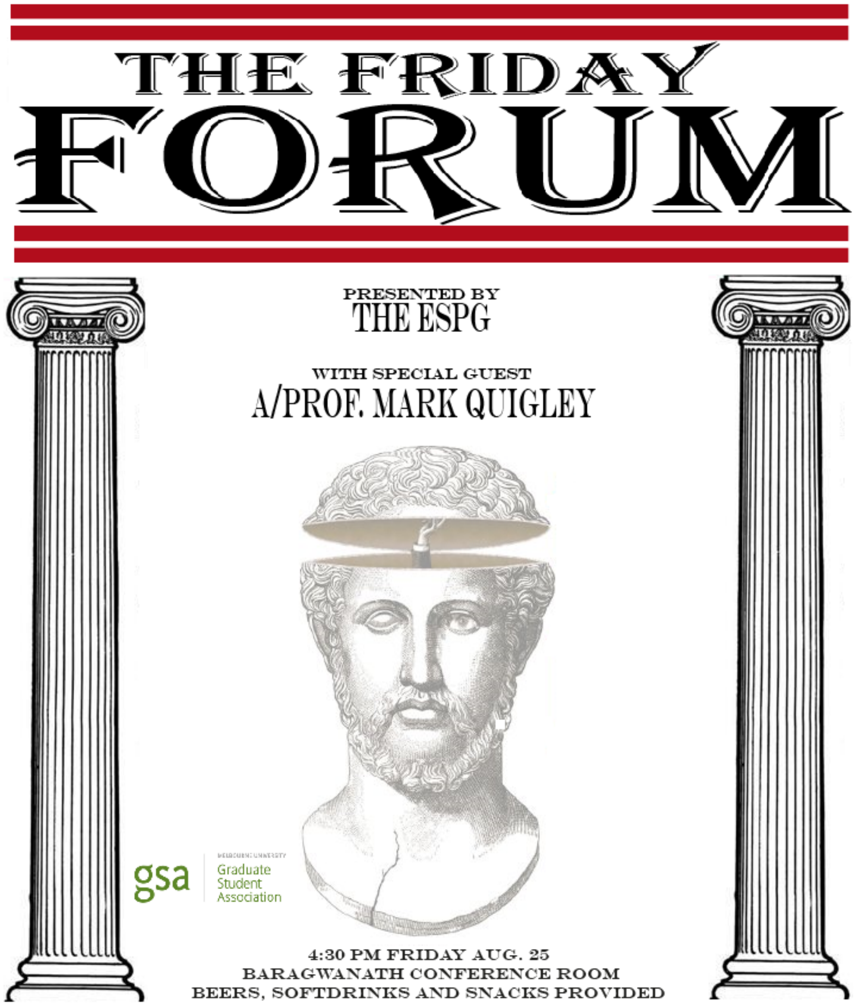

Scientific writing for research publication:

10 things we should talk about

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Continental tectonics and landscape evolution in south-central Australia and southern Tibet
MC Quigley
University of Melbourne, School of Earth Sciences
2 2007

Self cites

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PhD awarded 2007

Quaternary faults of south-central Australia: palaeoseismicity, slip rates and origin MC Quigley, ML Cupper, M Sandiford Australian Journal of Earth Sciences 53 (2), 285-301	92	2006
40 Ar/39 Ar thermochronology of the Kampa Dome, southern Tibet: Implications for tectonic evolution of the North Himalayan gneiss domes M Quigley, Y Liangjun, L Xiaohan, CJL Wilson, M Sandiford, D Phillips Tectonophysics 421 (3), 269-297	44	2006
Landscape responses to intraplate tectonism: Quantitative constraints from 10 Be nuclide abundances M Quigley, M Sandiford, LK Fifield, A Alimanovic Earth and Planetary Science Letters 261 (1), 120-133	32	2007
Distinguishing tectonic from climatic controls on range-front sedimentation MC Quigley, M Sandiford, ML Cupper Basin Research 19 (4), 491-505	55	2007
Bedrock erosion and relief production in the northern Flinders Ranges, Australia M Quigley, M Sandiford, K Fifield, A Alimanovic Earth Surface Processes and Landforms 32 (6), 929-944	52	2007
U–Pb SHRIMP zircon geochronology and T–t–d history of the Kampa Dome, southern Tibet MC Quigley, Y Liangjun, C Gregory, A Corvino, M Sandiford, CJL Wilson, ... Tectonophysics 446 (1), 97-113	56	2008
Holocene climate change in arid Australia from speleothem and alluvial records MC Quigley, T Horton, JC Hellstrom, ML Cupper, M Sandiford The Holocene 20 (7), 1093-1104	33	2010
Tectonic geomorphology of Australia MC Quigley, D Clark, M Sandiford Geological Society, London, Special Publications 346 (1), 243-265	60	2010

vs

Timing and mechanisms of basement uplift and exhumation in the Colorado Plateau-Basin and Range transition zone, Virgin Mountain anticline, Nevada-Arizona MC Quigley, KE Karlstrom, S Kelley, M Heizler Geological Society of America Special Papers 463, 311-329	12	2010

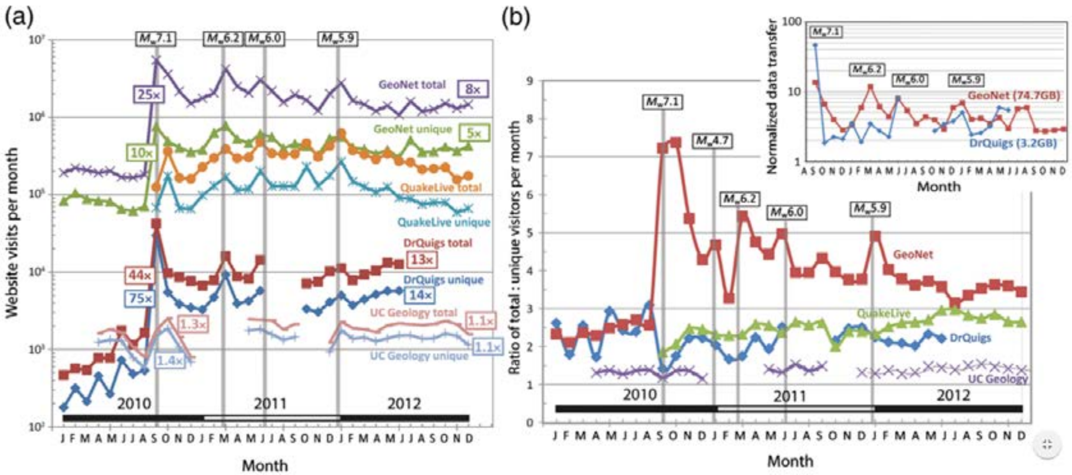
MSc awarded 2002

2. Write your thesis as a series of papers first, submit them to journals, and then revise them for your thesis (e.g., “We’s for “I”s)

Thesis reviewers like nothing more than seeing published chapters. Supervisors like nothing more than published research. It is much harder to deconstruct thesis chapters to construct papers rather than just writing them that way in the first place. And unpublished research after thesis completion almost always remains that way.

Science Website Traffic in Earthquakes

by M. C. Quigley and A. M. Forte



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Research in Dance Education, 2015
Vol. 16, No. 2, 161–183, http://dx.doi.org/10.1080/14647893.2014.930819
Routledge
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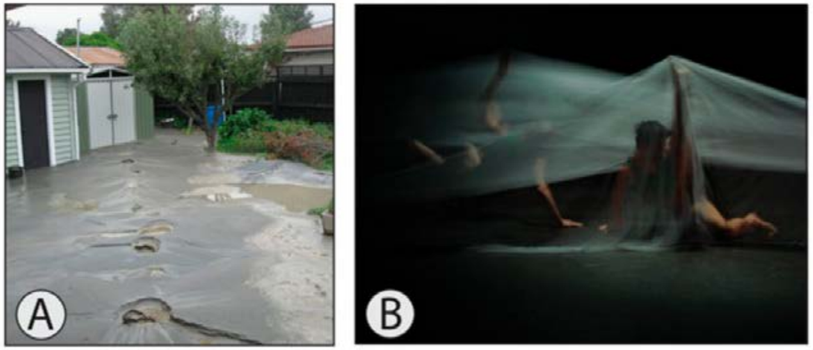
Dancing earthquake science assists recovery from the Christchurch earthquakes

Candice J. Egan[a]* and Mark C. Quigley[b]

[a]*Hagley Community College, Christchurch, New Zealand;* [b]*Department of Geological Sciences, University of Canterbury, Christchurch, New Zealand*

(*Received 25 February 2014; final version received 30 May 2014*)



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Strong proximal earthquakes revealed by cosmogenic ^{3}He dating of prehistoric rockfalls, Christchurch, New Zealand

Benjamin H. Mackey and Mark C. Quigley
Department of Geological Sciences, University of Canterbury, Private Bag 4800, Christchurch 8140, New Zealand

ABSTRACT

The 2011 rupture of previously undetected blind faults beneath Christchurch, New Zealand, in moment magnitude (M_w) 6.2 and 6.0 earthquakes triggered major rockfalls that caused fatalities and infrastructure damage. Here we use field, geospatial, seismologic, numerical modeling, and cosmogenic ^{3}He data to provide first evidence for prehistoric rockfall ca. 8–6 ka, and a possible preceding event ca. 14–13 ka, at a site where extensive rockfall occurred in the Christchurch earthquakes. The long (~7 ± 1 k.y.) time intervals between successive rockfall events and the high peak ground velocity thresholds required for rockfall initiation at this site (~20–30

small to cause surface rupture but large enough to cause strong ground shaking densely populate continental crust. Blind faults are underrepresented relative to larger, surface-rupturing faults in paleo-earthquake catalogues (Nicol et al., 2012). Recent earthquakes on previously unidentified and/or blind faults proximal to densely populated areas have caused catastrophic loss of life and infrastructure damage (Talebian et al., 2004; Calais et al., 2010; Beavan et al., 2012). At least 12 previously unknown faults ruptured in a series of moment magnitude (M_w) 5.9–7.1 earthquakes (Beavan et al., 2012) near Christchurch, New Zealand, in 2010 and 2011 (Fig. 1) (termed the Canterbury earthquake sequence). The 22 February 2011 M_w 6.2 Christchurch earthquake (herein termed Christchurch I earth-

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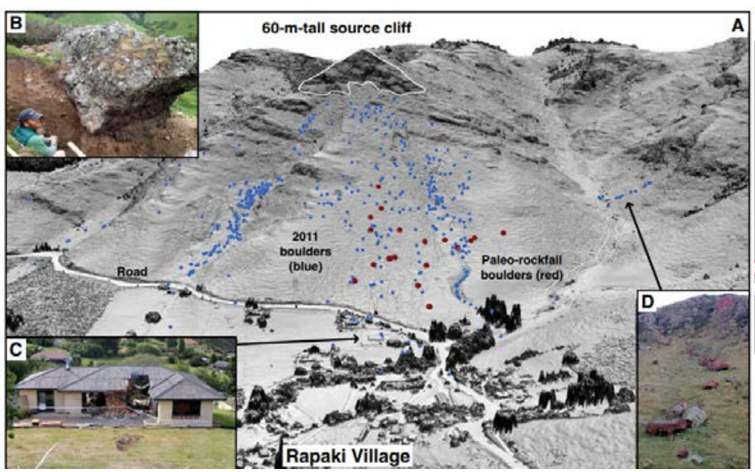

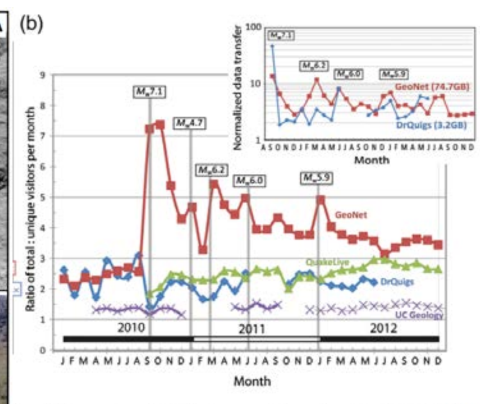

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Science Website Traffic in Earthquakes

by M. C. Quigley and A. M. Forte

Tectonic geomorphology of Australia

MARK C. QUIGLEY[1]*, DAN CLARK[2] & MIKE SANDIFORD[3]

[1]*Department of Geological Sciences, University of Canterbury, Christchurch 8014, New Zealand*

GEOLOGY

Anthropocene rockfalls travel farther than prehistoric predecessors

Josh Walter Borella,[1]* Mark Quigley,[1,2] Louise Vick[1]

Recurrent liquefaction in Christchurch, New Zealand, during the Canterbury earthquake sequence

Mark C. Quigley[1], Sarah Bastin[1], and Brendon A. Bradley[2]

Paleoliquefaction in Christchurch, New Zealand

. Bastin†, Mark C. Quigley, and Kari Bassett

Palaeoseismicity and pottery: Investigating earthquake and archaeological chronologies on the Hajiarab alluvial fan, Iran

Mark Quigley[a,*], Morteza Fattahi[b,c,d], Reza Sohbati[b,1], Armin Schmidt[e]

[a] *Department of Geological Sciences, University of Canterbury, Christchurch, New Zealand*
[b] *Institute of Geophysics, University of Tehran, Iran*

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Having the conversation

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Modes of active intraplate deformation, Flinders Ranges, Australia

Julien Célérier,[1] Mike Sandiford, David Lundbek Hansen,[2] and Mark Quigley

School of Earth Sciences, University of Melbourne, Melbourne, Victoria, Australia

U–Pb SHRIMP zircon geochronology and *T–t–d* history of the Kampa Dome, southern Tibet

M.C. Quigley [a,*], Y. Liangjun [b], C. Gregory [c], A. Corvino [a], M. Sandiford [a], C.J.L. Wilson [a], L. Xiaohan [b]

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Letter

U/Pb dating of a terminal Pliocene coral from the Indonesian Seaway

Mark C. Quigley [a,*], Brendan Duffy [a], Jon Woodhead [b], John Hellstrom [b], Louise Moody [a], Travis Horton [a], Jhony Soares [c], Lamberto Fernandes [c]

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[c] *Secretariat of State for Natural Resources (SERN), Dili, Timor-Leste*

8. Explicit statements of sources, types and magnitudes of uncertainty and limitations of your findings are the new cool and help pre-empt reviewer criticisms

"Epistemic uncertainties in our utilised datasets include…"

"Our interpretations represent a generalized model of a highly complex system…"

"A statistical treatment of each of these uncertainties is well beyond the scope of our study…"

Honest and rigorous descriptions of uncertainty and limitations of your research are no longer being viewed as a sign of weakness

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- When you are writing well (‘in the zone’), stay writing at all costs
- When you are not writing well, leave it, draft figures, clear your head, etc. Don’t get frustrated
- There are a variety of different writing styles and no real ‘rules’ – some people are very organized, others write haphazardly, some have all figures drafted beforehand and ‘write around them’, others do figures after, there is no right way
- Observations before interpretations!
- Keep a separate word file for extra text (that you can’t bare to part with, but that doesn’t make the cut) – you can use it later! (but you probably won’t)

Structure of an article

- Title, Authors and Affiliation, Abstract, Introduction, Geological Setting, Data methods and results, Discussion, Conclusion, Acknowledgements, References, Appendix

Abstract

- Describes study objectives (i.e., what hypothesis you were testing or what research question you were attempting to answer), methods used, main results, the interpretation and implications of the results
- Written so as to clearly convey as much information as possible in as few words as possible, and written as a single paragraph
- Powerful, concise sentences that will entice browsers to look on
- Results before interpretation
- I always write my abstract first, to get focused on what the paper is about, then write the paper, then re-write the abstract

ABSTRACT

Structural, stratigraphic, and thermochronologic studies provide insight into the formation of basement-cored uplifts within the Colorado Plateau–Basin and Range transition zone in the Lake Mead region. Basement lithologic contacts, foliations, and ductile shear zones preserved in the core of the Virgin Mountain anticline parallel the trend of the anticline and are commonly reactivated by brittle fault zones, implying that basement anisotropy exerted a strong influence on the uplift geometry of the anticline. Potassium feldspar $^{40}Ar/^{39}Ar$ thermochronology indicates that basement rocks cooled from ≥250–325 °C to ≤150 °C in the Mesoproterozoic and remained at shallow crustal levels (<5–7 km) until they were exhumed to the surface. Apatite fission-track ages and track length measurements reveal a transition from slow cooling beginning at 30–26 Ma to rapid cooling at ca. 17 Ma, which we interpret to mark the change from regional post-Laramide denudational cooling to rapid extension-driven exhumational cooling by ca. 17 Ma. Middle Miocene conglomerates (ca. 16–11 Ma) flanking the anticline contain locally derived basement clasts with ca. 20 Ma apatite fission-track ages, implying rapid exhumation rates of ≥500 m m.y.$^{-1}$. The apparently complex geometry of the anticline resulted from the superposition of first-order processes, including isostatic footwall uplift and extension-perpendicular shortening, on a previously tectonized and strongly anisotropic crust. A low-relief basement-cored uplift may have formed during the Late Cretaceous–early Tertiary Laramide orogeny; however, the bulk of uplift, exhumation, and deformation of the Virgin Mountain anticline occurred during middle Miocene crustal extension.

Abstract

Structural and thermochronological studies of the Kampa Dome provide constraints on timing and mechanisms of gneiss dome formation in southern Tibet. The core of Kampa Dome contains the Kampa Granite, a Cambrian orthogneiss that was deformed under high temperature (sub-solidus) conditions during Himalayan orogenesis. The Kampa Granite is intruded by syn-tectonic leucogranite dikes and sills of probable Oligocene to Miocene age. Overlying Paleozoic to Mesozoic metasedimentary rocks decrease in peak metamorphic grade from kyanite+staurolite grade at the base of the sequence to unmetamorphosed at the top. The Kampa Shear Zone traverses the Kampa Granite — metasediment contact and contains evidence for high-temperature to low-temperature ductile deformation and brittle faulting. The shear zone is interpreted to represent an exhumed portion of the South Tibetan Detachment System. Biotite and muscovite $^{40}Ar/^{39}Ar$ thermochronology from the metasedimentary sequence yields disturbed spectra with 14.22 ± 0.18 to 15.54 ± 0.39 Ma cooling ages and concordant spectra with 14.64 ± 0.15 to 14.68 ± 0.07 Ma cooling ages. Petrographic investigations suggest disturbed samples are associated with excess argon, intracrystalline deformation, mineral and fluid inclusions and/or chloritization that led to variations in argon systematics. We conclude that the entire metasedimentary sequence cooled rapidly through mica closure temperatures at ~ 14.6 Ma. The Kampa Granite yields the youngest biotite $^{40}Ar/^{39}Ar$ ages of ~ 13.7 Ma immediately below the granite–metasediment contact. We suggest that this age variation reflects either varying mica closure temperatures, re-heating of the Kampa Granite biotites above closure temperatures between 14.6 Ma and 13.7 Ma, or juxtaposition of rocks with different thermal histories. Our data do not corroborate the "inverse" mica cooling gradient observed in adjacent North Himalayan gneiss domes. Instead, we infer that mica cooling occurred in response to exhumation and conduction related to top-to-north normal faulting in the overlying sequence, top-to-south thrusting at depth, and coeval surface denudation.

Keywords: Tibet; Himalaya; Gneiss domes; $^{40}Ar/^{39}Ar$ thermochronology

Abstract

New high-resolution MC-ICPMS U/Th ages and C and O isotopic analyses from a Holocene speleothem in arid south-central Australia provide evidence for increased effective precipitation (EP) relative to present at *c.* 11.5 ka and *c.* 8–5 ka, peak moisture at 7–6 ka, and onset of an arid climate similar to present by *c.* 5 ka. $\delta^{18}O$ and $\delta^{13}C$ time-series data exhibit marked (>+1‰) contemporaneous excursions over base-line values of −5.3‰ and −11.0‰, respectively, suggesting pronounced moisture variability during the early middle Holocene 'climatic optimum'. Optically stimulated luminescence and ^{14}C ages from nearby terraced aggradational alluvial deposits indicate a paucity of large floods in the Late Pleistocene and at least five large flood events in the last *c.* 6 ka, interpreted to mark an increased frequency of extreme rainfall events in the middle Holocene despite overall reduced EP. Increased EP in south-central Australia during the early to middle Holocene resulted from (1) decreased El Niño-Southern Oscillation (ENSO) variability, which reduced the frequency of El Niño-triggered droughts, (2) the prevalence of a more La Niña-like mean climatic state in the tropical Pacific Ocean, which increased available atmospheric moisture, and (3) a southward shift in the Intertropical Convergence Zone (ICTZ), which allowed tropical summer storms associated with the Australian summer monsoon (ASM) to penetrate deeper into the southern part of the continent. The onset of heightened aridity and apparent increase in large flood frequency at *c.* 5 ka is interpreted to indicate the establishment of an ENSO-like climate in arid Australia in the late Holocene, consistent with a variety of other terrestrial and marine proxies. The broad synchroneity of Holocene climate change across much of the Australian continent with changes in ENSO behavior suggests strong teleconnections amongst ENSO and the other climate systems such as the ASM, Indian Ocean Dipole, and Southern Annular Mode.

Keywords

alluvial deposits, Australian summer monsoon, ENSO, Holocene climate change, Indian Ocean dipole, precipitation, Southern Annular Mode, speleothem

Marine Geology xxx (2012) xxx–xxx

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Letter

U/Pb dating of a terminal Pliocene coral from the Indonesian Seaway

Mark C. Quigley [a,*], Brendan Duffy [a], Jon Woodhead [b], John Hellstrom [b], Louise Moody [a], Travis Horton [a], Jhony Soares [c], Lamberto Fernandes [c]

[a] *Department of Geological Sciences, University of Canterbury, Christchurch 8014, New Zealand*
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A R T I C L E I N F O

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U/Pb
Timor

A B S T R A C T

Pristine detrital *Platygyra* corals were discovered in an exhumed package of syn-orogenic marine sediments on the island of Timor in the eastern Indonesian region and dated using U–Pb techniques. A single coral from the upper part of the sequence yields a $^{238}U/^{206}Pb–^{207}Pb/^{206}Pb$ concordia age of 2.66 ± 0.14 (2σ) Ma that is supported by coral $^{87}Sr/^{86}Sr$ chemostratigraphy and foraminiferal biostratigraphy from bounding strata. Minor U-series disequilibrium is best explained by U mobility within the last ~150 ka, as pore water chemistry was altered during exhumation, and is unlikely to have affected $^{238}U/^{206}Pb$ and the apparent sample age by more than 1–2%. The ability to date corals beyond the limits of ^{14}C and U/Th techniques provides the opportunity to improve the temporal resolution of associated marine chronostratigraphic records. In this instance, we refine the timing of Timor's emergence from beneath the waters of the Indonesian Seaway (*IS*) and the initiation of turbiditic deposition at the study site to between ca. 3.35 and 2.66 Ma. These results have implications for the evolution of topography and *IS* oceanic pathways in the active orogenic belts along the northern fringes of the Australian Plate.

Introduction

- The powerful first sentence (I agonize over it)
- Moving from the general to the specific
- First paragraph: stating the big questions and broad relevance, what is a critical void or misunderstanding in our current knowledge
- Second paragraph: Some detail about what is known about the problem, why it is controversial, setting up for your story
- Third paragraph: What is unique about your study, why is was undertaken, why it is important, what was learned (optional to actually give the answer here, or just cast the question)
- Probably the most important part of your paper next to the abstract

Introduction

Global ecosystems and human populations have been affected by changes in the frequency, magnitude and seasonal distribution of rain over the Holocene (Mayewski *et al*., 2004). Precipitation proxy data from the Holocene can provide insight into past connections between weather, climate and environments of relevance to understanding contemporary interactions. Additionally, paleoprecipitation data provide pre-industrial baselines upon which to assess whether changing rainfall distributions and magnitudes reflect anthropogenically influenced climate change (McInnes *et al*., 2003; Zhang *et al*., 2007). Speleothems (secondary $CaCO_3$ cave deposits) provide high-resolution proxy records of 'effective' moisture that can be related to long-term rainfall variability (e.g. Asmerom *et al*., 2007; Drysdale *et al*., 2006, 2007). Coarse alluvial terrace deposits provide evidence for large paleofloods and can be dated to determine paleoflood frequency (e.g. Keefer *et al*., 2003; Wells, 1990). By combining these approaches, past spatial and temporal relationships between effective moisture (e.g. mean annual precipitation, precipitation-evaporation indices) and moisture variability (e.g. large floods) can be resolved, with relevance for understanding the evolution of major climatic phenomenon such as ENSO (e.g. Gomez *et al*., 2004).

A variety of studies have identified the middle Holocene

First paragraph

INTRODUCTION

Large earthquakes occur intermittently in stable intraplate settings and may significantly impact developed and natural landscapes. The Australian continent experiences a magnitude $\geq$6.0 earthquake about every five years, as indicated by the historical database (McCue 1990). While the historical record of these events provides an insight into the contemporary Australian intraplate stress field (Clark & Leonard 2003), such datasets span relatively short time intervals (<200 y) and are therefore unlikely to encompass an earthquake of maximum magnitude for most areas (Sandiford *et al.* 2004). Seismic-hazard assessments of intracontinental regions based on historical seismicity may thus underestimate seismic risk (Clark & McCue 2003) and inadequately characterise long-term fault behaviour.

First paragraph

First paragraph

Introduction

The evolution of mountainous topography results from the dynamic interplay between tectonic forces, climate and erosion. For relief to develop in mountainous catchments, rates of fluvial incision into the landscape must exceed erosion rates on adjacent summit surfaces. Intervening hillslopes provide the bridge between these features, and may take on forms reflecting the relative rates of valley floor and summit surface erosion, as well as their internal lithologic and structural characteristics. In order to examine how mountainous landscapes respond to the tectonic and climatic forces imposed upon them, it is therefore critical to establish quantitative measures of bedrock erosion rate at summit surfaces, hillslopes and valley floors.

First paragraph

1. Introduction

The tectonic opening and closing of oceanic pathways influence global thermohaline circulation (Berggren and Hollister, 1977), marine productivity (Schneider and Schmittner, 2006), and climate (Mudelsee and Raymo, 2005). Exhumed marine sequences in or adjacent to oceanic pathway systems (e.g., Central American seaway, Indonesian Seaway) provide opportunities to decipher tectonic, topographic, physical and chemical oceanographic pathway changes with relevance for marine faunal evolution (e.g. Jackson et al., 1996), salinity and temperature changes in adjacent oceans (e.g. Karas et al., 2009), major climate systems (e.g. von der Heydt and Dijkstra, 2011), and human evolution (Cane and Molnar, 2001). The ability to study these processes is partially

Second paragraph

INTRODUCTION

Tectonism and climate are the primary external processes governing continental erosion, sedimentation and landscape evolution. Tectonic uplift creates elevated terrain and provides increased potential energy to the agents of erosion, such as fluvial systems. Seismic shaking associated with tectonic events may generate rubble and, in mountainous regions, trigger landslides, thereby increasing sedimentary inputs into catchment systems (Keefer, 1994; Allen & Hovius, 1998; Dadson *et al.*, 2004; Quigley *et al.*, 2007a). Climate controls the spatial and temporal distribution of erosional agents (streams and glaciers) and the vegetative cover that protects the landscape from erosion. Climatically induced changes in source catchment palaeogeography and/or hydrologic regimes may exert a strong influence on sediment generation and transport (e.g. Pederson *et al.*, 2000). In addition, the frequency and magnitude of large floods capable of significantly modifying continental landscapes may be strongly influenced by climate (Molnar, 2001; Molnar *et al.*, 2006). The ability to distinguish tectonic from climatic forcing on landscape evolution hinges on the development of robust geologic and chronometric datasets that may be evaluated in the context of well-dated tectonic events and palaeo-climatic regimes.

Alluvial fans are ubiquitous features of mountainous range fronts worldwide and provide a spatial and temporal record of source catchment erosion and basin sedimentation over geologic time scales (e.g. Bull, 1964; Denny, 1965; Ritter *et al.*, 1995; Whipple & Traylor, 1996; Calvache *et al.*, 1997). A primary focus of recent research has been to consider how tectonic and climatic processes influence alluvial fan morphological properties and sedimentary styles, and how fans respond to changes in these external parameters (e.g. Harvey *et al.*, 2005). Tectonic activity is now commonly recognized as the primary controlling factor in dictating alluvial fan properties such as location, setting and morphology, primarily through tectonic influences on drainage basin relief and fan accommodation space (Denny, 1965; Bull, 1977; Whipple & Traylor, 1996; Allen & Hovius, 1998; Allen & Densmore, 2000; Densmore *et al.*, 2007). Climate appears to have a dominant control in determining alluvial fan sequence stratigraphy, including the distribution of debris-flow, sheetflood and channelized fluvial deposits and fan aggradation–dissection intervals (Bull, 1991; Harvey & Wells, 1994; Harvey, 2004). Early studies on alluvial fans from the southwest USA emphasized the role of catchment lithology on alluvial fan morphology (Bull, 1964, 1991; Hooke & Rohrer, 1977) and sequence stratigraphy (Blair, 1999). However, these interpretations were questioned on the basis of spatial

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Second paragraph

Australia is generally considered a tectonically stable continental region (Johnston *et al.* 1994), where ancient land surfaces predominate (Twidale & Bourne 1975; Ollier 1978; Twidale 1983). While this is manifestly true for much of the continent, in some areas the coincidence of enhanced contemporary seismicity and surprisingly youthful geomorphology imply an important role for neotectonic landsculpting. One such region is the Flinders Ranges of South Australia, one of the most seismically active and geomorphically rugged parts of the continent (Sprigg 1945; Sandiford 2003). A number of workers have described Quaternary thrusting along range-bounding faults (Williams 1973; Ollier 1978; Bourman & Lindsay 1989, Célèrier *et al.* 2005), with fault slip rates in the range of 20–150 m per million years (Sandiford 2003). Sandiford (2003) traced this neotectonic regime back to at least 5 Ma based on regional unconformities between Upper Miocene and Pliocene sequences, and suggested that as much as half of the present elevation of the Flinders–Mt Lofty Ranges may be attributed to the presently active regime.

INTRODUCTION

The documentation of earthquake-induced surface ruptures (e.g., Clark, 1972) is a fundamental component of fault scaling relationships used for seismic-hazard analysis, engineering design criteria, and studies of fault rupture dynamics (e.g., Wells and Coppersmith, 1994; Wesnousky, 2008). Fault rupture data also enable estimation of static stress changes during earthquakes that provide insight into fault strength (e.g., Griffith et al., 2009) and the modeling of past and future earthquakes (e.g., Price and Bürgmann, 2002). Considerable variability exists in the surface rupture length (*SRL*) of moderately sized (i.e., M_w 7.0 ± 0.1) historical continental earthquakes, from nil (e.g., the 2010 M_w 7.0 Haiti earthquake; Prentice et al., 2010) to many tens of kilometers (e.g., 60 km *SRL* for the 1940 M_w 7.0 Imperial Valley, California, quake; Trifunac and Brune, 1970), highlighting the importance of combining geologic with seismologic and geodetic data sets in rupture analysis. Short or absent surface ruptures for continental earthquakes may reflect a concentration of coseismic slip at depth (Wesnousky, 2008) and/or complex ruptures on several faults without surface breaks (e.g., Hayes et al., 2010).

The 2010 M_w 7.1 Darfield (Canterbury) earthquake, henceforth referred to as the "Darfield" earthquake, occurred at 04:35 on 4 September 2010 New Zealand local time (16:35, 3 Sep-

Transitioning First to Second paragraph

Third paragraph

In this paper, we present new U–Pb SHRIMP spot ages from orthogneiss and leucogranite intrusions exposed in the core of the Kampa Dome. We combine these results with new structural and metamorphic data and previously published $^{40}Ar/^{39}Ar$ thermochronology (Quigley et al., 2006) to reconstruct temperature–time and deformational histories for rocks within the Kampa Dome. Our results indicate that (1) the Kampa granite is a Cambrian pluton that was strongly deformed and metamorphosed at high temperatures (~400–700 °C) during Himalayan orogenesis, (2) the contact between the Kampa granite and overlying metasedimentary rocks is a high-strain zone that preserves evidence for episodes of top-to-N and top-to-S ductile shearing and later brittle deformation, and (3) structural, metamorphic and geochronologic datasets are consistent with, but not necessarily unique to, the surfacing of

This study presents a new palaeoseismic analysis of the Late Quaternary tectonic activity associated with the Wilkatana and Burra Faults of the central Flinders Ranges and the Mundi Mundi Fault of the Barrier Ranges (Figure 1). Optically stimulated luminescence ages from fault-related sediments are used to generate quantitative palaeoseismic estimates. This allows better understanding of the long-term behaviour of intracontinental faults, including their temporal and spatial distribution and their potential for large-magnitude earthquake recurrence. The role and significance of active faulting in shaping the youthful topography and geomorphology of the Flinders Ranges are also considered. Specifically, the magnitude of vertical bedrock uplift resulting from movement along range-bounding faults was estimated in order to quantify the geomorphic signature associated with the active tectonic regime. Our results highlight the potential of intracontinental faults to impact the landscape, despite generally low slip rates and long recurrence intervals.

generation in mountainous regions.

This paper provides a quantitative analysis of the rates and processes of bedrock erosion for a mountainous catchment floored by resistant, variably foliated and ubiquitously jointed granitic bedrock. We describe and compare the erosional processes operating at summit surfaces, hillslopes and valley floors and use ^{10}Be concentrations in bedrock and alluvial sediment to provide a measure of the rates at which these processes operated in recent (late Quaternary) geologic time. Our results are placed into tectonic and climatic contexts in order to explain how an anomalously rugged, high relief mountain belt has developed in the middle of a continent generally known for its tectonic quiescence and climatic aridity.

agricultural framework. This provided >100 displaced markers (Fig. 2) that could be measured to determine *SRL* and coseismic displacements.

In this paper, we use real-time kinematic (RTK) and differential (D) GPS surveying, tape measurements, and airborne light detecting and ranging (LiDAR) to document the Greendale fault (GF) surface rupture during the 2010 Darfield earthquake. The rapid collection of field surface rupture data provides an opportunity to reduce the uncertainties in the displacement measurements and geometrical characteristics of earthquake surface rupture. We compare these data with data from other historical surface ruptures associated with earthquakes of similar M_w, and discuss the broader implications for fault behavior, M_w-displacement-*SRL* scaling relationships, and seismic-hazard analysis.

Third paragraph

Geological Setting

- Broad to specific
- If required, compartmentalize (e.g., climate section, tectonics section)
- Be clever about what you need to say that is **relevant** for what’s coming, but don’t overdo it
- Reference ALL / ORIGINAL early work if there is space, but be concise

GEOLOGIC SETTING

Flinders Ranges

The Flinders Ranges form part of a north–south trending, rugged upland system extending more than 600 km inland from the southern coast of South Australia to the Lake

Wilkatana area

The Wilkatana area is located within the central Flinders Ranges approximately 40 km north of Port Augusta, South Australia (Fig. 1). The catchments encompass an area

Topography, geology, climate, geomorphology, features of most relevance (e.g., alluvial fans)

Study sites: locations, descriptions and justification

The Flinders Ranges form part of a rugged upland system extending from the southern Australian coast south of Adelaide to the Lake Eyre Basin in the north (Figure 1). The ranges are flanked by lowland piedmonts comprising colluvial, alluvial and aeolian deposits with intercalated paleosols and large, internally draining playa lake basins (Lakes Frome, Eyre and Torrens). Mean annual precipitation across the region is low (<310 mm/yr) and only weakly seasonal. The speleothem site has a summer (December–February) to winter (June–August) rainfall ratio of 2.1:1 while the alluvial fan site has a summer–winter rainfall ratio of 1:1.4 (Figure 1). Summer rainfall is commonly associated with southward incursions of tropical northerly systems (Schwerdtfeger and Curran, 1996), while winter rainfall is dominantly supplied by extra-tropical cyclones and cold fronts originating in the Indian and Southern Oceans (Evans *et al*., 2009; Meneghini *et al*., 2007). Precipitation is strongly influenced by topography, with surrounding piedmonts and basins receiving less than 200 mm/yr and the high ridges receiving over 400 mm/yr. Rainfall is greatly exceeded by annual evaporation, accounting for the lack of permanent water bodies save a few small, spring-fed streams. However, during sporadic, intense summer rainfall events (e.g. 14 March 1989 event, 273 mm in 24 h in the Lake Torrens area; www.bom.gov) large streams

The Yudnamutana speleothem was obtained from a ~10 m deep overhang cave (30°11′16″S, 139°24′58″E) elevated ~ 8 m above the adjacent Yudnamutana Creek in the northern Flinders Ranges (Figure 1). Yudnamutana creek forms part of an antecedent, highly ephemeral drainage basin deeply incised (~600 m) into granite, gneiss and schist basement rocks that have been uplifted by thrust faulting along the tectonically active range front (Quigley *et al*., 2007c). The cave is situated within highly fractured, U-rich Proterozoic granite (Coats, 1973). Recharge throughout the ranges is limited to direct infiltration of rainfall through bedrock fracture networks, with the bulk of water discharge associated with small, fault-related springs (Brugger *et al*., 2005). The water-table in the ranges follows topography and lies up to ~9 m below the surface (Brugger *et al*., 2005), thus stream flow throughout the ranges is restricted to rare, infrequent flood events.

Within the Yudnamutana cave (Figure 2A), there is a cleft in the granite wall from which water has clearly flowed in the past. The cleft feeding this system has created a flowstone deposit with an area of ~0.25 m^2 on the wall beneath this outlet, of between about 10 and 40 mm in thickness (Figure 2B,C). We sampled the flowstone at its thickest point, with water probably channeled to, and flowing down, a ridge in the cave wall. Sample extraction revealed continuity of depositional units over its width and down onto the cave floor where they are interspersed with cave sediments. The position of the cave slightly above the creek floor beneath steep relief suggests that it provides a good proxy for

GEOLOGIC SETTING

New Zealand occupies the boundary zone between the Pacific and Australian plates, which converge obliquely at rates of 39–50 mm yr^{-1} (DeMets et al., 2010) (Fig. 1A). In the central South Island, continent-continent collision is characterized by dextral transpression across a series of predominantly NNE- to east-striking active faults throughout the Southern Alps, the Canterbury Plains, and offshore (Pettinga et al., 2001) (Figs. 1A and 1B). Geodetic data indicate ~2 mm yr^{-1} of contraction oriented at 277° ± 8° across the 125-km-wide Canterbury Plains block with a western boundary defined by the Porter's Pass–Amberley fault zone (PPAFZ; Fig. 1B) (Wallace et al., 2007). The stress field in the area of the Darfield earthquake is best characterized by a subhorizontal maximum compressive stress (s_1) trending ~115° ± 5° (Fig. 2) (Sibson et al., 2011). Structures in the Canterbury Plains block (Fig. 1B), such as the fault underlying the Hororata anticline (Jongens et al., 1999) and the Springfield fault (Forsyth et al., 2008), deform the post–last glacial alluvial outwash surface, implying Late Pleistocene or Holocene deformation. No evidence for prior surface-rupturing earthquakes was observed in the vicinity of the GF.

Keeping it short and concise:

This is the entire "Geol Setting" section for my Geology paper

Data methods and results

- The importance of being honest, even if you screwed up!
- A well written method and results section is one that can be duplicated by someone with the equipment but without the expertise
- However, you can reference other papers for specifics of methods
- Sample description, sampling and analytical procedure, results (with specific interpretations, but don't confuse with Discussion section)
- I often start the section with a reiteration of why this data is being acquired, without duplicating

U/Th dating of the Yudnamutana speleothem

Sample description

The Yudnamutana speleothem consists of hundreds of 10–100 μm thick laminae ranging from clear, microcrystalline calcite-rich layers to red-brown and black layers rich in Fe-oxide, mica and smectitic clay (Figure 2B,C). Based on petrographic observation of the speleothem in thin section, the laminae compositional variability

Sampling and analytical procedure

Samples were extracted from individual translucent laminations of the flowstone by scratching shallow grooves on a polished section using a stainless steel needle and binocular microscope. Microcrystalline calcite layers were preferentially selected for dating

Results

Ten U/Th ages were calculated using $[^{230}Th/^{232}Th]_i$ of 10 ± 5, imparting age uncertainties of up to ± 1.0 ka (Figure 2C; Table 1). The speleothem contains little detrital Th and yields a series of ages ranging from 11.6±0.3 ka from the innermost lamination adjacent to the cave wall to 5.2±1.0 ka from the outermost lamination, indicating speleothem growth in the latest Pleistocene and early to middle Holocene. Speleothem thickness measurements between successive ages were used to generate an age versus growth rate plot (Figure 2D). The earliest detected growth at

Discussion

- Sums up ideas, the juicy bit of the paper, the place for interpretations, speculations, etc
- Build from specific to broad (opposite of Intro)
- Often helps to compartmentalize your key ideas
- First paragraph, quick summary of results from above, then expansion on these results
- Second paragraph, detailed explanation of specific interesting attributes of the data, exploration of novel concepts
- Third paragraph, stepping out to examine how results fit into broader context
- Forth paragraph, really going for it, place for arm waving, big interpretations, etc

6. Discussion

6.1. Summary and interpretation of $^{40}Ar/^{39}Ar$ results

Many of the mica analyses presented here yield $^{40}Ar/^{39}Ar$ spectra with varying degrees of discordance. As a result $^{40}Ar/^{39}Ar$ ages for these samples cannot be

6.2. Formation of the Kampa Dome

Thermochronologic and structural data may be combined to constrain the timing and mechanisms

Followed by expansion to other domes…

closure temperatures.

The Kampa Dome shares several common features with ‘typical’ extensional metamorphic core complexes (Brun and Van Den Driessche, 1994; Tirel et al., 2004); including (1) the presence of a domed, major detachment zone (Kampa Shear Zone) that places younger metasedimentary rocks on older granitic rocks, (2) the occurrence of high-temperature to low-temperature

Discussion

Summary of speleothem and alluvial records

Thin section observation and U-Th dating reveals that the Yudanamutana speleothem was deposited at *c*. 11 ka and

Origin of the middle-Holocene 'climatic optimum' in southern Australia

Contemporary annual rainfall variability in the study region is modulated by complex interactions amongst broad-scale atmospheric arrangements (SO, ASM, SAM) associated with sea surface temperature gradients in the Pacific, Indian, and Southern Oceans (Evans *et al*., 2009; Meneghini *et al*., 2007) and influenced by local topography. In general, lower (higher) than average

The onset of the 'modern' climatic regime: implications for contemporary climate change and climate-weather interactions

After *c*. 5 ka, changes in ENSO dynamics, including the more frequent occurrence of El Niños, are likely have impacted on the other climate modes that deliver rainfall to southern Australia. These impacts would have included a reduced strength of the ASM, decreasing the amount of summer rainfall delivered to the Yudna-

Conclusion

- Not always required for papers
- Like abstract, but can be more summative and specific, given that the authors have now read the paper
- Not a duplicate though!
- What was learned
- Opportunities for future research
- Could be short, or long (if the latter, often numbering can help)

- http://www.ehow.com/how_4617129_write-scientific-conclusion-dissertation.html

Conclusions

Multisegment and imbricate reverse-fault earthquakes pose a challenge to earthquake hazard models. Inability to quantitatively characterize a range of potential M_w and MCEs involving coeval rupture of linked faults can lead to large underestimates of hazard for a fault system (e.g., Parsons *et al.*, 2012; Field *et al.*, 2013; Hubbard *et al.*, 2014; DuRoss and Hylland, 2015). We obtained new paleoseismic data in five trenches from the Fox Peak and Forest Creek faults in the South Island, New Zealand. The data show MRE (~2500 yr B.P.) and penultimate event ages (~5000 yr B.P.) on the two faults that are consistent with, but not uniquely diagnostic of, coeval rupture of this imbricate fault system. Using the field data obtained in this study, as well as existing geophysical data, we provide a methodology for calculating M_w distributions and the MCE for this system of imbricate faults. The shape of M_w probability distributions for the Fox Peak and Forest Creek faults reflect the relative probabilities of isolated and triggered ruptures of the fault system. The results also indicate that earthquakes that rupture listric fault planes have the potential to produce significantly larger earthquakes (M_w 0.2–0.5 larger in our case study) than those on high-angle planar faults, due to the increased fault rupture area. Studies that do not take into account fault triggering or listric geometries could significantly underpredict the M_w and MCE of earthquakes.

6.3. Is the CES over?

The question of whether the CES is effectively 'over' can be addressed by (i) comparing current (i.e., 2015) seismicity rates to immediate post-mainshock (i.e., 2010–2012) rates and pre-CES (i.e., 1940–2010) rates for the CES region, (ii) considering whether faults that did not rupture completely in the CES but that are capable of future damaging earthquakes exist in the CES region, and (iii) comparing the CES with other analogous earthquake sequences globally. CES aftershock rates have declined post-mainshock (with rejuvenation following large aftershocks) in general accordance with modified Omori's Law. Annual rates of $M_L \geq 4$ and $M_L \geq 3$ earthquakes in 2015 are 8–14% of the 2012 rates and ≤2% of $M_L \geq 4$ and $M_L \geq 3$ average annual rates from September 2010 to September 2012 (Fig. 5). However, the annual rate of $M_L \geq 4$ and $M_L \geq 3$ earthquakes in the CES region in 2015 was 8–10 times as great as the average annual pre-Darfield earthquake rate of $M_L \geq 4$ and $M_L \geq 3$ earthquakes between 1940 and 2010 (to account

7. Conclusions

1. The 2010–2011 CES occurred on a series of previously unidentified active faults situated in a comparably low strain rate domain at the periphery of a diffuse plate boundary orogen. The locations of the 14 faults that ruptured in M_w 7.1 to 5.9 earthquakes, including the surface rupturing Greendale Fault, were unknown because (i) evidence for prior surface rupture and surface folding was buried by Late Pleistocene and/or Holocene sediments, and/or was sufficiently subtle or eroded to the point that no surface deformation was clearly discernible from geomorphic or topographic analysis, (ii) detailed subsurface geophysical investigations that had recently revealed similar active blind and buried faults elsewhere in the region had not yet been conducted in the CES region, and (iii) the CES faults were seismically quiescent or had sufficient small and imprecisely located historical earthquakes such that fault structure

was not clearly definable. However, the susceptibility of the region to a CES-type scenario was well documented in pre-CES seismic hazard models (Stirling et al., 2001, 2008) that stated (i) earthquakes up to M_W 7.2 on unidentified faults were possible in the region, (ii) proximal moderate M_W earthquakes contributed the largest component of strong to severe shaking hazard in Christchurch, and (iii) structurally inherited E–W striking active faults were present through the broader region and capable of generating $M_W > 7$ surface rupturing earthquakes. From this perspective, individual CES earthquakes were consistent with best-practise seismic hazard models (Stirling et al., 2012). The spatial and temporal clustering of this event highlighted the importance of implementing short- to medium-term forecasting in seismic hazard considerations (Gerstenberger et al., 2014).

2. The CES triggered a variety of geologic, geomorphic, hydrologic, and biologic environmental effects. The occurrence or non-occurrence of a given effect was governed by the seismologic attributes of the associated earthquake (seismic triggering thresholds) and the intrinsic properties of the site (site characteristics) that in some instances were influenced by preceding earthquakes (e.g. water table depth, pore fluid pressures). The geologic variability of the CES region, including late Holocene alluvial and estuarine sediments with shallow water tables, steep pervasively jointed and subhorizontally stratified volcanic bedrock cliffs, and low-elevation coastal plains with active and abandoned stream channels contributed to the diversity of observed effects. The most severe shaking and most severe environmental effects occurred in response to earthquakes sourced

in areas that may have been affected by historic, earthquake-induced subsidence and flooding. Some distal hydrologic effects mimicked hydrologic effects induced by other historical earthquakes. Other effects of a more subtle or transient nature are similarly likely to have affected by pre-CES seismicity and offer avenues for future research.

6. For proximal, highly vulnerable sites, the severity of liquefaction and rockfall effects incurred in the M_W 6.2 Christchurch and 6.0 June earthquakes exceed, or are equivalent to, the severity of any pre-CES effects discernible from the geologic record. Furthermore, some less-susceptible sites where CES effects occurred show no geologic evidence of pre-CES predecessors. Blind fault earthquakes may thus dominate the palaeoseismic record in some locations globally. From the geologic perspective, the CES, and in particular the M_W 6.2 Christchurch and 6.0 June earthquakes, appears to represent a 'worse case' seismic shaking scenario for the Christchurch area. It is unclear from palaeoseismic data whether the tight temporal cluster of proximal earthquakes experienced during the CES is exceptional or representative; from the geologic record, the possibility of further highly damaging earthquakes in the short to medium term cannot be dismissed.

7. Christchurch was settled upon a highly dynamic landscape prone to flooding and mass movements, in an area where historical earthquakes were frequently recorded, and where geologic evidence for flooding, liquefaction and mass movements was present at the surface or in the shallow subsurface. Extensive property development, largely in the 1950s and 1960s but starting in the late 19th Century and continuing into the 2000s, took place (i) on some of the most

support the argument that there has been no significant displacement along the Darling Scarp during the Quaternary. A word of caution is, however, required since at ~30 Myr ago, this region of Australia was at a latitude of ~45°S and the climate was likely substantially wetter than present (Martin, 2006). Hence, the assumption that the present day retreat rates of the knickpoints and scarp face are representative of the long term may be somewhat simplistic. Since erosion rates were likely to have been higher under a higher rainfall regime, the mid-Tertiary to early Neogene initiation obtained here are likely to be maximum values.

Conclusion

Low cosmogenic ^{10}Be erosion rates and erosion rate variability from bedrock outcrops comprising the Darling Scarp imply minimal relief production over the Quaternary, consistent with this feature being a slowly eroding, tectonically inactive feature. Knickpoint retreat rates are compatible with long-term rates derived from geological constraints and, if representative of longer term rates, are consistent with the interpretation that knickpoints formed during early Tertiary tectonic uplift and have been slowly propagating through the landscape since

then. High cosmogenic ^{10}Be concentrations in active stream channels indicate slow erosion that is inconsistent with tectonically modulated incision along the adjacent range-front, as has been proposed for other Australian landscapes (e.g. Flinders Ranges), and is more consistent with a fluvial response to slow, long wavelength, low amplitude southwest side up tilting of the Australian continent. Continental tilting may explain the disequilibrium longitudinal profiles in streams incised into the Darling Scarp. Comparison of the ^{10}Be cosmogenic nuclide concentrations of the aseismic Darling Scarp with seismically active Flinders Ranges suggest that ^{10}Be nuclide analysis is a very useful tool in determining whether a structure, or region, has been tectonically active over the timescales of cosmogenic nuclide accumulation, thus providing a potential palaeo-seismic tool with a range of up to 10^5 to 10^6 years.

Style of Interplate Deformation, External Publication, Geoscience Australia, 'Geospatial information for the nation'. Department of Industry, Tourism and Resources: Canberra.

Crosby BT, Whipple KX. 2006. Knickpoint initiation and distribution within fluvial networks: 236 waterfalls in the Waipaoa River, North Island, New Zealand. *Geomorphology* **82**: 16–38.

de Broekert P, Sandiford M. 2005. Buried inset-valleys in the eastern Yilgarn Craton, Western Australia: geomorphology, age and allogenic control. *Journal of Geology* **113**: 471–493.

Doyle HA. 1971. Australian seismicity and plate boundaries. *Nature Physical Science* **234**: 174–175.

Fabel D. 2006. *A Brief Introduction to* in-situ *Produced Terrestrial Cosmogenic Nuclide Methods*, CRC LEME Open File Report, Report no. 189. Australian National University: Canberra; 7–18.

Fleming A, Summerfield MA, Stone JO, Fifield LK, Cresswell RG. 1999. Denudation rates for the southern Drakensberg escarpment, SE Africa, derived from *in-situ*-produced cosmogenic ^{36}Cl: initial results. *Journal of the Geological Society, London* **156**: 209–

Acknowledgements, References, Appendix

- Thanks to people who helped contribute ideas with your work – also good politics
- Thanks to people who reviewed the manuscript (not really any point in thanking anonymous)
- Thanks to research grants
- Dedications?
- References – pay attention to journal format
- Appendix – as above, listen to editorial advice but push if you disagree

The publication process

- Several revisions, clearance from co-authors
- On-line submission
- Passes quality check
- Editor decides to review, asks reviewers
- Reviewers respond and review ms
- Editor examines reviews and makes decision
- Author responds – politely and professionally – remember that (most of the time) the reviewers have done you a great favour, by investing their time and energy into helping you improve the science and presentation of your work
- Repeat process
- Paper accepted
- Proofs received
- Paper published

Helpful resources

- http://abacus.bates.edu/~ganderso/biology/resources/writing/HTWsections.html