JIE CHRISTINE CHANG

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Current Position:*Postdoctoral Research Fellow, Universidad de Chile, Santiago, Chile*
Academic Degrees:*Ph.D* *in Physical Geography,* ***PostGrad Diploma*** *in Natural Resource Studies,* ***Bachelor*** *of Engineering (Chemical), 2010*

PUBLICATION LIST

Peer Reviewed Journals

Chang, J.,Shulmeister, J., Woodward, C., Steinberger, L., Tibby, J., Barr, C. 2015. A chironomid-inferred summer temperature reconstruction from subtropical Australia during the last glacial maximum (LGM) and the last deglaciation, *Quaternary Science Reviews, Vol 122, pp 282 – 292*

Chang, J.,Shulmeister, J.,Woodward, C. 2015.A chironomid based transfer function for reconstructing summer temperatures in south eastern Australia. *Palaeogeography, Palaeoclimatology, Palaeoecology, Vol 423, pp 109-121*

Chang, J., Woodward, C., Shulmeister, J. 2014. A snapshot of the limnology of eastern Australian water-bodies spanning the tropics to Tasmania: The land-use, climate, limnology nexus. *Marine and Freshwater Research, Vol 65, pp 872-883*

Woodward, C., ***Chang, J***., Zawadzki, A., Shulmeister, J., Haworth, R., Collecut, S., Jacobsen, G. 2011. Evidence against early nineteenth century major European induced environmental impacts by illegal settlers in the New England Tablelands, south eastern Australia, *Quaternary Science Reviews, Vol 30, pp3743-3747*

Chang, J.,Shulmeister, J., Woodward, C., Michalski, G. Submitted. Can stable oxygen and hydrogen isotopes from Australian subfossil chironomid head capsules be used as proxies for past environmental change?*Journal of Paleolimnology*

Chang, J.,Woodward, C., Shulmeister, J. Submitted. Reconstructing terrestrial temperatures in the Australian tropics: a chironomid based transfer function approach,*Quaternary International*

Conference Abstracts

Chang, J., Shulmeister, J., Woodward, C. 2014. Using chironomid-based methods for reconstructing past climate in south eastern Australia. In: American Geophysical Union Fall Meeting 2014, San Francisco, USA, 15th– 19th Dec, 2014

Chang, J., Woodward, C., Shulmeister, J. 2014.A limnologicalsurvey of eastern Australian water bodies exploring the relationshipamong lake water chemistry, land-use and climate. In: 16th Conference of the Australia and New Zealand Geomorphology Group (ANZGG), Mount Tamborine, Australia, 1-3 December, 2014 (Oral presentation)

Chang, J., Shulmeister, J., Woodward, C. 2014. Development and application of a chironomid based transfer function for reconstructing summer temperatures in south eastern Australia. In: Australasian Quaternary Biennial (AQUA) Conference 2014, Mildura, Australia, 30th June – 3rd July, 2014 (Oral Presentation)

Chang, J. 2014. The use of Australian chironomid as proxies for past climate and environmental change, In: Australia-China Wetland Network Research Partnership Symposium, Nanjing, China, 24th – 28th March, 2014 (Invited)

Chang, J., Shulmeister, J., Woodward, C. 2013. Using Australian chironomid as proxies to reconstruct Last Glacial Maximum (LGM) temperature from Southeast Queensland, In: International Quaternary Association (INQUA) Early Career Researcher, Inter-congress Meeting, Wollongong, Australia, 2nd– 6th December, 2013 (Poster)

Chang, J.,Shulmeister, J., Theiling, B. 2013.Application of stable isotopes from Australian chironomid (non-biting midge) head capsules as proxies for past climate change. In: 12th Australasian Environmental Isotope Conference (AEIC), Perth, Australia, 10-12 July, 2013 (Oral Presentation)

Chang, J., Shulmeister, J., Woodward, C. 2013. Developing methods that use Australian chironomid (non-biting midge) larvae as proxies for past climate change. In: Asia-Oceania Geoscience Society (AOGS) 10th Annual Meeting, Brisbane, Australia, 24-28 June, 2013 (Oral Presentation)

Chang, J., Woodward, C., Shulmeister, J., Zawadzki, A., Jacobsen, G. 2012. New data from Little Llangothlin Lagoon, New England Tablelands, eastern Australia, indicate no significant post-European erosion. In: 15th Biennial Conference of the Australia and New Zealand Geomorphology Group (ANZGG), Bundanoon, Australia, 2-7 December, 2012 (Oral presentation) - *highly recommendedfor student best oral presentation award (top 3)*

Successful Grant Proposal

Shulmeister, J., ***Chang., J.,*** Woodward, C., Moss, P. T., Clark, D.(Awarded). Holocene history of Lake Cootapatamba, Australian Alps.Australian Institute of Nuclear Science and Engineering (AINSE) Research Award, 2015 Round 1

GRANTS, AWARDS &SCHOLARSHIPS

Nov 2015	Member of UQ Future Leaders Program class 2015, only top 2% of UQ graduates who demonstrated outstanding leadership during their study at UQ were selected
Mar 2015	International Quaternary Association (INQUA) early career researchers (ECR) Travel Grant for the XIX INQUA Congress, Japan 2015
May 2014	University of Queensland Graduate School International Travel Award (GSITA) to visit Purdue Stable Isotope Laboratory, USA ($5,000)
July 2013	Australian Nuclear Science and Technology Organisation (ANSTO) Student Travel Grant for the12th Australasian Environmental Isotope Conference (AEIC Perth, WA)
May 2012	Australian Academy of Technological Sciences and Engineering (ATSE)Young Science Ambassador Award ($2,400), participated the 'Wonder of Science' programlaunched in Northern Queensland
2012-2014	University of Queensland Research Scholarship (UQRS), equivalent to Australian Postgraduate Award(APA) for doctoral study
2012-2014	Australian Research Council (ARC) Discovery Top-Up Scholarship: 'The last glaciation maximum climate conundrum and environmental responses of the Australian continent to altered climate states'. ARC Discovery – DP110103081
2010-2011	Faculty of Science, University of Queensland Summer Research Scholarship ($3,000)
2009-2010	Faculty of Engineering, Architecture and IT (EAIT), University of Queensland Summer Research Scholarship ($3,000)

EDUCATION & TRAINING

Jan 2012 – Jul 2015 **PhD Candidate in Physical Geography and Environmental Geoscience (Quaternary)**
School of Geography, Planning and Environmental Management
The University of Queensland

Thesis Title: *Development and application of methods using a chironomid-based transfer function and stable isotopes for reconstructing past climate in south eastern Australia*

My PhD project is aiming to develop two methods that will use the fossilised remains of non-biting midge (chironomids) head capsules preserved in lake sediments to reconstruct past changes into and out of the last glacial maximum (LGM), approximately 20,000 years ago in south eastern Australia. I have so far completed major chapters of my thesis and produced associated publications in high-standard international science journals. This project has filled a significant gap in the context of lacking temperature proxies and relative records for the LGM in Australia. The measurement of stable O and H isotopes from chironomids was the first time introducing this innovative method to southern hemisphere. In addition, it has also contributed to the understanding of current status of Australian limnology, climate and land-use relations from the tropics to temperate zone. This has attracted attention of researchers that are interested in both palaeo and contemporary climate, environment and ecology.

Aug 2014— Sep 2014 **Visiting Scholar**

Department of Earth, Atmospheric, and Planetary Sciences, Purdue University (USA)

During my visit at Purdue Stable Isotopes laboratory, I worked closely with A/Prof Greg Micahlski (joint with Department of Chemistry) and his research group. I am fully trained on operating a TCEA-IRMS equipment for stable isotope (Oxygen and Hydrogen) analyses for solids (microfossils) and liquids respectively. My chemical engineering background allowed me to have an insight and extensive understanding in the overall design of the equipment. Key responsibilities and skills developed including:

- Stable isotope standards preparation and testing (specialized in chitin and keratin materials)
- Hardware setup, operation and maintenance for TCEA and GC-PAL equipment (i.e. column packing, baking, background gas fill/vacuum for auto-sampler)
- Using software Isodat interface and run methods scripts for analyses, including writing/modifying methods scripts to suit needs for sample mass
- Troubleshooting for both TCEA and GC-PAL, stable isotope data calibration, analyses and interpretation

2011 **Postgraduate Diploma in Natural Resource Studies**
The University of Queensland
Dean's Commendation for High Achievement

2007 – 2010 **Bachelor of Engineering**
The University of Queensland
Major: Chemical engineering

2008 **Certificate III in Engineering Machining and use of hand tools (Short course)**
Metropolitan South Institute of TAFE, Queensland

TEACHING AND EDUCATIONAL RELATED EXPERIENCES

2013 – Present **Demonstrator/Teaching Assistant** for GEOS1100 – *Environment and Society*, teaching and leading up to four practical classes each week, including field teaching and as field data collection demonstrator

2012 – Present **Mentor/Academic Supervisor** for ENVM3521 – *Industrial Placement*, mentoring 3rd year undergraduates enrolled in Bachelor of Environmental Managementundertaking industry placement projects through their last semester

2012 **Young Science Ambassador**, visited Holy Spirit School (Townsville) and delivered lectures to grade 6 and 7 students as part of the Wonder of Science program sponsored by ATSE, JCU and other industrial partners

2012-2014 **Demonstrator** for UQ Geography Day, ran workshop titled 'Geography helps predict the future' for grade 10-12 students from Brisbane region schools

2014 **Session chair** and **volunteer** to onsite management support at the 16th ANZGG at Mount Tamborine

2013 **Volunteer** to onsite management support at the 10th Annual Asia Oceania Geoscience Society (AOGS) at Brisbane

2009 **Volunteer** Supervisor for the University of Queensland Science and Engineering Challenge, supervised groups of students from grade 10-12 from Brisbane schools to complete the challenge

EMPLOYMENT OVERVIEW

School of Geography, Planning and Environmental Management (GPEM), University of Queensland
Research Assistant (Dec 2010— 2012)

Key Responsibilities:

- Assisted in field work of coring from bogs and lagoons in New England Tablelands national parks
- Prepared samples for Loss on Ignition (LOI) analysis and ran experiments of LOI
- Performed grain size analysis using Multisizer 3 laser Coulter Counterfor the use as a wind proxy
- Prepared samples for stable isotope (incl. ^{14}C,^{15}N and ^{210}Pb) analyses and radiocarbon dates for Australian Nuclear Science and Technology Organization (ANSTO)
- Studied fire history and contributed to fire events reconstruction of a New Zealand's lake, performed laboratory work for macro-charcoal identification and counting

- Searched and summarized literature relevant to research work and co-authored for an international journal article publication
- Liaised with external professionals and research associates

Centre for Water in Mineral Industry (CWiMI), Sustainable Minerals Institute (SMI), University of Queensland
Research Assistant (Dec 2009—June 2010)
Key Responsibilities:

- Analysed mine sites water quality data using Matlab, MINITAB and R
- Ran simulations using GWB (Geochemists WorkBench); analysed and presented associated data
- Studied water isotopes and isotope tracers in hydrological processes
- Participated in project planning and designed own inputs for project work
- Searched and summarised literature relevant to research work
- Contributed to project report

Skills & Abilities

- Field work –working in remote areas of Australia, familiar with operating hand corers, taking samples from lakes, wetlands and bogs environment. I am experienced with hiking and boating. I have also worked with drillers for scientific drilling projectin Blue Mountains, NSW. I am experienced in leading field work, field work planning/organization.
- Experienced in writing for publication in international journals and conference presentation
- Highly experienced in the use of Engineering/Geoscience software: MATLAB, R programing in ecology, Canoco 4.5, C2 in Paleoecology, ArcGIS and remote sensing, Isodat (Isotope Geochemistry), GWB (Geochemist's Workbench)
- Current First Aid (Incl. CPR) certificate issued by St John Ambulance Australia
- Current Open Australian (QLD) driver's license
- I am passionate and practiced in teaching and mentoring all levels of tertiary students and experienced in tutoring, demonstrating and mentoring. Some selected comments from myfirst year GEOS1100 class:
  'Her intelligence is inspiring'
  'Very well prepared and encouraged discussions as a group'
  'Very friendly, well-prepared lesson content'
  'Her intuitive and respectful approach to helping students answer questions when encountering difficulties'

Professional Memberships

Membership of American Geophysical Union (AGU)
Membership of Asia Oceania Geosciences Society (AOGS)
Membership of Australian and New Zealand Geomorphology Group (ANZGG)
Membership of Australasia Quaternary Association (AQUA)

Referees

Professor James Shulmeister
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