



# Prof Sally A Gibson

FGS, F. MinSoc, AGU, EAG

## PROFESSIONAL SUMMARY

My research is focused on the inner workings of our planet and how processes operating in its deep interior influence those at its surface. This is broad in scope and embraces mantle and volcanic rocks ranging from 3.5 billion to <1 year in age. The advancement of knowledge made by my research group has been accomplished by combining detailed field observations in remote parts of Africa, South and North America, Russia plus volcanic islands in the Atlantic and Pacific Oceans with analytical studies of volcanic rocks, geophysical and numerical investigations. This rigorous approach has allowed my research group and collaborators to address provocative and timely scientific questions related to global geodynamic processes. A large recent campaign of my research group has been focused on the cycling of volatiles. This is now being expanded to look at the origins of critical metals in our new REE-LITH project.

## PROFESSIONAL EXPERIENCE

**2018** – Professor of Petrology & Geochemistry, Dept of Earth Sciences, University of Cambridge, UK

**2012 – 2018.** Reader in Petrology & Geochemistry, Dept of Earth Sciences, University of Cambridge, UK

**2001 – 2012.** University Senior Lecturer, Dept of Earth Sciences, University of Cambridge University

**1995 – 2001.** Lecturer, Dept of Earth Sciences, University of Cambridge, UK

**1992 – 1995.** NERC Senior Research Assistant, Dept of Geological Sciences, University of Durham, UK. 'Cretaceous plume-lithosphere interaction & alkalic magmatism in Brazil and Paraguay'

**1989 – 1991.** NERC Senior Research Assistant, Dept of Geological Sciences, University of Durham, UK. 'Continental basaltic and basalt-related magmatism' (Oligocene-Quaternary magmatism of the Rio Grande rift and surrounding region, USA)

## PROFESSIONAL SOCIETIES

2014 – Present: Member of the European Association of Geochemistry

1996 – Present: Member of the Mineralogical Society of UK & Ireland

1990 – Present: Member of the American Geophysical Union

1985 – Present: Fellow of the Geological Society of London

## OTHER APPOINTMENTS & AFFILIATIONS: UNIVERSITY OF CAMBRIDGE

2019-2022: Faculty of Physics, Chemistry & Astronomy Promotions Panel

2019 -: Faculty of Earth Sciences & Geography Promotions Panel

2015 – 2016; 2018-2019: Acting Director, Sedgwick Museum of Earth Sciences

## CONTACT

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## EDUCATION

### PhD

University of London (Kingston)  
1985-1988

### BSc (Spec Hons)

University of Sheffield  
1982-1985

## LEADERSHIP

President, Mineralogical Society of UK & Ireland (2023-2024)

Chair, Volcanic & Magmatic Studies Group (2018-2022)

Acting Director, Sedgwick Museum, University of Cambridge (2015 & 2018)

LA-ICP-MS Lab Manager, University of Cambridge (2002- )

## PRIZES & AWARDS

2017: Harold Wilson Memorial Lecture, Ulster Museum, Belfast

2014: Hallimond Lecture Prize for outstanding contribution to mineralogy & petrology, Mineralogical Society of UK & Ireland

2008: Sedgwick Prize for field research, University of Cambridge

2002: Pilkington Prize for teaching, University of Cambridge

## CURRENT AWARDS

NERC: REE-LITH project (£1 million)

NSF\_NERC: Galapagos (\$1.5 million)

ARC: Williams Ridge (Kerguelen)

## SUPERVISION & EXAMINATION

Principal supervisor of 17 PhD students (all completed in <4 years).

Principal supervisor of 16 MSci students (>50% awarded 1st).

External examiner of 21 PhD theses (England, Wales, Scotland, N. Ireland, Eire, Netherlands, Brazil and Finland)

Senior Examiner of undergraduate exam committees at the University of Cambridge

## EDITORIAL BOARDS

2018 – present: Editorial Review Board, *J. Petrology* (Invited)

2015 – 2018: Editorial Review Board, *Geology* (Invited)

1999 – 2008: Editor, *Journal of the Geological Society of London*

## PANEL MEMBERSHIP

2018-2021: Icelandic Centre for Research Funds (RANNIS) panel for Maths & Physical Sciences

2012– Present: Scientific Advisory Board, Cambridge Arctic Shelf Project (Invited)

2012– 2014: Scientific & External Relations Committee, Geological Society of London (Invited)

## OTHER APPOINTMENTS & AFFILIATIONS: UNIVERSITY OF CAMBRIDGE

2016. Senior Part II Examiner, Department of Earth Sciences

2012 – 2017: Careers Officer, Department of Earth Sciences

2010 – 2013: Faculty Board & Degree Committee, Department of Earth Sciences & Geography

2010 – Present: Manager of Earth Sciences geochemistry and sample preparation laboratories,

2010 – Present: Honorary Curator of Petrology, Sedgwick Museum (Invited)

2001 – 2015: Course Co-ordinator, 1B Geological Sciences B

2001 – Present: Manager of Laser-Ablation Inductively-Coupled-Plasma Mass-Spectrometry laboratory, Department of Earth Sciences

1997 – Present: Member of numerous Appointment Committees and Advisory Groups

## SYNERGISTIC ACTIVITIES EXTERNAL TO UNIVERSITY OF CAMBRIDGE (SINCE 2007)

2023-present: President, Mineralogical Society (Invited)

2019- present: Awards Nominations Panel, Geological Society of London

2018-2019: Vice President, Mineralogical Society (Invited)

2018 – 2021: Chair, Volcanic & Magmatic Studies Group, *Geological Society of London* (Invited)

2018 – 2022: External examiner, *University of Bristol*

2017: Session convenor, AGU (New Orleans)

2017: Session convenor, Goldschmidt (Paris)

2017 & 2008: Co-Scientist, Universities of Cambridge & Quito joint expedition to Galápagos

2015: Session convenor, EGU (Vienna, invited)

2014: Conference organiser, Deep Earth Processes, *Geological Society of London* (Invited)

2013 – 2015: External examiner, *Open University*

2013: Session convenor, IAVCEI (Japan, invited)

2011: Conference Organiser, Volcanic and Magmatic Studies Group, *Geological Society of London*

2010 – 2013: Geoconservation Committee, *Geological Society of London* (Invited)

2010 – Present: UK Universities Teaching Consortium for Earth Sciences (Invited)

2010 – 2013: Professional Committee, *Geological Society of London* (Invited)

2010-2013: Member of Council, *Geological Society of London* (Elected)

2009 – Present: Trustee, CASP (formerly known as Cambridge Arctic Shelf Project)

2007 - 2010: Charles Darwin Bicentenary exhibit, Sedgwick Museum of Earth Sciences

2007 & 2008: Principal Scientist, Universities of Cambridge & Idaho joint expedition to Galápagos

## REGULAR CONTRIBUTIONS

I regularly give oral presentations at national/international conferences (e.g. *AGU, EGU, Goldschmidt*), review large grant proposals for NSF, CNPq, grant council for Eire, and review for high-ranking international scientific journals (e.g. *Nature, Geology, Earth Planetary Science Letters, Journal of Petrology, Science*)

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## INTERESTS

Travelling  
Photography  
Hill walking  
Yoga

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## COMMITMENT TO EQUALITY, DIVERSITY AND INCLUSION

Through my various roles in the *Mineralogical Society of the UK & Ireland* and the *Geological Society of London*, I actively demonstrate leadership that promotes the excellence of others (e.g. by participating in awards panels of major scientific societies and modernizing awards criteria so that they consider all activities made by individuals and team work). I have served on Council of both the *Mineralogical Society of the UK & Ireland* and the *Geological Society of London*. I have been responsible for major surveys of Society members and the writing of associated reports that aim to act as pathways for ensuring equality, diversity and inclusion. I have also been involved in establishing new awards that recognize the achievements of Early Career Researchers (VMSG Zeiss Award, VMSG Emeleus Grant) and implementing mentoring schemes. Additionally, I have used these platforms to work with international Learned and Professional Societies to establish Code of Conduct policies.

## OUTREACH & PUBLIC ENGAGEMENT

While serving as Acting Director of the Sedgwick Museum I worked with colleagues to host outreach and educational events in the Museum (e.g. Science Festival). I also served on the University of Cambridge Museums syndicate. I continue to participate in activities of the Sedgwick Museum via my role as Honorary Curator of Petrology and by serving on the Sedgwick Museum Strategy Board.

My work on Charles Darwin as a 'Geologist', specifically the observations that he made on the voyage of HMS Beagle and in Galapagos, has given me a unique opportunity to engage with a diverse public audience. This has involved both a historic and 'modern' perspective on the work and discoveries of scientists, and has included talks and related activities (e.g. Pint of Science, Oxbridge Alumni trip to Galapagos, Sutton Trust Summer Schools).

## PEER REVIEWED PUBLICATIONS

- [1] Gibb, F.G.F. & **Gibson, S.A.**, 1989. The Little Minch Sill Complex. *Scott. J. Geol.* 25, 367-370.
- [2] **Gibson, S.A.**, 1990. The geochemistry of the Trotternish Sills, Isle of Skye: crustal contamination in the British Tertiary Volcanic Province. *J. Geol. Soc. Lond.* 147, 1071-1081.
- [3] Thompson, R.N., Leat, P.T., Morrison, M.A., Hendry, G.L. & **Gibson, S.A.**, 1990. Strongly potassic mafic magmas from lithospheric mantle sources during continental extension and heating: evidence from Miocene minettes of northwest Colorado, U.S.A. *Earth Planet. Sci. Lett.* 98, 139-53.
- [4] **Gibson, S.A.** & Jones, A.P., 1991. Igneous stratigraphy and internal structure of the Little Minch Sill Complex on the Trotternish Peninsula, N. Skye, Scotland. *Geol. Mag.* 128, 51-66.
- [5] **Gibson, S.A.**, Thompson, R.N., Leat, P.T., Morrison, M.A., Hendry, G.L. & Dickin, A.P., 1991. The Flat Tops volcanic field NW Colorado 1: Lower Miocene open-system multi-source magmatism at Flander, Trappers Lake. *J. Geophys. Res.* 96, 13609-13627.
- [6] Thompson, R.N. & **Gibson, S.A.**, 1991. Subcontinental mantle plumes, hot spots and pre-existing thinspots. *J. Geol. Soc. Lond.* 148, 973-977.
- [7] **Gibson, S.A.**, Thompson, R.N., Leat, P.T., Morrison, M.A., Hendry, G.L., Dickin, A.P. & Mitchell, J.G., 1993. Ultrapotassic magmas along the flanks of the Oligo-Miocene Rio Grande rift, USA: monitors of the zone of lithospheric extension and thinning beneath a continental rift. *J. Petrology* 34, 187-228.
- [8] Thompson, R.N., **Gibson, S.A.**, Leat, P.T., Morrison, M.A., Hendry, G.L., Dickin, A.P. & Mitchell, J.G., 1993. Early-Miocene continental extension-related mafic magmatism at Walton Peak, Northwest Colorado: further evidence on continental basalts genesis. *J. Geol. Soc. Lond.* 150, 277-292.
- [9] **Gibson, S.A.**, 1994. Review of 'Magmatism in Extensional Structural Settings' by A.B. Kampunzu & R.T. Lubala (eds). *J. Petrology*, 35, 289.
- [10] **Gibson, S.A.**, Thompson, R.N., Leonardos, O.H., Turner, S., Mitchell, J.G. & Dickin, A.P., 1994. The Serra do Bueno potassic diatreme: a possible hypabyssal equivalent of the ultramafic potassic volcanics in the Late Cretaceous Alto Paranaíba Igneous Province, SE Brazil. *Mineral. Mag.* 58, 357-372.
- [11] Thompson, R.N. & **Gibson, S.A.**, 1994. Magmatic expression of lithospheric thinning across continental rifts. *Tectonophys.*, 233, 41-68.
- [12] Leonardos, O.H., **Gibson, S.A.**, Thompson, R.N., 1997. First evidence of thick sub-cratonic lithospheric mantle forming a Cretaceous diamond source beneath SE Brazil. In 'The Dynamic Geosphere, ed. A.K. Gupta & R. Kerrich. *Proc. Acad. Sci. India* (volume in honour of W.S. Fyfe), 56-67.
- [13] **Gibson, S.A.**, Thompson, R.N., Leonardos, O.H., Dickin, A.P. & Mitchell, J.G., 1995. The Late Cretaceous impact of the Trindade mantle plume: evidence from large-volume, mafic, potassic magmatism in SE Brazil. *Journal of Petrology*, 36, 189-229.
- [14] **Gibson, S.A.**, Thompson, R.N., Leonardos, O.H. & Dickin, A.P. 1995. High-Ti and Low-Ti mafic potassic magmas: Key to plume-lithosphere interactions and continental flood-basalt genesis. *Earth Planet. Sci. Letts.* 136, 149-165.
- [15] Leonardos, O.H., Fleischer, R., Thompson, R.N., **Gibson, S.A.**, Svisero, D.P. & Weska, R.K., 1996. Comments on the paper of G.M. Gonzaga et al., 'The origin of diamonds in western Minas Gerais, Brazil' *Mineral Deposita* 31, 343-344
- [16] **Gibson, S.A.**, Thompson, R.N., Weska, R., Dickin, A.P., Leonardos, O.H. 1997. Late Cretaceous rift-related upwelling and melting of the Trindade starting mantle plume head beneath western Brazil. *Contrib. Mineral. Petrol.* 126, 303-314.
- [17] Thompson, R.N., Velde, D., Leat, P.T., Morrison, M.A., Mitchell, J.G., Dickin, A.P. & **Gibson, S.A.**, 1997. Oligocene lamproite containing an Al-poor Ti-rich biotite, Middle Park, north west Colorado, USA. *Min. Mag.* 61, 557-572.
- [18] Thompson, R.N., **Gibson, S.A.**, Mitchell, J.G., Dickin, A.P., Leonardos, O.H., Brod, J.A. & Greenwood, J.C., 1998. Migrating Cretaceous-Eocene magmatism in the Serra do Mar alkaline province, SE Brazil: melts from the deflected Trindade mantle plume? *Journal of Petrology* 39, 1493-1526.
- [19] Rao, N. V. C., **Gibson, S. A.**, Pyle, D. M., Dickin, A. P., 1998. Contrasting isotopic mantle sources for Proterozoic lamproites and kimberlites from the Cuddapah Basin and Eastern Dharwar

craton:implication for Proterozoic mantle heterogeneity beneath Southern India. *J. Geological Society of India* 52, 683-694.

- [20] **Gibson, S.A.**, Thompson, R.N., Leonardos, O.H., Dickin, A.P. & Mitchell, J.G. 1999. The limited extent of plume-lithosphere interactions during CFB genesis: geochemical evidence from Cretaceous magmatism in southern Brazil. *Contrib. Mineral. Petrol.* 137, 147-169.
- [21] Rao, N.V.C., Miller, J.A., **Gibson, S.A.**, Pyle, D.M. & Madhavan, 1999. Precise  $^{40}\text{Ar}/^{39}\text{Ar}$  age determinations of kimberlites and lamproites from southern India. *J. Geological Society of India*, 53, 25-432
- [22] Rao, N. V. C., Miller, J. A., **Gibson, S. A.**, Pyle, D. M., Madhavan, V., 1999. Precise  $^{40}\text{Ar}/^{39}\text{Ar}$  age determination of the Kotakonda kimberlite and Chelima lamproite, India: implication to the timing of mafic dyke swarm emplacement in the Eastern Dharwar craton. Reply. *J. Geological Society of India*, 54, 205-209
- [23] **Gibson, S.A.**, Thompson, R.N. & Dickin, A.P., 2000. Ferropicrites: geochemical evidence for Fe-rich streaks in upwelling mantle plumes. *Earth and Planetary Science Letters* 174, 355-374
- [24] Mahotkin, I. L. **Gibson, S.A.**<sup>1</sup>, Thompson, R. N., Zhuravlev, D. Z. & P. U.Zherdev, 2000. Late Devonian Diamondiferous Kimberlite and Alkaline Picrite (Proto-kimberlite?) Magmatism in the Arkhangelsk Region, NW Russia. *Journal of Petrology* 41, 201-227.
- [25] Thompson, R.N. & **Gibson, S.A.**, 2000. Transient high temperatures in mantle plume heads inferred from magnesian olivines in Phanerozoic picrites. *Nature* 407, 502-505.
- [26] Brod, J.A., **Gibson, S.A.**, Thompson, R.N., Junqueira-Brod, T.C., Seer, J.H., Moraes, L.C de & Boaventura, G.R., 2000. The kamafugite-carbonatite association in the Alto Paranaíba Igneous Province (APIP) southeastern Brazil. *Revista Brasileira de Geociencias* 30, 404-408.
- [27] Junqueira-Brod, T.C., Brod, J.A., Thompson, R.N. & **Gibson, S.A.** 1999. Spinning droplets-A conspicuous lapilli-size structure in kamafugitic diatremes of Southern Goiás, Brazil. *Revista Brasileira de Geociencias* 29, 437-440 1999
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- [29] J.A. Brod, Gaspar, J.C., de Araujo, D.P., **Gibson, S.A.**, R.N. Thompson, Junqueira-Brod, T.C. 2001. Phlogopite and tetra-ferriphlogopite from Brazilian carbonatites complexes: petrogenetic constraints and implications for mineral-chemistry systematics. *J. Asian Earth Sciences* 19, 265-296.
- [30] Thompson, R.N., **Gibson, S.A.**, Dickin, A.P. & Smith, P., 2001. Early Cretaceous basalt and picrite dykes of the Southern Etendeka region, NW Namibia: windows into the role of the Tristan mantle plume in Paraná-Etendeka magmatism. *Journal of Petrology* 42, 2049-2081.
- [31] **Gibson, S.A.**, 2002. Major element heterogeneity in Archean to recent mantle plume starting-heads. *Earth and Planetary Science Letters*.195, 59-74.
- [32] Thompson, R. N., Smith, P. M., **Gibson, S.A.**, Matthey, D. P., Dickin, A. P., 2002. Ankerite carbonatite from Swartbooisdrif, Namibia: the first evidence for magmatic ferrocarnatite. *Contributions to Mineralogy and Petrology* 143, 377-395
- [33] Anand, M. , **Gibson, S. A.**<sup>1</sup>, Subbarao, K. V., Kelley, S. P., Dickin, A. P. 2003. Early Proterozoic melt generation processes beneath the intra-cratonic Cuddapah Basin, Southern India. *Journal of Petrology*, 44, 2139-2171
- [34] Chalpathi Rao, N. V., **Gibson, S. A.**<sup>1</sup>, Pyle, D. M., Dickin, A. P., 2004. Petrogenesis of Proterozoic lamproites and kimberlites from the Cuddapah Basin and Dharwar Craton, Southern India. *Journal of Petrology* 45, 907-948
- [35] Johnson, J., **Gibson, S.A.**<sup>1</sup>, Thompson, R.N. & Nowell, G.M., 2005. Volcanism in the Vitim Field, Siberia: geochemical evidence for a mantle plume beneath the Baikal Rift Zone. *Journal of Petrology* 46, 1309-1344

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<sup>1</sup> Denotes S.A. Gibson was main but not first author



- [36] Thompson, R.N., Ottley, C.J., Smith, P.M., Pearson, D.J., Morrison, M.A., Leat, P.T. & **Gibson, S.A.**, 2005. The puzzle of OIB-like continental alkalic magmatism: Quaternary alkalic basalts, picrites and basanites of the Potrillo Volcanic Field, New Mexico, USA. *Journal of Petrology* 46, 1603-1643.
- [37] Rao, N.V.C., **Gibson, S.A.**, Pyle, D.M., Dickin, A.P., Day, J.A. 2005. Petrogenesis of Proterozoic Lamproites and Kimberlites from the Cuddapah Basin and Dharwar Craton, Southern India: a Reply *Journal of Petrology* 46, 1081-1084.
- [38] Tuff, J., Takahasi, E. & **Gibson, S.A.** 2005. Experimental Constraints on the Role of Garnet Pyroxenite in the Genesis of High-Fe Mantle Plume Derived Melts. *Journal of Petrology* 46, 2023-2058
- [39] **Gibson, S.A.**, Thompson, R.N., Day, J., Humphris, S.E., Dickin, A.P., 2005. Melt generation processes associated with the Tristan mantle plume: constraints on the origin of EM-1. *Earth and Planetary Science Letters* 237, 744-767
- [40] **Gibson, S.A.**, Thompson, R. N., Day, J.A., 2006. Timescales and mechanisms of plume-lithosphere interactions:  $^{40}\text{Ar}/^{39}\text{Ar}$  geochronology and geochemistry of alkaline igneous rocks from the Paraná-Etendeka large igneous province. *Earth and Planetary Science Letters* 1-17.
- [41] **Tuff, J. & Gibson, S.A.**, 2007. Trace-element partitioning between garnet, clinopyroxene and Fe-rich picritic melts at 3 to 7 GPa. *Contributions to Mineralogy and Petrology* 4, 369-387.
- [42] **Gibson, S.A.**, Malarkey, J. & Day, J.A., 2008. Melt Depletion and Enrichment beneath the Western Kaapvaal Craton: Evidence from Finsch Peridotite Xenoliths. *Journal of Petrology* 49, 1817-1852.
- [43] Herbert, S., **Gibson, S.A.**<sup>1</sup>, Norman, D., Geist, D., Estes, G., Grant, T., Miles, A., 2009. Into the field again: re-examining Charles Darwin's 1835 geological work on Isla Santiago in the Galápagos archipelago. *Earth Sciences History*, 28 (1). pp. 1-31.
- [44] Ayalew D. & **Gibson, S.A.**<sup>1</sup>, 2009. Head-to-tail transition of the Afar mantle plume: Geochemical evidence from a Miocene bimodal basalt-rhyolite succession in the Ethiopian Large Igneous Province. *Lithos*.112, 461-476
- [45] **Gibson, S. A.** & Geist, D., 2010. Geochemical and geophysical mapping of lithospheric thickness variations beneath Galápagos. *Earth and Planetary Science Letters*, 300 (3-4). pp. 275-288.
- [46] **Gibson, S. A.**, Geist, D., Day, J.A. & Dale, C.W., 2012. Short wavelength heterogeneity in the Galápagos plume: evidence from compositionally-diverse basalts on Isla Santiago. *Geochemistry, Geophysics, Geosystems* 13, doi:10.1029/2012GC004244. 23pp
- [47] **Gibson, S.A.**, McMahon, S.C., Day, J.A. & Dawson, J.B. (2013). Highly-refractory lithospheric mantle beneath the Tanzanian Craton: evidence from Lashaine pre-metasomatic garnet-bearing peridotites. *J. Petrology*, 54, 1503-1546.
- [48] **Gibson, S.A.**, Geist, D. & Richards, M.A. (2015). Mantle plume capture, anchoring and outflow during Galápagos plume-ridge interaction. *Geochemistry, Geophysics, Geosystems* 10.1002/2015GC005723
- [49] Richards, M.A., Alvarez, W., Self, S., Karlstrom, L., Renne, P.R., Manga, M., Sprain, C.J., Smit, J., Vanderkluysen, L., **Gibson, S.A.** (2015). Triggering of the largest Deccan eruptions by the Chicxulub impact. *Geol Soc America* 127, 1507-1520
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- [51] **Gibson, S. A.**, Dale, C.W., Geist, D.G., Day, J.A., Brugmann, G., Harpp, K.S. (2016). The influence of melt flux and crustal processing on Re–Os isotope systematics of ocean island basalts: Constraints from Galápagos *Earth Planet. Sci. Letts.*, 449, 345-359
- [52] Miller, W.G.R., Holland, T.J.B. & **Gibson, S.A.** (2016). Garnet and spinel oxybarometers: New internally consistent multi-equilibria models with applications to the oxidation state of the lithospheric mantle. *J. Petrology* 57, 1199-1222
- [53] Weit, A., Trumbull, R.B., Keiding, J.K., X Geissler, W.H., **Gibson, S.A.**, Veksler, I.V., (2016). The magmatic system beneath the Tristan da Cunha hotspot: insights from thermobarometry, melting models and geophysics. *Tectonophysics* doi.org/10.1016/j.tecto.2016.08.010.

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- [85] Helene Hoffmann, Jason Day, Rachael Rhodes, Mackenzie Grieman, Jack Humby, Isobel Rowell, Christoph Nehrbass-Ahles, Robert Mulvaney, **Gibson, S.A.**, and Eric Wolff (Submitted). Laser Ablation - ICP-MS measurements for high resolution chemical ice core analyses with a first application to an ice core from Skytrain Ice Rise (Antarctica). *The Cryosphere*. [egusphere-2023-3071](https://doi.org/10.5194/egusphere-2023-3071)
- [86] Crosby, J.C., **Gibson, S.A.**<sup>1</sup>, Day, J.F., Stuart, F., DiNicola, L., Riley, T.R.R. (submitted). Systematic behaviour of <sup>3</sup>He/<sup>4</sup>He in Earth's continental mantle.
- [87] Jackson, C.G., **Gibson, S.A.**<sup>1</sup>, Tollan, P & Hermann, J., (submitted). The effects of metasomatism and sub-solidus diffusion on the distribution of volatiles in cratonic mantle
- [88] Zhou, S.H., Shu, Q., Pearson, D.G., **Gibson, S.A.**, (submitted). East meets West: The trace of the Mesoproterozoic Kibaran event in the mantle lithosphere beneath eastern Tanzania.



- [89] **Gibson, S.A.**, McKenzie, D.P. & Lebedev, S., (submitted). The distribution and generation of carbonatites.
- [90] Chagas de Melo, B., Lebedev, S., Celli, N.L., **Gibson, S.A.**, de Laat, J.I. & Assumpção, M. (submitted). A The lithosphere of South America from seismic tomography: Structure, evolution, and control on tectonics and magmatism

## Non-peer reviewed conference proceedings (Oct 2018-)

- [1] Jackson, C.G. & **Gibson, S.A.** (2019). Metasomatic controls on hydrogen and fluorine contents of nominally volatile-free minerals in the sub-cratonic mantle. *AGU Fall*, San Francisco, December 2019.
- [2] **Gibson, S.A.** (2019). Geochemical and geophysical constraints on the volatile inventory of Earth's lithospheric mantle. *AGU Fall*, San Francisco, December 2019.
- [3] Gleeson, M. & **Gibson, S.A.** (2019). New insights into the nature of plume-ridge interaction and the implications for mantle degassing at plume-influenced MORBs. *AGU Fall*, San Francisco, December 2019.
- [4] Nava, A.H., Black, B.A.B. & **Gibson, S.A.**, Bodnar, R.J., Renne, P.R. & Vanderkluyzen, L. (2020). Early Deccan Traps CO<sub>2</sub> budget and degassing history constrained from melt inclusions. *AGU Fall*, San Francisco, December 2019.
- [5] Crosby, J.C., **Gibson, S.A.**, Stuart, F., DiNicola, L., Riley, T.R.R. (2020). Illuminating the long-term storage of fluid-hosted volatiles in the SCLM from <sup>3</sup>He/<sup>4</sup>He, major- and trace elements in global mantle xenolith suites. *Volcanic & Magmatic studies Group Annual meeting Plymouth* January, 2020. **Awarded conference prize.**
- [6] Nava, A.H., Black, B.A.B. & **Gibson, S.A.** (2020). Sources of early Deccan Traps magmas and implications for volatile evolution. *Geological Society of America*, Denver 2020.
- [7] **Gibson, S.A.** & McKenzie, D.P. (2020). Earth's lithospheric mantle: A sink & source in global volatile cycles? *Goldschmidt*, Hawaii, June 2020.
- [8] **Gibson, S.A.**, Jackson, C.G., Gleeson, M. & Crosby, J.C. (2020). The role of pyroxenites in the volatile budgets of intraplate magmas. *Goldschmidt*, Hawaii, June 2020.
- [9] Crosby, J.C., **Gibson, S.A.**, Stuart, F., DiNicola, L., Riley, T.R.R. (2021). Illuminating the long-term storage of fluid-hosted volatiles in the SCLM from <sup>3</sup>He/<sup>4</sup>He, major- and trace elements in global mantle xenolith suites. *Goldschmidt*, Lyon, July, 2021.
- [10] **Gibson, S.A.** (2021). The lithospheric mantle as a "sink" and "source" in global volatile cycles. *Goldschmidt*, Lyon, July, 2021.
- [11] Heckel, C., Woodland, A.B., Seitz, H.M., Linckens, J., & **Gibson, S.A.** (2021). "Cold" sheared peridotites from Kimberley (Kaapvaal craton, SA): short-lived deformation connected with transient heating and metasomatism. *European Mineralogy Conference 2021*, Krakow, Poland.
- [12] Heckel C., Woodland, A.B., Linckens, J., & **Gibson, S.A.** (2021). Sheared peridotites from Kimberley (South Africa): Ti-enrichment of olivine neoblasts through a 1200°C hot metasomatic agent. *Goldschmidt*, Lyon, July 2021.
- [13] Nava, A.H., Black, B.A.B. & **Gibson, S.A.**, Bodnar, R.J., Rennes, P.R. & Vanderkluyzen, L. (2021). The co-evolution of Deccan Traps mantle melting, outgassing and climate. *AGU Fall*, New Orleans, December (2021). Invited.
- [14] Coffin, M.J., Whittaker, J., Daczko, N., Halpin, J., Bernardel, G., Picard, K., Gardner, R., Gürer, D., Brune, S., **Gibson, S.A.**, Hoernle, K., Koppers, A., Storey, M., Uenzelmann-Neben, G., Magri, L., Neuharth, D., Christiansen, P., & Easton, L. (2021). Development of William's Ridge, Kerguelen Plateau, and Broken Ridge: tectonics, hotspot magmatism, microcontinents, and Australia's Extended Continental Shelf. *AGU Fall*, New Orleans, December (2021).
- [15] Morris, M., **Gibson, S.A.** & Hole, M. (2022). Evaluation of pyroxenite as a source of post-subduction

- alkali basalts in the Antarctic Peninsula. [https://www.youtube.com/watch?v=DU6\\_Xr4R\\_to](https://www.youtube.com/watch?v=DU6_Xr4R_to)
- [16] Lawford, S.J. & **Gibson, S.A.** (2022). Outgassing of CO<sub>2</sub> reflected in trace element chemistry of mineral phases at Oldoinya Lengai, N. Tanzania. Volcanic & Magmatic Studies Group Annual meeting (2021). <https://www.youtube.com/watch?v=6anla5v8ZTg>
- [17] Heckel C., Woodland, A.B., Linckens, J. & **Gibson, S.A.** (2022). Different types of sheared peridotites from Lesotho (Kaatvaal craton). *Goldschmidt*, Hawaii, June 2022.
- [18] Heckel, C., Woodland, A.B., Linckens, J., & **Gibson, S.A.** & Seitz, H.M. (2022). Sheared peridotites from the cratonic mantle beneath Lesotho (Kaatvaal craton, SA): Investigating deformation and related metasomatic processes from mid-lithospheric depths to the LAB. *GeoMinKöln 2022*, Cologne, Germany (**ERC award winner**).
- [19] Heckel C, Woodland AB, Linckens J, **Gibson SA**, Seitz H-M (2022). Metasomatism-deformation-cycle: Connecting deformation and metasomatism in the lithospheric, cratonic mantle. *DMG - Section meeting geochemistry and petrology* (Mainz, Germany) – **poster** presentation
- [20] Heckel C, Woodland AB, Linckens J, **Gibson SA**, Seitz H-M (2022). Metasomatism-deformation-cycle: Connecting deformation and metasomatism in the lithospheric, cratonic mantle. *Earth Mantle Workshop 2022* (Toulouse, France) – **poster** presentation
- [21] **Gibson, S.A.** & Jackson, C.G. (2022). Build-up of multiple volatiles in Earth's continental keels: Implications for craton stability. *AGU Fall*, Chicago, December 2022.
- [22] Mittal, T., **Gibson, S.A.**, Richards, MA & Constable, S. CO<sub>2</sub> and H<sub>2</sub>O fluxes from the global mid-ocean ridge system : Critical role of deep-sourced, volatile-rich plume material. *AGU Fall*, Chicago, December 2022
- [23] Folkard, A. & **Gibson, S.A.** (2023). Episodic excess crust formation on the Galapagos hotspot track and the diversification of species. *VMSG 2023* (Natural History Museum, London)
- [24] **Gibson, S.A.**, Jackson, C.G & Crosby, J.C. (2023). Abundance and behaviour of volatiles in the continental lithospheric mantle. *Goldschmidt 2023 invited* [doi.org/10.7185/gold2023.19747](https://doi.org/10.7185/gold2023.19747)
- [25] Heckel C., Withers, Woodland, A.B., Gibson S.A. & Ludwig, T. (2023). Low-T sheared peridotites from the Kaapvaal-craton: Record of hydrous metasomatism during deformation. *Goldschmidt 2023*
- [26] Rhodes, R.H., Saville J., Larkman P., Hoffmann H., Day J., Bohleber P., **Gibson S.A.** & Wolff E.W. Taking a closer look at chemical impurities in ice cores with laser ablation. *GGRIP University of Cambridge 2023*
- [27] Cirium, D, **Gibson, SA** & Passey, S., *VMSG*, Bristol (2024). Preliminary Volatile Estimates for the Afro-Arabian LIP.
- [28] Heckel, C., Woodland A. & **Gibson, S.A.** (2024). A sheared ilmenite-dunite xenolith from Thaba Putsoa: a witness of deformation, metasomatism and general perturbation of the deep lithospheric mantle beneath the Kaapvaal craton. *International Kimberlite conference*
- [29] Heckel, C., Woodland A. & **Gibson, S.A.** Linckens J., Withers, A.C., Seitz H-M & Ludwig T (2024). Sheared peridotites: linking deformation and metasomatism contributing to the onset of craton destabilization. *International Kimberlite conference*.
- [30] Lebedev, S., **Gibson, S.A.**, Fullea, J., Xu, Y., Bonadio, R., Davison, F. (2024). Seismic Thermography of Continental Lithosphere: Structure, Evolution, and Controls on the Distribution of Kimberlites and Other Mineral Deposits. *International Kimberlite conference*.
- [31] **Gibson, S.A.**, McKenzie, D.P. & Lebedev, S., (2024). The distribution and generation of carbonatites. *EMC2024*, Dublin, Eire.