, native title and public education.

Key References:

- i) McDonald, J.J. and P. Veth (2006) Rock art and social identity: a comparison of graphic systems operating in arid and fertile environments in the Holocene. In I. Lilley (ed.) *Archaeology of Oceania: Australia and the Pacific Islands*, pp. 96-115. Blackwell Studies in Global Archaeology. Blackwell, Oxford.
- ii) Selected chapters on NW archaeology from Veth, P., Smith, M. and P. Hiscock (2005) *Desert Peoples: Archaeological Perspectives*. Blackwell Publishing, Oxford.

Tony Barham

Geoarchaeology - Australian research in the global context

Tony's research focuses on applying regolith science and stratigraphic approaches to aspects of archaeological site formation process, palaeoenvironments, and regional site patterning. Geographically, current research focuses on coastal archaeology in WA and Torres Strait, and open sites in fluvial landscapes in NSW and Victoria. His key interest is in Holocene stratigraphic architectures, especially interactions between coastal processes and landforms acting as templates, which influence our views of archaeological site preservation and the narratives we create from site evidence about past environments through time.

Key publications:

- i) O'Connor, S., Zell, L. and Barham, A.J. (2007) Stone reconstructions on Rankin Island, Kimberley, Western Australia. *Australian Archaeology* 64: 15-22.
- ii) Barham, A.J. (1999) The local environmental impact of prehistoric populations on Saibai Island, northern Torres Strait, Australia - enigmatic evidence from Holocene swamp lithostratigraphic records. In: *Quaternary International*. 59 (1), 71-105. Special issue on Holocene Impacts on Australia and the southwest Pacific.

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- iii) Barham, A.J. and Macphail, R.I. eds. (1995) *Archaeological Sediments and Soils: Analysis, Interpretation and Management*. London: Institute of Archaeology, UCL. 239pp.

Mattiu Prebble

Archaeobotany in the Pacific Region

Mattiu's research is focused on the theoretical underpinnings of environmental archaeology and history of islands. His PhD investigated the empirical geological, biological and archaeological foundation of the Austral Islands through a synthesis of botanical information from historical, archaeobotanical, ethnographic and paleobotanical sources.

Key References:

- i) Kennett, D., Anderson, A. J., Prebble, M., Conte, E., and Southon, J. (2006) Prehistoric human impacts on Rapa, French Polynesia. *Antiquity* 80, 340–354.

Nuno Oliveira

Archaeobotany in the Tropics: objectives, methodologies and caveats

This seminar will look into the methodologies employed in recovering and analysing macro-plant remains from archaeological sites, based on experience accumulated during two seasons of fieldwork in East Timor. Among others, attention will be given to aspects regarding research design and objectives, sampling strategies and identification criteria of archaeological specimens. An ideal practice-based approach for archaeobotanists working in the region is suggested, and current caveats to the discipline discussed.

Key References:

- i) Fairbairn, A. (2005) Simple bucket flotation and wet-sieving in the wet tropics. *PalaeoWorks Technical Report 4*. p.18.

Geoff Hope

Palaeoenvironmental reconstruction

Geoff is a geobotanist working on the interface between human activity and the environment with a mix of archaeologists, geographers and other colleagues. Much of his work involves assessing the past impact of people on landscapes by measuring vegetation change (using phytoliths, charcoal and pollen) and geomorphic consequences-erosion, silting and shifts in production. He is also interested in the roles of climate change and fire on human activity and is currently assessing the long term fire regimes in east Kalimantan, New Guinea, New Caledonia, Myanmar and Fiji in relation to the very different human settlement histories.

Key References:

- i) Hope, G.S. and Haberle S.G. (2005) The history of the human landscapes of New Guinea. In Pawley, A., Attenborough, R., Golson, J. and Hide, R. (eds.), *Papuan Pasts: Cultural, Linguistic and Biological Histories of Papuan-Speaking Peoples*, pp.541-554. Pacific Linguistics, The Australian National University, Canberra.

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Nick Porch

Palaeoenvironmental reconstruction - insects

Nick's research concentrates on quantitative reconstructions of palaeoclimate from biotic proxies, primarily beetle remains. He has an exceptional expertise in *Coleoptera* identification and has developed an Australian insect distribution database for application to palaeoclimatic studies. He employs a range of numerical analytical techniques (Mutual Climate Range, and Best Modern Analogue approach) and associated software (BIOCLIM, PolCalib, ArchInfo, CANOCO) in his research. He is currently working on insect fossils from Pacific Island pre-human and archaeological contexts and is developing a new area of investigation using the fossil record to reconstruct the history and impact of human-moderated biological invasions termed "invasion palaeoecology".

Key References:

- i) Porch, N. (2007) Late Pleistocene Beetle Records from Australia. In, Elias, S.A. (editor-in-chief), *Encyclopaedia of Quaternary Science*. Elsevier Scientific Publishing, Amsterdam.
- ii) Porch, N. and Elias, S. (2000) Quaternary beetles: A review and issues for Australian studies. *Australian Journal of Entomology* 39: 1–9.

Includes a lab tour (~30 min)

Sally Stowe

Scanning Electron Microscopy

Sally is the Facility Co-ordinator of the ANU Electron Microscopy Unit and is a Member of Centre for Visual Sciences, ANU. The SEM is widely used across ANU for student and staff research projects in archaeology and palaeoecology. The theoretical background and operational techniques of the SEMs will be discussed and a demonstration of the microscopes will be given.

See the web page <http://www.anu.edu.au/EMU/>

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Kat Fitzsimmons

Dating the landscape: the timing of sediment deposition using optically stimulated luminescence

Kat will introduce the principles of OSL, then move on to its applications, which includes her work in the desert dunefields of central Australia. She is also involved in a project on the prehistoric hearths in western New South Wales.

Key References:

- i) Aitken, M.J. (1998) *An Introduction to Optical Dating*. Oxford University Press, New York.
- ii) Fitzsimmons, K., Rhodes, E., Magee, J., Barrows, T.T. (in press) The timing of linear dune activity in the Strzelecki and Tirari Deserts, Australia. *Quaternary Science Reviews*.

Tim Barrows

Geochronology (AMS, Cosmogenics)

Tim's research concentrates on refining the chronological sequences for palaeoclimate in the Australian region. Using AMS techniques he has played a crucial role in re-evaluating the late glacial

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palaeoclimate of the Australasian region. He will provide a demonstration of the ANU's Accelerator Mass Spectrometry (AMS) which is able to measure trace amounts of cosmogenic Be-10, C-14 and Cl-36 in naturally occurring geological materials in the environment. These isotopes have important applications such as dating glacial deposits, fossils, lava flows, landslides and meteorite impacts within the last 2 million years.

Key References:

- i) Barrows, T.T., Juggins, S. De Deckker, P. Calvo, E., and Pelejero, C. (2007) Long-term sea surface temperature and climate change in the Australian–New Zealand region. *Paleoceanography* 22, PA2215, doi:10.1029/2006PA001328.
- ii) Barrows T.T., Stone J.O., Fifield L.K., and Cresswell R.G. (2002) The timing of the Last Glacial Maximum in Australia. *Quaternary Science Reviews*, 21: 159-173.

Includes a lab tour (~1hr)

Ben Marwick

Isotope analysis in archaeology

Ben's research is focused on stone artefact technology and economics, cultural change and environmental change during the Pleistocene and Holocene in Northwest Thailand. He is exploring the application of stable isotope analysis of shells in archaeological contexts. He will discuss the basics of isotope analysis, review some recent interesting case studies of isotopes in archaeology and lead a tour of the stable isotope facilities at ANU.

Key references:

- i) Mannino, M. A., B. F. Spiro, et al. (2003). Sampling shells for seasonality: oxygen isotope analysis on shell carbonates of the inter-tidal gastropod *Monodonta lineata* (da Costa) from populations across its modern range and from a Mesolithic site in southern Britain. *Journal of Archaeological Science* 30(6): 667.
- ii) Bocherens, H., D. G. Drucker, et al. (2005). Isotopic evidence for diet and subsistence pattern of the Saint-Cesaire I Neanderthal: review and use of a multi-source mixing model. *Journal of Human Evolution* 49(1): 71-87.
- iii) Bentley, R. A., N. Tayles, et al. (2007). Shifting Gender Relations at Khok Phanom Di, Thailand. *Current Anthropology* 48(2): 301-314.

Includes a lab tour (~45 min)

Christian Reepmeyer

Materials sourcing in Pacific prehistory (LA-ICP-MS)

Analysing chemical composition of artefacts, e.g. for provenance studies, has a long history of successful research. This session will focus on the advances in a specific geochemical method, Laser Ablation - Inductively Coupled Plasma Mass Spectrometry. The equipment, which is located at the Research School of Earth Sciences, has been applied to a wide variety of fields. We will give a short overview of the history, the method itself and on possible applications in archaeological research.

Key References:

- i) Speakman, R.J. and Neff, H. (2005) The application of laser ablation-ICP-MS to the study of archaeological materials – an introduction. In: R.J. Speakman and H. Neff, Editors, *Laser Ablation-ICP-MS in Archaeological Research*. University of New Mexico Press, Albuquerque, pp. 1–14.

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- ii) Cochranea, E.E., and Neff, H. (2006) Investigating compositional diversity among Fijian ceramics with laser ablation-inductively coupled plasma-mass spectrometry (LA-ICP-MS): implications for interaction studies on geologically similar islands. *Journal of Archaeological Science* 33: 378-390.

Includes a lab tour (~45 min)

Rachel Nanson and Ben Marwick

Application of GIS to archaeological problems

This talk will introduce some potential uses of spatial data in archaeology. It will demonstrate data collection using Global Positioning Systems (GPS) and data analysis using Geographic Information Systems (GIS).

Ian Moffat

Applications of Geophysical Techniques in Archaeology

Geophysical methods can be a useful tool for a wide range of archaeological investigations however careful selection of the appropriate technique with reference to the expected target and site properties is essential. This presentation reviews a variety of case studies from Australian Indigenous, historical, maritime and South-East Asian archaeology to consider which geophysical techniques added significant value to each site investigation and why this was the case.

Geoffrey Clark

Geophysical investigation of Pacific archaeological sites

Geophysical techniques are routinely used to investigate archaeological sites in developed nations such as Hawai'i and New Zealand, but have only occasionally been utilized in the tropical Pacific. Recently, remote sensing techniques (GPR, magnetometry, resistivity) have been successfully applied to historic and prehistoric sites in Palau, Samoa and Tonga, where geophysical methods were used on a variety of monumental structures ranging from tombs, house platforms, ditches and a canoe wharf. The work has identified key elements of a successful research strategy in which geophysical and archaeological approaches can be profitably combined.

Key References:

- i) Conyers, L.B. (2006) Ground penetrating radar techniques to discover and map historic graves. *Historical Archaeology* 40(3): 64-73.
- ii) Silliman, S.W., Farnsworth, P. and Lightfoot, K.G. (2000) Magnetometer prospecting in historical archaeology: Evaluating survey options at a 19th-century Rancho site in California. *Historical Archaeology* 34(2):89-109.
- iii) Frederick, C.D and Abbott, J.T. (1992) Magnetic prospection of prehistoric sites in an alluvial environment: Examples from NW and West-Central Texas. *Journal of Field Archaeology* 19(2):139-153.

List of Presenters emails

Tony Barham	anthony.barham@anu.edu.au
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