



INQUA
International Union for Quaternary Research



Report
2011 OZ-INTIMATE workshop
AINSE, Lucas Heights:
13-15th December, 2011
Conveners – Jessica Reeves & Tim Cohen

The fourth OZ-INTIMATE workshop hosted by AINSE took place on the 13-15th December, 2011. In attendance were 23 Australian researchers, joined by two members of our New Zealand counterpart (NZ-INTIMATE): Helen Bostock and Drew Lorrey, supported by AUS-INTIMATE. The primary aim of the workshop was to work on manuscripts for an upcoming AUS-INTIMATE special issue of *Quaternary Science Reviews* (QSR), following on from the successful session at INQUA in Bern, Switzerland in July.

As we had several new members attend this workshop, we began with highlights of new work. This included presentations from Patrick Moss (*Late Quaternary grassland patches in NE Queensland and NW Tasmania*), Claire Krauss (*A palaeo-monsoon record from Sulawesi, Indonesia 40ka – present*), Linda Ayliffe (*30 ka composite speleothem record from Liang Luar cave, Flores*) and John Tibby (*Past climate variability from North Stradbroke Island, SE QLD*). Other new works presented throughout the meeting included Michelle Ho (*Hydrological risk modelling*), Joel Pedro (*An Antarctic ice core stack*) and Ulla Heikkila (*Be¹⁰ in Antarctic ice cores*). Contributions to the QSR special issue were also discussed by Helen Bostock (*Review of the last 30 ka in the Southern Ocean*) and Tim Barrows (*Antarctic climate event stratigraphy*).

The majority of the workshop was spent developing the manuscripts for the QSR special issue. The papers have been divided to correspond with the regional working groups developed under OZ-INTIMATE, namely: tropical, temperate, arid interior, Southern Ocean and an overall Australian region synthesis paper. The idea was to develop individual regional climate event stratigraphies, based on the most representative records for each of the regions, and then bring these together in an Australia-wide paper.

We were able to establish guidelines for each of the papers, so that the format would be comparable and the overall synthesis paper more straightforward to construct. It was agreed that the regional papers should present the results by proxy, with a brief introduction to the limitations and assumptions inherent in each. The discussions would then follow timeslices. The timeslices agreed upon are as follows:

- Pre-30 ka (either 40 or 35 ka, as most relevant to the region)
- Glacial 30-18 ka (early glacial, LGM proper)
- Deglacial 18-12 ka (deglacial 18-15, ACR, etc. 15-12)
- Holocene 12-0 ka (early 12-8, middle 8-4, late 4-0)

The resolution of the records to be included is centennial to millennial scale; hence decadal oscillations in the Holocene, for example, are not relevant to these syntheses.

In comparison, the overview paper is more process driven and is to resolve the changes detailed in the regional papers. It is to be written around drivers and mechanisms (e.g. sea level change, insolation, winter sea-ice extent, thermohaline circulation, ITCZ movement, trades and westerlies, the monsoon variability, CO₂ and geographical boundaries) with figures for each timeslice to describe climatic conditions across the continent. The impact of people was considered beyond the scope of this manuscript, but identified as an area for future research.

The future of the AUS-INTIMATE project was discussed in a session chaired by Drew Lorrey on the second day. He proposed a new project, which was developed at INQUA, SHAPE: Southern Hemisphere Assessment of Palaeo Environments, to be put forward to PALCOMM in February. SHAPE will incorporate the other Southern Hemisphere nations and will potentially look further back in time to MIS 3 (~60 ka). It is likely that SHAPE will be a project within the COST INTIMATE IFG (the Northern Hemisphere International Focus Group), although we may apply for full IFG status. Data-model integration would be a key component of SHAPE, along with targeting of key sites for proxy-based studies. The proposal received broad support, with key objectives for the Australasian node being identified.

Other business discussed at the workshop included successful grants and upcoming projects. Jessica Reeves as CI, with Tim Cohen, John Tibby, Patrick De Deckker, Simon Haberle, Janelle Stevenson, Scott Mooney, Russell Drysdale, Tony Dosseto and Nigel Spooner as PIs were awarded an AINSE grant (\$11, 385) for the project: Palaeo-lakes revisited: re-investigating key lake sites of temperate Australia through the last glacial period. This project will look at a thorough multi-proxy re-investigation of three sites key to the INTIMATE remit. Jan Hendrik-May was awarded one of the inaugural ARC DECRA's, with a project entitled: The wet and dry of tropical Australia: past, present and future (\$375 000). Other research projects in the group continue on northern Australian lakes, the dry tropics, Arnhem Land and the New England tableland. Henk Heijnis talked to us about the new ITrax facility at ANSTO and we anticipate a lot of future INTIMATE projects to be utilising this.

The OZ-INTIMATE group is now well established and continues to attract new members. The most significant output of this second phase of the AUS-INTIMATE project will be the QSR special volume, which will hopefully be in press in the second half of 2012. Attached is a list of committed manuscripts. Those with an asterix have benefited from AINSE support, which will be dutifully acknowledged in the publications. We include here also a list of other publications from the OZ-INTIMATE group and the abstracts of papers presented at the ONQUA congress that emerged from previous AINSE meetings.

Again, we thank AINSE for their continued support of the OZ-INTIMATE project and hope to continue this relationship.

Jessica Reeves & Tim Cohen

5th January, 2012

OZ-INTIMATE publications

Reeves, J.M. and Cohen, T., 2010. OZ-INTIMATE workshop. *Quaternary Australasia* 27(2): 21-25.

Reeves, J.M. and Bostock, H., 2011. INTIMATE meetings both sides of the Tasman. *Quaternary Australasia* 28(1): 23-24.

Reeves, J.M., Almond, P., Cohen, T.C., Lorrey, A., 2011. INTIMATE meetings at INQUA. *Quaternary Australasia* 28(2): 18-19.

Quaternary Science Reviews: Australasian INTIMATE special issue - proposed

*Barrows, T., Alloway, B. and Reeves, J. Australasian-INTIMATE – an overview.

*Reeves, J., Cohen, T., and OZ-INTIMATE members. OZ-INTIMATE: toward a climate event stratigraphy for the Australian region, 0-35 ka.

Barrell, D., Almond, P., Lorrey, A., Newnham, R., Vandergoes, M., Alloway, B., Barrows, T., Burge, P., Fink, D., Hyatt, O., Lowe, D., Shulmeister, J., Woodward, C. and Williams, P. The sequence of climatic events in New Zealand over the past 30 000 years: a composite stratotype for regional correlation and comparison

*Reeves, J., Bostock, H., Ayliffe, L., Devreindt, L., Drysdale, R., Fitzsimmons, K., Griffiths, M., Haberle, S., McGregor, H., Mooney, S. and Moss, P. Climatic records from Tropical Australasia – A synthesis from the OZ-INTIMATE workgroup.

*Petherick, L., Bostock, H., Cohen, T., De Deckker, P., Fitzsimmons, K., Reeves, J., Tibby, J. Temperate records from Australia on INTIMATE timescales: A summary

*Fitzsimmons, K.E., Cohen, T., Hesse, P., OZ-INTIMATE contributors (in alphabetical order): Barrows, T., Haberlah, D., Hilgers, A., Kelly, T., Kemp, J., Lomax, J., Magee, J., May, J.-H. and Treble, P. Towards a synthesis of palaeoenvironmental change in the Australian continental interior

Lorrey, A., Ackerley, D., Vandergoes, M., Newnham, R., Harper, S., Renwick, J., Fowler, A., Williams, P., Hellstrom, J., Drysdale, R. and Whittaker, T. The Mid-Holocene circulation transition in New Zealand

Doughty, A.M., Anderson, B., Mackintosh, A.N., Kaplan, M.R., Vandergoes, M.J., Barrell, D.A. and Denton, G.H. Late-glacial climate in the Southern Alps of New Zealand inferred from glacial modelling

Newnham, R.M., McGlone, M.S., Moar, N.T., Wilmshurst, J.M., Vandergoes, M.J., Callard, S.L. Seeing the wood for the trees: the vegetation of New Zealand during the Last Glacial Maximum

Vandergoes, M.J., Hogg, A.G., Lowe, D.J., Newnham, R.M., Denton, G.H., Southon, J., Petchey, F., Dabell, K., Barrell, D.J.A., Almond, P.C., Allan, A., Wilson, C.J.N., McGlone, M.S. and Blaauw, M. Refining the age of the Kawakawa/Oruanui tephra in New Zealand.

Almond, P., Vandergoes, M., Lorrey, A., Barrell, D. and Lowe, D. Palaeoclimate reconstruction during the 8w (Kawakawa Tephra) Timeslice of the New Zealand Climate Event Stratigraphy

Larsen, J. and van Heerwaarden, C. Balancing Australia's Late Quaternary water and energy budgets

*Bostock, H., Armand, L., Barrows, T.T., Carter, L., Chase, Z., Cortese, G., Dunbar, G., Ellwood, M., Hayward, B., Neil, H. and Noble, T. L. A review of the Australian-New Zealand sector of the Southern Ocean over the last 30 ka

*Barrows, T.T. and Pedro, J. *et al.* Antarctic climate event stratigraphy

Barrows, T.T., Almond, P., Rose, R., Fifield, K and Tims, S.G. Late Pleistocene stratigraphy of Westland, South Island, New Zealand

*Moss, P.T., Tibby, J., Petherick, L., McGowan, H and Barr, C. Late Quaternary vegetation history of the sub-tropics of Eastern Australia

*Lewis, S., Sloss, C., Murray-Wallace, C., Woodroffe, C., et al. A review of sea-level change in the Australian region over the last 15 ky

Lowe, David J.; Blaauw, Maarten; Newnham, Rewi M.; Hogg, Alan G. Revised timing of the late glacial reversal at Kaipo bog, northern New Zealand, using high-resolution Bayesian depositional modelling (Bacon)

*Devriendt, L., Reeves, J., Chivas, A., Garcia, A. and Fink, D. Lake-level variability in the Gulf of Carpentaria, Australia

Callard, S.L., Newnham, R.M. and Vandergoes, M.J. Palynology, vegetation and climate of Howard Valley, South island, New Zealand preceding and during the Last Glacial Maximum

INQUA abstracts – with AINSE support

Fitzsimmons, K., Cohen, T., Hesse, P. toward a synthesis of palaeoenvironmental change in the Australian continental interior.

Phipps, S.J. from the tropics to Antarctica: Integrating Palaeoclimate archives with climate system models.

Reeves, J.M., Cohen, T and OZ-NTIMATE members. OZ-INTIMATE: Toward a climate event stratigraphy for the Australian region 0-35 ka.

Petherick, L et al. Temperate records from Australia on INTIMATE timescales: A summary

Lewis S., Ayliffe, L., Bostock, H., Devriendt, L., Drysdale, R., Griffiths, M., Haberle, S., McGregor, H., Mooney, S., Moss, P. and Reeves, J. Climatic records from tropical Australasia – A synthesis from the OZ-INTIMATE workgroup.