Editorial

Research, Discussion and Debate in Southern African Quaternary Research in 2017

Jennifer M. Fitchett[1] & Marion K. Bamford[2]

[1]*School of Geography, Archaeology and Environmental Studies, University of the Witwatersrand*

[2]*Evolutionary Studies Institute, University of the Witwatersrand*

Introduction

The Southern African Society for Quaternary Research (SASQUA) was established in the 1960s, and remains a vibrant community of Quaternary scientists including archaeologists, palaeoecologists, palaeoclimatologists, geomorphologists, chronologists and palaeoanthropologists (Bamford & Grab 2005). Considerable progress has been made by members of the community in reconstructing the environments, climates and human evolution of southern Africa spanning the Quaternary (Meadows & Finch 2016; Fitchett *et al.* 2017). A number of critical reviews of South African Quaternary palaeoscience have published over recent years (*cf.* Meadows 2015; Meadows & Finch 2016; Fitchett *et al.* 2017), but as with any developing discipline, the landscape continues to evolve rapidly. Conferences are critical fora for sharing state-of-the-art knowledge including: methodological developments, reconstructions for previously overlooked regions, and debates on interpretations and inferences. It is likewise critical to publish the conference outputs in the public domain. The South African Society of Quaternary Research (SASQUA) brings together many of the currently active Quaternary scientists conducting research in southern Africa. The conference delegates, although predominantly South African, include international scientists, allowing for a rich transfer of expertise and ideas. Of particular value to continued Quaternary research in South Africa is that a large proportion of the conference delegates are students, all of whom are engaged in exciting projects that pursue methodological advancement, address spatial and temporal gaps in the existing regional database, and who demonstrate a strong culture of skills development in the country. This special issue contains the extended abstracts of material presented in oral and poster presentations at the 2017 SASQUA conference, together with conference proceedings papers from a selection of delegates.

Historical overview

Quaternary palaeoenvironmental and palaeoclimatic reconstructions were initiated comparatively late in southern Africa, compared to work elsewhere in the world. Pioneering studies by Van Zinderen Bakker (1955), Martin (1959, 1968), Coetzee (1967) and Scott (1976, 1982), were challenged by the considerably rich and varied flora of the region and limited by uncertain chronologies. In recent years, studies have benefited from access to increasingly affordable, high-precision dating facilities, and large pollen, phytolith and diatom collections to facilitate the identification of proxies (Meadows 2014). Archaeological research in the region was initiated slightly earlier, with the establishment of the *South African Archaeological Bulletin* in 1960 (Bamford & Grab, 2005). Since then there have been numerous publications in local and international journals. Just one example is shown in Wadley's (2015) review of the Middle Stone Age innovations of southern Africa where she lists more than 57 sites, compared with a list of seven sites in 1999 by Deacon & Deacon (1999). Both archaeology and palaeoenvironmental studies have benefited tremendously from advances in dating techniques and capacity over the past half-century (Fitchett *et al.* 2017), and improvements in age-dating remain a popular topic at SASQUA conferences.

In the editorial for the *Quaternary International* special issue for the 2005 SASQUA Conference, Bamford & Grab (2005) tabulated the key themes spanned by papers presented at SASQUA conferences from 1993–2003 (Table 1). These themes were notably dominated by the fields of geomorphology, sedimentology and stratigraphy, topics which have over subsequent years received increasingly less attention. The conferences of 2001 and 2003 additionally had key focus areas in the domains of archaeology, palaeozoology, and dating and isotopic work. It is interesting to reflect a decade and a half later, on how many of these themes remain topics of continued innovation, debate and development within the community.

Table 1. Percentage contributions of papers from sub-disciplines, presented at SASQUA conferences from 1993–2003 (after Bamford & Grab 2005).

Year	Geomorphology/ sedimentology/ stratigraphy	Dating isotope work	Archaeology	Palaeozoology	Palaeobotany	Palaeoclimatology	Environmental multidisciplinary
1993	27	3	22	13	15	10	10
1995	45	4	7	4	7	11	45
1997	64	3	7	7	9	3	7
2001	53	13	3	12	3	3	16
2003	31	3	26	14	12	0	14

Current themes in South African Quaternary science

In comparison to the trends of 1993–2003 (Table 1), it is notable that none of the oral or poster presentations at SASQUA 2017 cover topics of geomorphology; the only work exploring sedimentology is presented by Morrissey *et al.* (this issue), investigating the palaeoenvironment of the Nahoon Point footprints on the basis of sedimentological evidence. A significant proportion of the work presented at this conference explores developments in Quaternary science methods and proxies. It is thus fitting that the plenary address, presented by Prof. Anson Mackay of University College London, explores novel developments in the use of $\delta^{18}O_{diatom}$ records from lake sediments to reconstruct hydrological variability (Mackay *et al.,* this issue). Applications of Foraminifera in palaeoenvironmental reconstructions of South Africa's shoreline (Strachan, this issue), FIB-SEM as a new method for examining pollen grain walls (House, this issue), and a comparison of palynological processing methods (Neumann *et al.,* this issue) comprise a few of these contributions. As is typical for SASQUA conferences, many of the presented works include new Quaternary palaeoenvironmental reconstructions, which for SASQUA 2017 span the Middle Stone Age through to the late Holocene. The conference also included a strong contingent of geologists and cultural archaeologists, providing a wealth of perspectives. Engaging in the diversity of delegates, a panel debate was scheduled to conduct inter-disciplinary discussion regarding the climatic conditions in South Africa during the Last Glacial Maximum (LGM). This contributes to the ongoing efforts of the SHeMax team to better understand LGM conditions in the southern hemisphere (Petherick *et al.* 2016). The outcome of this panel debate is summarized in a short communication (Fitchett *et al.* this issue).

The abstracts accepted for oral and poster presentations at SASQUA 2017 reflect a focus on South and southern Africa, as to be expected given the ambit of the conference (Fig. 1). There is a significant focus on palynology in the proceedings of SASQUA 2017, with the word 'pollen' used 76 times in the full collection of all accepted abstracts. Related subjects of 'climate', 'change', 'environment' and 'conditions' also feature among the frequently used words in the collection of abstracts, with a combined total of 208 mentions.

The way forward: sustaining Quaternary research and debate in South africa

While the large international conferences draw more attention to more people the disadvantage is that there is an overwhelming amount of information disseminated and unless the delegate is very focussed and disciplined in attending his selection of topics it results in a

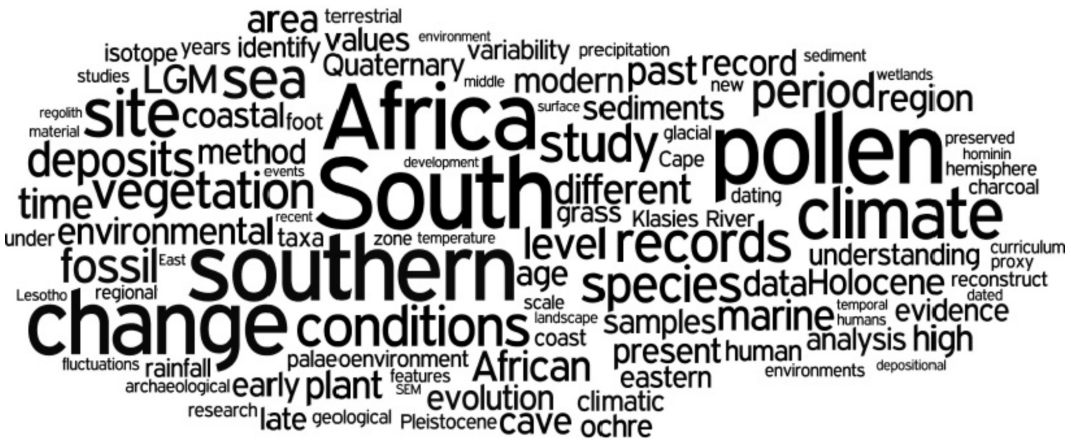

Figure 1. Word cloud demonstrating the proportional contribution of words used 10 times or more in the full collection of SASQUA 2017 abstracts.

case of 'in one ear and out of the other'. The advantage of smaller, more personal conferences is that the delegates are more likely to listen to talks outside of their normal selection and so learn something new but can also contribute new ideas from another field to the presenter. Thus, conferences such as SASQUA remain a vital enterprise in the training of the next generation of palaeoscientists, who will be increasingly local and diverse.

REFERENCES

BAMFORD, M.K. & GRAB, S.W. 2005. Highlights of Quaternary research in southern Africa, and proceeding forwards. *Quaternary International* **129**, 1–3

COETZEE, J.A. 1967. Pollen analytical studies in East and southern Africa. *Palaeoecology of Africa* **3**, 1–146.

DEACON, H.J., DEACON, J. 1999. Human beginnings in South Africa: uncovering the secrets of the Stone Age. David Phillip, Cape Town.

FITCHETT, J.M., GRAB, S.W., BAMFORD, M.K. & MACKAY, A.W. 2017. Late Quaternary research in southern Africa: progress, challenges and future trajectories. *Transactions of the Royal Society of South Africa,* In press.

MARTIN, A.R.H. 1959. The stratigraphy and history of Groenvlei, a South African coastal fen. *Australian Journal of Botany* **7**, 142–167.

MARTIN, A.R.H. 1968. Pollen analysis of Groenvlei lake sediments, Knysna (South Africa). *Review of Palaeobotany and Palynology* **7**, 107–144.

MEADOWS, M.E. 2014. Recent methodological advances in Quaternary palaeoecological proxies. *Progress in Physical Geography* **38**(6), 807–817.

MEADOWS, M.E. 2015. Seven decades of Quaternary palynological studies in southern Africa: a historical perspective. *Transactions of the Royal Society of South Africa* **70**(2), 103–108.

MEADOWS, M.E. & FINCH, J.M. 2016. The history and development of Quaternary science in South Africa. *South African Geographical Journal* **98**(3), 472–482

PETHERICK, L., SHULMEISTER, J., KNIGHT, J. & ROJAS, M. 2016. SHeMax: the last glacial maximum in the southern hemisphere. *Quaternary Australasia* **33(**2), 32.

SCOTT, L. 1976. Preliminary palynological results from the Alexandersfontein Basin near Kimberley. *Annals of the South African Museum* **71**, 73–189.

SCOTT, L. 1982. A Late Quaternary pollen record from the Transvaal Bushveld , South Africa. *Quaternary International* **17**, 339–370.

VAN ZINDEREN BAKKER, E.M. 1955. A preliminary survey of the peat bogs of the alpine belt of northern Basotholand. *Acta Geographica* **14**, 413–422.

WADLEY, L. 2015. Those marvellous millennia: the Middle Stone Age of southern Africa. *Azania: Archaeological Research in Africa* **50**(2), 155–226.